



Bushfire Assessment Report

**Proposed Thredbo Golf Course
subdivision and re-design**

Kosciuszko Thredbo Pty Ltd

21 October 2025

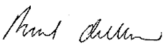
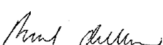
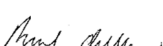
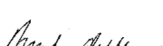
GHD Pty Ltd | ABN 39 008 488 373

15/133 Castlereagh Street
Sydney, NSW, 2000, Australia

T 02 9239 7100 | **E** paul.demar@ghd.com | **ghd.com**

Author	Paul de Mar
Project manager	Paul de Mar
Client name	Kosciuszko Thredbo Pty Ltd
Project name	Thredbo Golf Course redesign and subdivision DA – Bushfire Assessment
Document title	Bushfire Assessment Report
Revision version	Rev 4
Project number	12583041

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	0	P. de Mar	M. George	On file	P. de Mar		4 July 2023
S4	1	P. de Mar	M. George	On file	P. de Mar		14 July 2023
S3	2	P. de Mar	M. George	On file	P. de Mar		15 Nov 2024
S4	3	P. de Mar	M. George	On file	P. de Mar		1 Jul 2025
S4	4	P. de Mar	M. George	On file	P. de Mar		21 Oct 2025

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1. Introduction

Kosciuszko Thredbo Pty Ltd (**KT**) is seeking development consent for creation of a new 18 lot subdivision development within the existing Thredbo Golf Course. The development will also involve a re-design of the golf course to accommodate the proposed subdivision, and provision of an access road and services to all lots within the subdivision, and outdoor carparking spaces. The proposed development is located within Thredbo Alpine Resort (Thredbo), Kosciuszko National Park (KNP), New South Wales (NSW) 2625.

GHD has been engaged by KT to provide a bushfire assessment report, satisfying the requirements of Planning for Bushfire Protection 2019 (**PBP**), to inform KT's Development Application (DA) for the development and to document bushfire assessment of the development proposal against PBP requirements. GHD has also assessed the conformance of the subdivision development with bushfire requirements of the Snowy Special Activation Precinct Masterplan (see section 4.4). The site is located at the Thredbo Golf Course, 2/4 Crackenback Drive, Thredbo, NSW, 2625, on land formally described as Lot 876/DP1243112. The site is on bushfire prone land (as is the entire Thredbo Village and ski-slopes lease area), and therefore bushfire risk management issues will necessarily be a constraint for development within the proposed development site.

Noting the proposed development site lies within the designated boundaries of the Thredbo Alpine Resort, development in NSW alpine resort areas is governed by the State Environmental Planning Policy (Precincts – Regional) 2021 (Precincts – Regional SEPP). The development proposal has been designed to achieve the relevant provisions of the *Precincts – Regional SEPP, Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). The Minister for Planning is the consent authority for development in the alpine resort areas under Part 4 of the EP&A Act.

In September 2023, KT lodged a Development Application seeking development consent for the Golf Course subdivision. The DA incorporated a Bushfire Assessment Report prepared by GHD. As an integrated development, the DA was referred to NSW Rural Fire Service (RFS). Following assessment of the DA by both the Department of Planning and Environment and NSW Rural Fire Service, KT received a Request for Further Information (RFI) on 27 October 2023. A range of matters, not limited to bushfire matters, were identified by the Department of Planning and Environment (now Department of Planning, Housing and Infrastructure (DPHI)).

In relation to bushfire matters, extensive consultation between KT and RFS was undertaken with the result that RFS advised its preference to receive a revised DA and Bushfire Assessment Report providing performance-based solutions for Asset Protection Zones (for achieving BAL 10 building envelopes within each proposed lot), and for subdivision access. Pursuant to development of performance-based solutions, KT and GHD undertook extensive consultation with RFS to agree Bush Fire Design Brief assumptions for Bushfire Attack Level modelling.

This Bushfire Assessment Report assesses a revised subdivision/golf course design, and pursues performance-based solutions for APZs and subdivision access consistent with the consultation undertaken with RFS.

1.1 Applicant and Property details

The applicant and property covered by this bush fire assessment report are:

Proponent:	Kosciuszko Thredbo Pty Ltd (KT) (ABN 95 000 139 015).
Consent Authority:	NSW Department of Planning Housing and Infrastructure
Council:	Snowy Monaro Regional Council

Property: Land formally described as Lot 876/DP1243112
Address: 2/4 Crackenback Drive, Thredbo, New South Wales 2625,

1.2 Works to be undertaken

In addition to seeking development consent for land subdivision of leasehold land into 18 lots, the DA is also seeking development approval for the following works:

- Woody vegetation removal (with retention of significant vegetation wherever possible) in uncleared parts of proposed subdivision lots and for subdivision access road construction;
- Vegetation thinning (with retention of significant vegetation) for golf fairway widening and playing area improvement;
- Subdivision access road and adjacent parking area construction and connection to Crackenback Drive;
- Works to extend services (water, power, sewer) to the proposed subdivision;
- Landscaping and golf playing area modification works (tree removal, ground shaping and turfing works to develop tees, greens, fairways and playing areas).

The further development of individual subdivision lots will be subject to separate DAs in the future.

1.3 Development type for application of PBP

While the development type is subdivision, the ultimate end-use of the subdivision will be for Special Fire Protection Purpose (SFPP) development. Accordingly, consistent with the outcomes of consultation with RFS, performance criteria for subdivisions are applicable with the exception that viable building envelopes within each proposed lot will need to meet a radiant heat threshold not exceeding 10 kW/m².

1.4 Integrated development

Being subdivision intended for future SFPP development, the development is classifiable as integrated development and will require the issue of a Bush Fire Safety Authority (BFSA) (incorporating General Terms of Approval) from the NSW Rural Fire Service under section 100B of the Rural Fires Act 1997 (RF Act).

2. Location and Site plans

The location of the proposed development is the Thredbo golf course which is situated within Thredbo Alpine Resort (Figure 1). Whilst golf course modification works (including the relocation of 2 tees and 4 greens) associated with the golf course re-design are mostly constrained to existing golf playing areas, some fairway re-alignment works and vegetation thinning works in playing areas adjacent to fairways to improve playability is proposed in areas where vegetation thickening and encroachment has occurred over more than five decades. Detailed golf course re-design plans are submitted with the DA.

The subdivision location is confined to the southern-central part of the existing Thredbo golf course, largely on the existing 1st, 3rd and 4th fairways with some encroachment into patches of native vegetation adjacent to those cleared fairway areas. The subdivision access road extends from Crackenback Drive (junction is approximately 40 metres west of the Thredbo Community Centre) and will run adjacent to (south of) the new 9th fairway and green and then adjacent to (north of) the new 1st fairway and green before entering into the proposed subdivision (Figure 1).

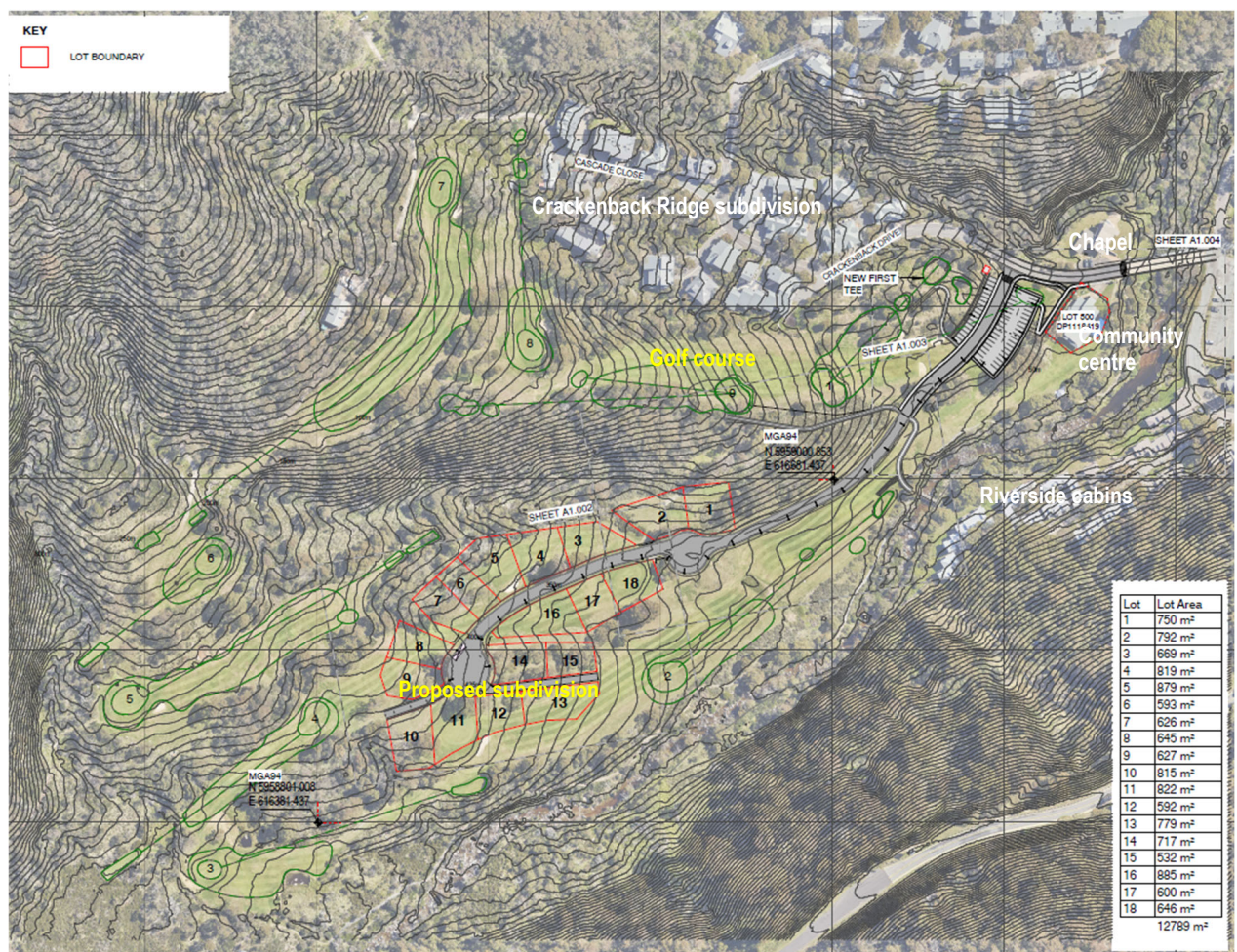


Figure 1 Thredbo Golf Course and proposed subdivision location

2.1 Project description

The Development proposes 18 lots located largely on the existing first, third and fourth fairways and adjacent playing area. Building envelopes catering for future tourist accommodation development of 18 separate free-standing buildings with a proposed bed count of approximately 186 beds are planned for. The combined footprint of the 18 subdivision lots is 12,789 m².

The development proposal incorporates the following key elements:

- Woody vegetation removal (with retention of significant vegetation wherever possible) in uncleared parts of proposed subdivision lots and for subdivision access road construction
- Vegetation thinning (with retention of significant vegetation) for golf fairway widening and playing area improvement and tee shot safety
- Subdivision access road and adjacent parking area construction and connection to Crackenback Drive;
- Works to extend services (water, power, sewer) to the proposed subdivision;
- Landscaping and golf playing area modification works (shaping and turfing works to develop tees, greens, fairways and playing areas)

Detailed site development plans for both the golf course re-development works and subdivision works are contained in KT's DA. Key features of the subdivision development and golf redevelopment are summarised at section 2.1.1 to 2.1.3.

2.1.1 Subdivision

The Development provides for 18 separate lots for future SFPP development (Table 1) and sits largely on the existing first, third and fourth fairways. The majority of lots have been orientated to maximise solar access. All lots are sufficiently sized to accommodate future tourist accommodation buildings, vehicle access and open space. Where possible, significant vegetation within lots has been retained. The majority of lots have frontage to the proposed new access road. KT will impose building set-backs of 6 metres from road frontage and 4 metres from all other Lot boundaries. To inform the impact assessment of the proposal, conceptual building envelopes and indicative future building footprints have been provided in Table 1 and depicted on the Site Plans. Final built form after sub-division, sale and sub-lease will not likely match the conceptualised plan exactly.

Table 1: Proposed Lots

Lot	Lot Area (m ²)	Building Footprint (m ²)	Beds (nominal)
1	750	240	12
2	792	225	12
3	669	192	8
4	819	274	12
5	879	307	12
6	593	206	8
7	626	215	8
8	645	220	8
9	627	219	10
10	815	285	12
11	822	287	12

Lot	Lot Area (m ²)	Building Footprint (m ²)	Beds (nominal)
12	592	207	10
13	779	272	14
14	717	250	10
15	532	186	8
16	885	310	12
17	600	210	8
18	646	225	10
Total:	12,789	4,331	186

2.1.2 Golf Course Re-design

The Development necessitates a re-design of the golf course. The proposed re-design retains a nine-hole course, albeit shortened in distance with all but one hole being par three holes. A summary of the re-design is provided in Table 2. Detailed golf course plans (prepared by DAWSON DESIGN golf + resorts Pty Ltd), are provided in the DA.

Table 2: Golf Course Re-design

Existing			Proposed				
Hole	Metres (m)	Par	Hole	Metres (m)	Elevation tee to green (m)	Par	Existing hole used
1	432	5	1	10	+3	Short 3	Most 9 th
2	167	3	2	162	+6	Medium 3	1 st
3	348	4 (5)	3	167	-	Long 3	2 nd
4	132	3	4	147	+2	Medium 3	3 rd
5	199	3	5	200	+6	Long 3	5 th
6	90	3	6	96	+3	Short 3	6 th
7	294	4	7	294	+4	Short 4	7 th
8	124	3	8	124	-6	Medium 3	8 th
9	322	4	9	160	-17	Long 3	Most 9 th
Total	Mens 2,108	32		Total	Mens 1,451	28	9 holes used
	(Womens) 1,947	(33)		Change	-657	-4	

2.1.3 Provision of services to the subdivision

The Development will include provision of municipal infrastructure, including new road access and car parking, water, electricity, sewer, communications, stormwater drainage and gas infrastructure. All services will be underground and where possible located within a single trench. Connections to the existing village services will be made on the northern side of Crackenback Drive. Services plans are provided in the DA for further details. Design features of services of relevance for bushfire protection are summarised below.

2.1.3.1 Subdivision access road and turnaround provision

A new subdivision access road has been designed with consideration of the following:

- The road carriageway will be 6.1 metres wide which satisfies the requirements for emergency vehicle access and can accommodate two-way traffic.
- The access road alignment follows natural contours to minimise road grade, reduce stormwater velocities, and minimise changes to the existing drainage network.
- Clearances for snow clearing machinery.

Detailed design will be provided at the Construction Certificate stage.

2.1.3.2 Car Parking

An additional 47 public carparks will be provided along the sides of the subdivision access road. Provision of these parking spaces (which are additional to future parking space provision for each of the subdivision lots when developed) will ensure that emergency vehicle access and visitor vehicle egress along the subdivision access road is not partially blocked or compromised by cars parking within the road area.

Detailed design of the proposed car parking will be provided at the Construction Certificate stage.

2.1.3.3 Water Supply

The Development will provide water supply infrastructure and tap into the existing Crackenback water supply network (refer to the DA for more detail).

2.1.3.4 Electricity and Gas

The Development will include electricity and gas infrastructure to service the lots. Undergrounded services will connect into the existing network on the northern side of Crackenback Drive (refer to DA for alignment details). The lots will be connected to electricity and gas services in accordance with the relevant requirements of the supply/service provider.

2.1.3.5 Telecommunications

The Development will provide telecommunications services (undergrounded) to service the lots. The services will connect into the existing network on the northern side of Crackenback Drive.

2.1.3.6 Additional services

- street lighting to ensure the safety of pedestrians, cyclists and vehicles (mix of solar and LED);
- signage and wayfinding; and
- dual head fire hydrants in accordance with Australian Standard (AS 2419.1:2021).

2.2 Landscape context

The development site is located within the Thredbo Golf Course in the Thredbo Alpine Resort lease area within Kosciuszko National Park. Services such as sealed road access, electricity supply mains, reticulated water supply, and sewer mains are available to Crackenback Drive which runs adjacent to eastern edge the golf course.

Thredbo Village is situated at the bottom of a steep-sided, narrow valley (Thredbo River valley). Most of Thredbo Village, including the entire development site, is situated at around 1,400 metres elevation, with landform to the north and north-west rising to over 2,000 metres on the Rams Head Range (and more than 2,200m at Mount Kosciuszko immediately further to the north-west), and to more than 1,800 metres to the south on Brindle Bull Hill and Mount Leo (above Thredbo to the south). Due to this sheltered valley floor position, Thredbo Village benefits from the sheltering effects of the main range when adverse bushfire weather develops as a result of warm dry winds prevailing from the north-west or west. The highest part of the main range - from Mount Kosciuszko in the north, through Rams Head North, Rams Head to South Rams Head to the west – occupies the landscape above Thredbo village from the north through to the west-south-west. When adverse north to west winds blow during periods of elevated fire danger, winds in Thredbo Valley are typically half to one third the strength of winds up on the main range.

A key consequence of the sheltering from adverse fire winds, in combination with its elevation around 1,400 metres, is that Thredbo rarely ever experiences levels of Forest Fire Danger Index (FFDI) above FFDI 50. Historical analysis of Bureau of Meteorology weather data demonstrates that Thredbo Village has only ever recorded FFDI 50 exceedance once in 52 years of data, reaching FFDI 51.1 on 21 January 2003.

Consultation with RFS on FFDI input assumptions for radiant heat flux modelling has identified FFDI 80 as the input value acceptable to RFS.

2.3 Site bushfire protection context

The proposed golf course subdivision development occurs within the broader context of being an integral part of the Thredbo Alpine Village and resort. Accordingly, it is relevant to consider bushfire protection measures applied at individual development site scale in conjunction with historically successful and effective bushfire protection measures applying to the whole of Thredbo Alpine Resort.

National Parks and Wildlife Service (NPWS) administers the lease area on behalf of the State Government (Department of Climate Change, Energy, the Environment and Water – DCCEEW). The head lease holder, KT, actively participates in whole-of-village bush protection planning with NPWS and RFS. Bushfire protection measures applied at whole-of-village scale, implemented by KT in consultation with NPWS and RFS, contribute significantly to bushfire protection for individual sub-leases. These measures include:

- Planning and implementation of the Thredbo Bushfire Preparation Plan Map (produced by NSW RFS CSC South), assigning responsibility to KT for:
 - Implementation and maintenance of mapped APZ and Strategic Fire Advantage Zones within the lease area aimed at preventing or impeding bushfire fire spread toward and within the village. APZ's designated in the Thredbo Bushfire Preparation Plan Map include over-sized APZ areas (substantially larger than dimensions typically required for individual developments under PBP 2019) on the lower ski run areas, golf course, Village Ski Terminal and open space areas surrounding and within the village urban footprint;
 - Maintenance of the Thredbo Village Neighbourhood Safer Place (as depicted on the Thredbo Bushfire Preparation Plan Map) and associated APZ providing a last-resort shelter location for personnel not evacuated during bushfire evacuations.
- Preparation of the Thredbo Bushfire Evacuation Plan (in place since 2009 and last reviewed Nov 2020) endorsed by NPWS, which provides operational planning for the evacuation preparedness and management of Thredbo Resort in the event of escalating bushfire threats

and triggers. These are applied to the whole Thredbo Alpine Resort, and were successfully implemented during the 2019/20 Black Summer bushfire threats to NSW Alpine Resorts.

- Full cooperation with, and provision of assistance to NPWS (lease administrator) during operational response actions they undertake to protect Thredbo Village against bushfire threats during bushfire incidents and emergencies. This is not limited to implementing evacuations but extends also to making such things as reticulated snow making outlets available to support fire containment operations.

These collective, whole-of-resort bushfire protection measures are important contextually to the application of individual sub-lease site level bushfire protection measures applied through the NSW planning and development control process. These cooperative 'collective' measures have been effective in preserving human life and averting any bushfire damage to lessee and sub-lessee property within Thredbo Village (despite extensive presence of building stock constructed prior to the introduction of bushfire planning and development controls) and despite major fire threats of bushfire coming over the main range and into Thredbo Valley in KNP in 2003.

3. Site Assessment

A site bushfire assessment (including APZ and BAL determination) has been conducted and compiled in accordance with the site assessment methodology detailed in Appendix 1 of PBP 2019.

3.1 Vegetation and fuels

All vegetation formations for each aspect of the development within 140 metres of the development site have been assessed as per the vegetation formations of Keith (2004).

The DA involves works which will clear or modify vegetation in parts of the golf course. Accordingly, in considering BAL assessment for subdivision lots it is necessary and appropriate to assess vegetation on the basis of the vegetation cover and characteristics that will exist (assuming that Development consent is granted) noting that some vegetated areas will be cleared or modified under the DA.

Vegetation clearing and modification works to be undertaken as part of the development include:

- Clearing of woody vegetation within subdivision lots (with retention of significant trees outside building footprints wherever possible, but with tree cover not occupying more than 15% of the APZ)
- Clearing of vegetation within the access road and carpark area footprints to make way for the road and carparking spaces;
- Selected tree removal along in specified fairway edge areas on the golf course in accordance with the golf course re-design;
- Selected woody vegetation thinning (with retention of significant overstorey wherever possible) in golf playing areas and the tree retention areas in accordance with the golf course re-design.

Vegetation condition and management assumptions:

- All vegetation within each proposed subdivision lot is assumed to be either cleared (for construction) or to be 'managed vegetation' (managed consistent with *low threat vegetation – exclusion* criteria per Section A1.10 of PBP) forming part of any APZ which will apply to future development of each lot.
- All vegetation within areas of the golf course designated as '*playing area*' (tees, fairways, cut rough, greens, green-to-tee walkways) is assumed to be 'managed vegetation' (managed consistent with *low threat vegetation – exclusion* criteria per Section A1.10 of PBP) being either intensively managed open cut grass playing areas or fairway fringe areas with retained trees where understorey vegetation will be limited to managed grass cover under retained mature trees, maintained in such condition by ongoing golf course maintenance/greenkeeping works to maintain such areas in a playable condition. This assumption was confirmed during site inspection on 17 February 2023.
- Designated internal, '*managed remnant vegetation areas*' within the golf course are assumed to be 'managed vegetation' (managed consistent with *low threat vegetation – exclusion* criteria per Section A1.10 of PBP) being areas where understorey vegetation will be limited to managed grass cover under a thinned tree cover of retained mature trees, managed in accordance with the proposed Thredbo Golf Course vegetation management plan.

In Figure 3, the subdivision area (red dashed polygon), golf course playing areas (light blue dashed lines indicate the edge of playing areas) and the '*managed remnant vegetation areas*' are remnant vegetation patches within the golf course which will be subject to recurrent vegetation management (in accordance with the Vegetation Management Plan at Appendix 1) which will maintain an open cover of mature trees (principally snow gums) with a managed grass-dominated understorey. Areas of unmodified sub-alpine woodland vegetation are classified as 'Forest'. A narrow strip of vegetation

dominated by alpine heath between the Thredbo River and the golf course playing area is identified as 'short heath'. Small internal patches of sub-alpine woodland smaller than 0.25 hectares and narrow tree strips less than 20 metres wide are incorporated into the managed land area as they are low threat vegetation – exclusion areas.

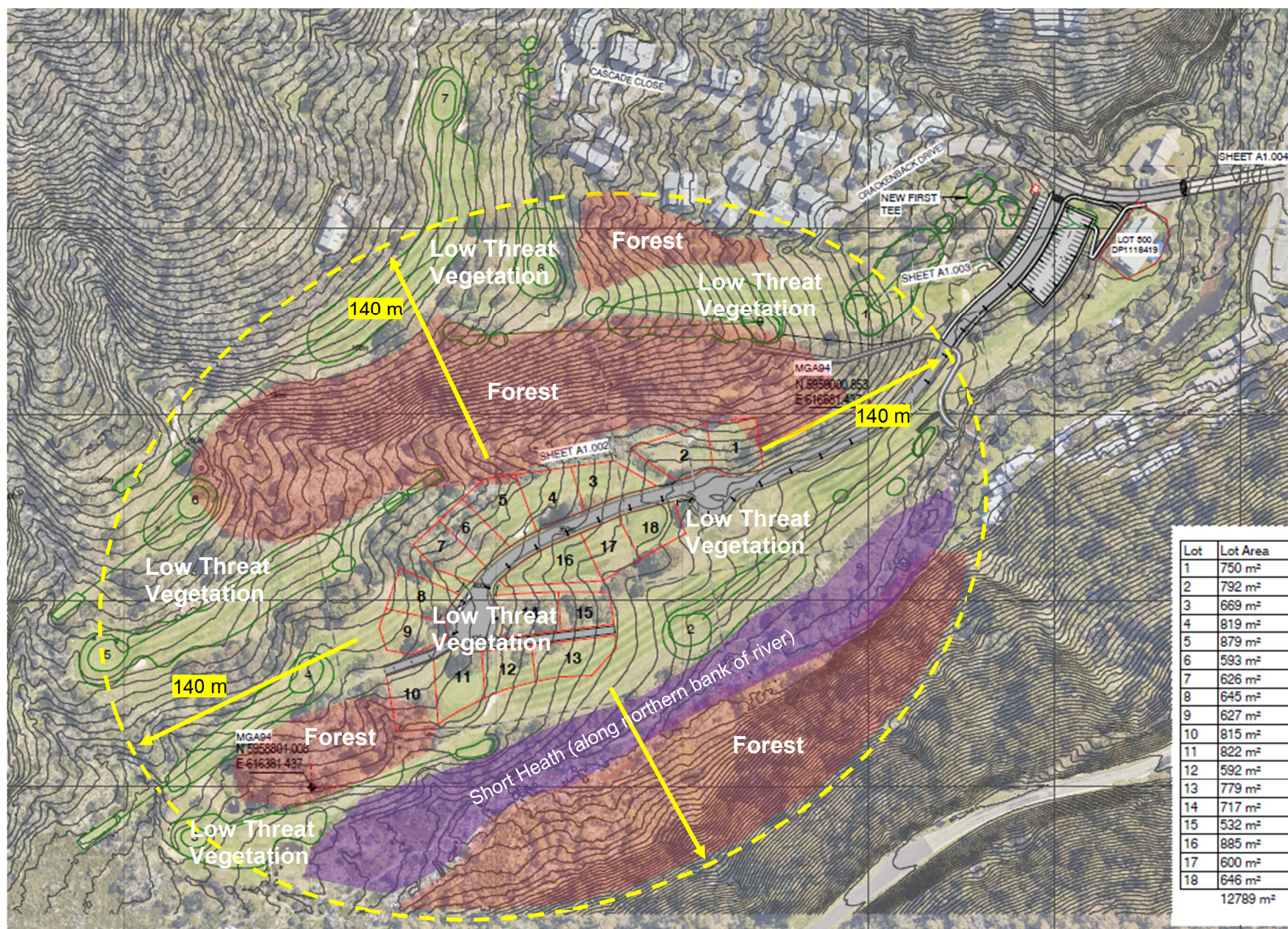


Figure 2 Existing vegetation classification within 140 metres of subdivision

Low Threat Vegetation – Exclusion areas are identified for the purpose of PBP application. Golf course playing areas were inspected with RFS during the pre-DA advice site visit. Golf course playing areas have been assessed as Low Threat Vegetation in accordance with the provisions of Section A1.10 of PBP. Managed remnant vegetation areas will be managed in accordance with the attached Vegetation Management Plan at Appendix 1.

Vegetation formation assessment results, for each aspect of the proposed development, are presented at Table 3. GHD notes that in *PBP 2019*, for the purpose of determining Bushfire Attack Levels (BAL), sub-alpine woodlands are grouped under the 'Forest' vegetation formation.

Table 3 *Vegetation assessment results*

Direction	Dominant vegetation formation	Comments
North	Currently a remnant 'Forest' patch > 1ha within the managed playing areas of the golf course which will be thinned and managed in a 'low threat vegetation' condition in accordance with the Thredbo Golf Course Vegetation Management Plan (Appendix 1).	Under the proposal developed in consultation with RFS, any parts of the remnant forest patch not falling within an APZ will be managed in a low fuel hazard condition in accordance with the attached Vegetation Management Plan (Appendix 1) achieving the following specifications: • Mature canopy-dominant snow gum cover retained with stand thinning to remove mid-storey and understorey tree cover; • Retained low understorey shrub cover not to exceed 20% of understorey vegetation cover; • Understorey grass-dominated cover to be cut to 100mm height at times when grass curing exceeds 70% during the bush fire danger period.
East	Managed land (adjacent) and Forest (further out)	Managed land (golf course playing areas - low threat vegetation) occupy land adjacent to subdivision to the east, then a large patch of forest lies beyond the golf course on the southern-eastern side of Thredbo River
South	Managed land (adjacent); Short Heath along river bank; and Forest (south of river)	Managed land (golf course playing areas - low threat vegetation) occupy land adjacent to subdivision to the south, then short (alpine) heath occupies the riparian zone between the river and the golf course) and then forest lies beyond the riparian zone on the southern side of Thredbo River
West	Principally managed land with a small remnant patch of forest < 0.25 ha which will be managed as low threat vegetation in accordance with the Thredbo Golf Course Vegetation Management Plan (Appendix 1).	Managed land (golf course playing areas - low threat vegetation) occupy land adjacent to subdivision to the west with a small patch (< 1ha) of forest situated adjacent to the south-west corner of the subdivision

3.2 Effective slope assessment

In accordance with the requirements of PBP 2019, effective slope (underneath bushfire-prone vegetation) was assessed for the site. Slope assessment results are presented below at Table 4.

Thredbo golf course's location next to the Thredbo river at the bottom of a deep, steep sided valley places it in a favourable location from a fire approach perspective with downhill or cross-slope approach from every direction.

Fire approach direction with contour mapping is depicted below at Figure 3.

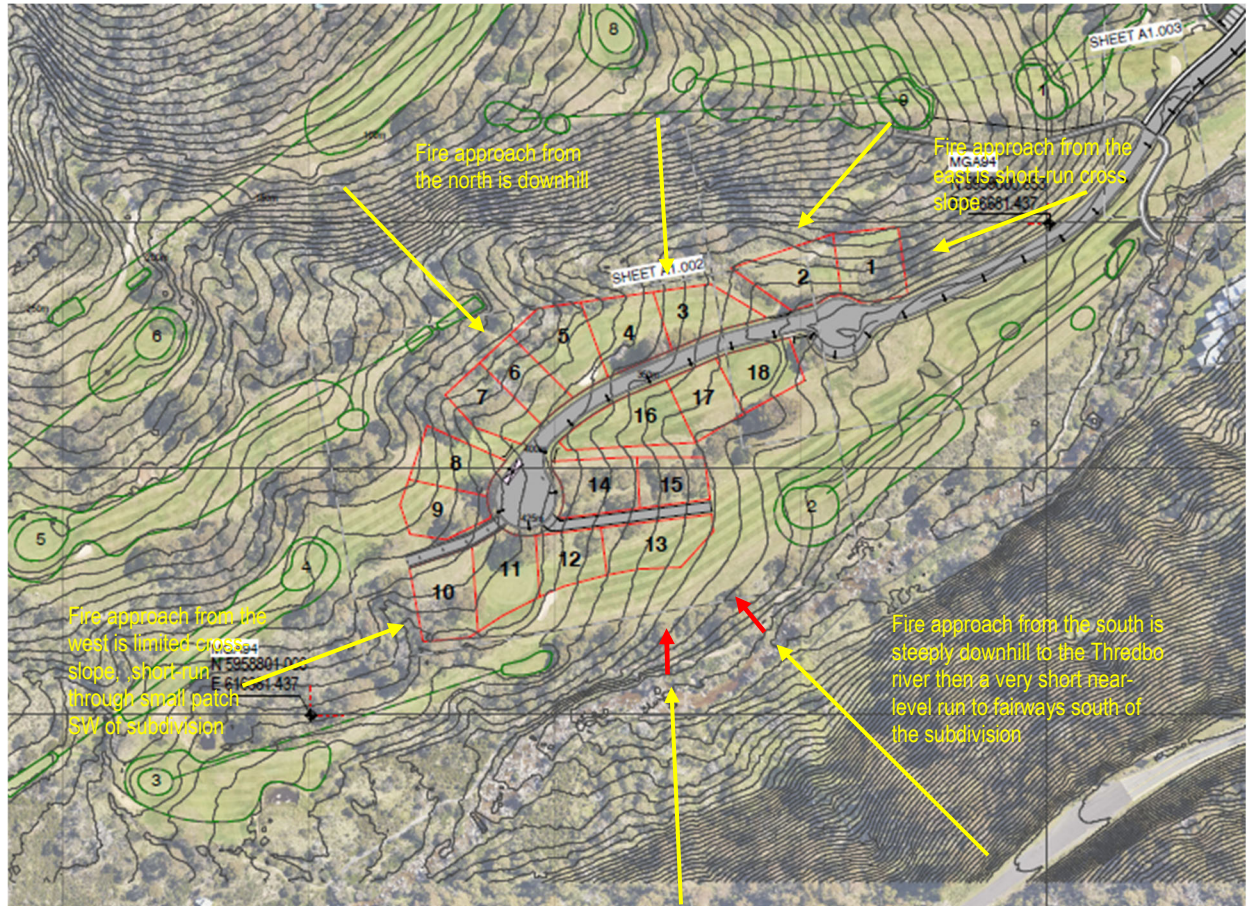


Figure 3 Fire approach transects overlaid on contours

Table 4 Effective slope assessment results

Direction	Effective slope	Comments
North	Upslope (10 degrees)	Land under the narrow 'managed remnant vegetation area' north of the subdivision is on a steep short upslope (fire must approach downhill)
East	[Only applicable to Lot 1] Downslope 0 – 5 degrees (managed land lies east of all other lots)	Fire approach from the east would principally be cross-slope Fire approach from the east limited to a very small patch of sub-alpine woodland east of Lot 1.
South	In consultation with RFS, assumed level to account for narrow width of short heath	Forest above the riparian zone on the southern side of Thredbo River is on a steep upslope (fire must come steeply downhill from the south).

Direction	Effective slope	Comments
	along the river, and upslope position of vegetation beyond the river to the south.	Fire crossing Thredbo river from the south has a short run of around 25 metres through short heath up a 0-5 degree slope before encountering short mown grass fairways on holes 2 and 3 south of the subdivision
West	Upslope 0 – 5 degrees	The area west of the subdivision is dominated by managed land (golf course playing area and very small fragmented remnant snow gum patches – Low Threat Vegetation exclusions) Fire approach from the west would principally be from an upslope position with some cross slope areas from the south-west.

3.3 Fire weather area determination

The FFDI input value for bushfire assessment is FFDI 80 as indicated by RFS¹ is the acceptable FFDI input value for performance-based solutions for the DA.

3.4 APZ determination

Performance-based Solution (developed in consultation with RFS) applied

KT/GHD undertook extensive consultation with RFS canvassing a range of Bush Fire Design Brief and performance-based solution options.

Bush Fire Design Brief assumptions selected in consultation with RFS are:

- FFDI 80
- Maximum bushfire attack level to be achieved by APZ: BAL10
- Flame Temperature: 1200K
- Heat of combustion, flame emissive power, and flame width constants in accordance with AS3959:2018 Appendix B.

Performance-based APZ solutions developed in consultation with RFS

The performance-based APZ solutions below, developed in consultation with RFS, adopt the 'alternative solutions' indicated to be acceptable to RFS in RFS Letter (ref: PRE-DA20230203000015) dated 27 September 2024). These APZs are directed to achieving a radiant heat level not exceeding 10 kW/m² (calculated with a flame temperature of 1200K) and assuming FFDI input value of FFDI 80.

- APZ along northern boundaries of Lots 1 to 10 of not less than 18 metres (measured from northern and western building elevations) - also applicable to western boundaries of those lots. APZ to be incorporated in a Vegetation Management Plan (see Appendix 1) covering the remnant vegetation patch adjoining the APZ.
- APZ along the southern boundaries of Lots 10, 11, 12, 13, 17 and 18 of not less than 32 metres incorporating an Outer Protection Area of 20 metres).

Note minimum setbacks between building envelopes and Lot boundaries not less than 4 metres will apply, therefore the northern/western APZ will extend 14 metres from the Lot boundaries.

¹ As per RFS Letter dated 27SEP2024 (RFS Ref: PRE-DA20230203000015)

A detailed breakdown of the minimum performance-based solutions for APZ widths (inclusive of assumptions), as determined in consultation with NSW RFS, are detailed at Table 5.

A plan view of APZ application to the proposed Thredbo Golf Course subdivision is depicted at Figure 4.

Table 5 APZ determination for leasehold land subdivision intended for future SFPP Tourist Accommodation

Lots	Vegetation formation	Slope Class	FFDI	Max BAL	Min APZ	Comments regarding Lot ability to house a viable building envelope and APZ
Leasehold land subdivision for future SFPP Tourist Accommodation						
All lots	Unbuilt area within each lot landscaped and maintained as APZ	Level	80	BAL 10	Entire area within each lot is to be managed as APZ	Building envelopes have a minimum 4 metre setback from Lot boundaries – this setback area within each lot is to be landscaped and managed as APZ (IPA) APZ management within lot boundaries will be the responsibility of the sub-lessee of each lot to maintain.
Lots 1 to 10	Managed remnant corridor of thinned sub-alpine woodland to the north to be managed in accordance with the Vegetation Management Plan at Appendix 1.	Upslope	80	BAL 10	18 metres to north The 18 metre APZ ² also applies in westerly direction.	In practice the 18 metre APZ will extend 14 metres from the northern and western lot boundaries noting the minimum 4 metre setback of building envelopes within the lots. The APZ portion (14m) outside the Lot boundaries will be the responsibility of the head lessee (KT) to establish and maintain. The entire area within each lot is also APZ, and will be the responsibility of the sub-lessee of each lot to maintain.

² As per RFS Letter dated 27SEP2024 (RFS Ref: PRE-DA20230203000015)

Lots	Vegetation formation	Slope Class	FFDI	Max BAL	Min APZ	Comments regarding Lot ability to house a viable building envelope and APZ
Lots 10, 11, 12, 13, 17 & 18	Section of narrow corridor of sub-alpine heathland to the south	Level	80	BAL 10	32 metres to the south (outer 20 metres to be OPA) ²	The APZ south of lots 10, 11, 12 and 13 will mostly be occupied by golf course playing area (existing and continued), including the 3rd tee and fairway. The 12 metre wide IPA will be fully within existing mown golf course playing areas. The 20 metre wide OPA will partially extend into vegetation within the outer riparian zone applying to the Thredbo River, but will not extend to the inner riparian zone or to the existing Thredbo River Track. Parts of the OPA which intersect with outer riparian zone vegetation (noting this involves a narrow strip less than 10m wide) will require ongoing management, as per the Vegetation Management Plan attached at Appendix 1. The APZ south of lots 17 and 18 will be occupied by golf course playing area (existing and continued) – the playing area around the shoulders of the 2nd green. All APZ portions outside the Lot boundaries (28m) will be the

Lots	Vegetation formation	Slope Class	FFDI	Max BAL	Min APZ	Comments regarding Lot ability to house a viable building envelope and APZ
						responsibility of the head lessee (KT) to establish and maintain. The entire area within each lot is also APZ, and will be the responsibility of the sub-lessee of each lot to maintain.
Lot 1, 13, 15 & 18	Fairways / remnant vegetation patch internal to golf course	Cross-slope (0 degrees)	80	BAL 10	18 metres to east (a minimum of 4 metres of the APZ will be internal within each lot noting KT's minimum 4 metres building setback inside lot boundaries)	Lots 1, 13, 15 and 18 each have an eastern boundary not adjoining other lots. All lots except Lot 1 adjoin golf course playing areas (existing and continued). The eastern Boundary of Lot 1 adjoins a remnant vegetation corridor within the golf course – this area is part of the “managed remnant vegetation area area” which will be managed in accordance with the Vegetation Management Plan at Appendix 1. In practice the 18 metre APZ will extend 14 metres from the eastern lot boundaries noting the minimum 4 metre setback of building envelopes within the lots. All APZ portions outside the Lot boundaries (14m) will be the responsibility of the head lessee (KT) to establish and maintain.

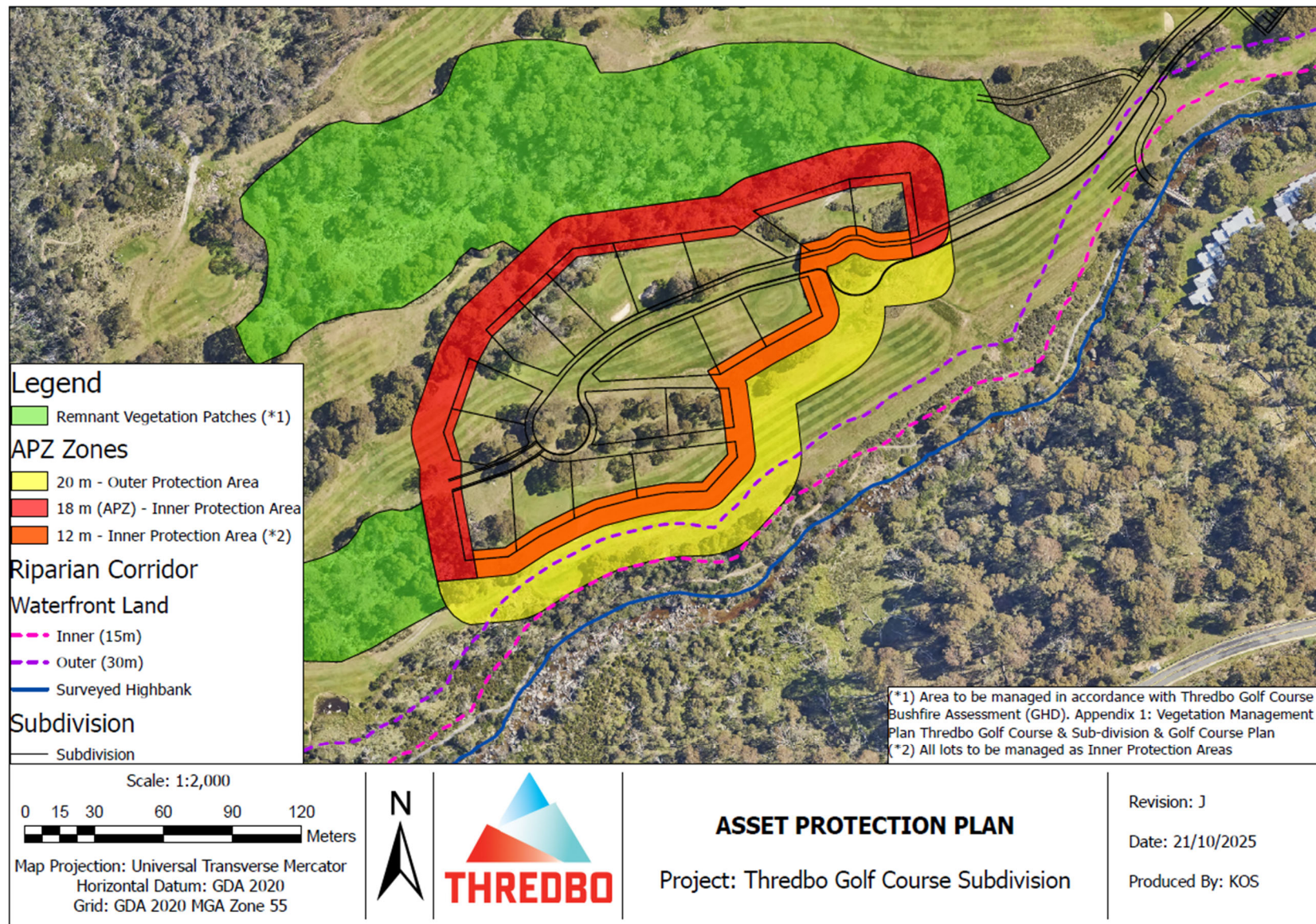


Figure 4 APZ plan view for Thredbo Golf Course subdivision

3.4.1 Basis for calculation of APZ

As part of the consultation process to determine a Bush Fire Design Brief agreeable to the RFS, a range of options were considered. In the consultation process RFS identified 'alternative options'³ for APZ dimensions for consideration which were adopted by KT. The RFS 'alternative options' are:

- APZ to the north not less than 18 metres – provided that “the portion of vegetation to the north (within the fairway) can be managed for the life of the development as a modified grassy woodland”
- The RFS did not specify APZ alternative options for east and west, however given the connection to the same vegetation patch as to the north, GHD proposes to apply the same APZ standard as for the north
- APZ to the south not less than 32 metres (noting the outer 20m may be managed as an Outer Protection Area)

3.5 Determination of Construction standard

Noting that the DA for which this bushfire assessment report has been prepared covers land subdivision (no construction of buildings within subdivision lots is proposed in the DA), no construction standards apply to the DA.

However, noting that the subdivision is for the intended purpose of future development of SFPP Tourist Accommodation for Holiday Let tourism use, in assessing the potential for each proposed lot to accommodate a viable building envelope and APZ, a maximum BAL 10 has been assumed for assessment.

³ As per RFS Letter dated 27SEP2024 (RFS Ref: PRE-DA20230203000015)

4. Bushfire Protection Measures to meet the aims and objectives of PBP 2019

The aim of PBP 2019 is to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.

As explained in detail at section 1.3 of this bushfire assessment report, the proposed development is unusual in that it seeks to undertake land sub-division, not for residential or rural residential use, but for SFPP use in an alpine resort area for the future creation of new tourist accommodation.

Table 6 on the following page compiles the relevant PBP performance criteria and acceptable solutions for the development and identifies how the proposed development can comply with the requirements. For convenience, the key compliance requirements are summarized below:

Asset Protection Zones (APZ)

✓ Performance-based Solution proposed

- Refer to Table 5 for dimension specifications proposed performance-based APZ solutions.
- For all subdivision lots, a viable building envelope and APZ achieving a maximum BAL 10 is able to be achieved), with APZ extension over sub-lease lot boundaries into head lease land within the golf course for which KT has provided written agreement to maintain any portion of the APZ extending into the head lease area. Performance-based solution APZ dimensions have been determined in consultation with NSW RFS to achieve BAL 10, assuming FFDI 80 and flame temperature 1200K, and subject to active fuel management within the 'managed remnant vegetation patch' immediately north of the subdivision (as per the Vegetation Management Plan at Appendix 1).
- Slope within all APZ areas is substantially less than 18 degrees and able to be managed in accordance with PBP Appendix 4
- APZ portions within sub-lease lots and on KT leasehold land are able to be managed in perpetuity

Construction standard

✓ Acceptable Solutions can be applied

- The DA is for land subdivision therefore no buildings are proposed. The proposed BAL 10 APZs can accommodate a construction level of BAL 12.5 for future development of the proposed subdivision lots.

Access/egress

✓ Performance-based Solution proposed

- Refer to Section 4.1 for detailed description of how the proposed performance-based solution for subdivision access can comply with relevant PBP performance criteria for subdivision access
- In summary, all elements of site access provision can satisfy minimum requirements for an 'Acceptable Solution' pathway except that the proposed subdivision access road will not be a through road and no perimeter roads are proposed. The proposed access road will traverse principally clear open irrigated golf course areas and the cleared subdivision area, with unimpeded visibility to and within the subdivision. The mid-section of the subdivision access road will pass by a narrow remnant patch of managed, subalpine woodland upslope from the road, managed such that retained trees are sufficiently set back from the road that they cannot block access if they fall. The performance criteria for the subdivision access road can be met in full as detailed at Section 4.1 of this bushfire assessment report.

Appropriate access to water supply**✓ Acceptable Solutions proposed**

- All lots will have access to reticulated water supply with hydrants able to be provided in accordance with the relevant clauses of AS 2419.1:2021

Electricity Services**✓ Acceptable Solutions proposed**

- Mains supply to the subdivision lots is underground

Gas Services**✓ Acceptable Solutions proposed**

- Gas supply infrastructure to subdivision lots proposed

Emergency Management**✓ Acceptable Solutions proposed**

- KT has in place and maintains a Bushfire Emergency Management and Evacuation Plan for the Thredbo Alpine Resort which is executed as required in coordination with NPWS and NSW RFS

4.1 Subdivision Access – Performance based solution

Performance Based Solution proposed

All acceptable solutions can be provided for all subdivision access Acceptable Solution requirements except Acceptable Solutions requiring that the subdivision access road be a 'through road' and that subdivisions of more than 3 lots be provided with a perimeter road. Noting the National Park setting and objectives to minimize subdivision road impacts in sensitive alpine environment and riparian zone along the Thredbo River, such solutions are not practicable at the site. Accordingly, a performance-based solution for subdivision access is proposed.

The PBP performance criteria for providing subdivision access (general requirements) are:

- *Firefighting vehicles are provided with safe, all-weather access to structures*
- *The capacity of access roads is adequate for firefighting vehicles*
- *There is appropriate access to water supply*
- *Access roads (non-perimeter) are designed to provide safe access and egress fire firefighting vehicles while residents are evacuating*

4.1.1 Proposed subdivision access route

The alignment of the proposed new access road into the proposed subdivision has been changed since the original DA submission. The change in alignment is relatively minor, with the entrance off Crackenback Drive shifting approximately 30 metres to the west to provide improved separation between the Thredbo Community Centre and the subdivision entrance road (revised access road route at *Figure 5* on the following page). The revised alignment rejoins the original alignment at a point approximately 120 metres from the entrance junction. Thereafter, the access road alignment is as originally proposed.

In considering subdivision road access safety from bushfire, the proposed sub-division access route can be described as having three main sections:

- **Entry section:** Entrance into golf course section (approximately 120 metres in length, traversing proposed car parking areas on both sides before passing between a practice putting green (located to the south-east) and the 9th golf hole playing areas (tees, fairway and green) located to the north-west. Hence the entry section will be flanked by carparks and then

irrigated and intensively managed golf course playing areas extending more than 50 metres to the north-west and 40 metres to the south-east, within which bushfire ignition and spread cannot be sustained.

- **Mid-section:** A middle section of the subdivision access road, approximately 150 metres in length, flanked by the existing 1st golf hole fairway (irrigated short-mown green lawn) to the south-east, and the eastern end of a remnant vegetation patch to the north-west. At its south-western end, the mid-section ends at a circular turnaround area at the entrance to the subdivision. A Vegetation Management Plan will apply to the remnant vegetation patch (within the golf course) on the north-western side of the access road mid-section, which will have the effect of maintaining discontinuous tree cover with maintained snow grass (single seasons growth without accumulated thatch, in a partially cured condition) which will have a low likelihood of sustaining fire ignition or spread. Tree presence will be restricted to structurally sound mature retained trees without trunk defects such that these will not fail in the event of a fire impacting the maintained grass understorey.
- **Subdivision section:** The non-through subdivision access road section, culminating in a round turning head, will be separated from bushfire-prone vegetation on both sides by the proposed subdivision lots, noting these lots are already mostly cleared, and will be further cleared as part of the DA. In effect, when the subdivision is established, the subdivision road section will be flanked along its full length by Asset Protection Zones applying to the full depth of the subdivision lots and then extending at least 18 metres further beyond the buildings established within each lot when further developed.

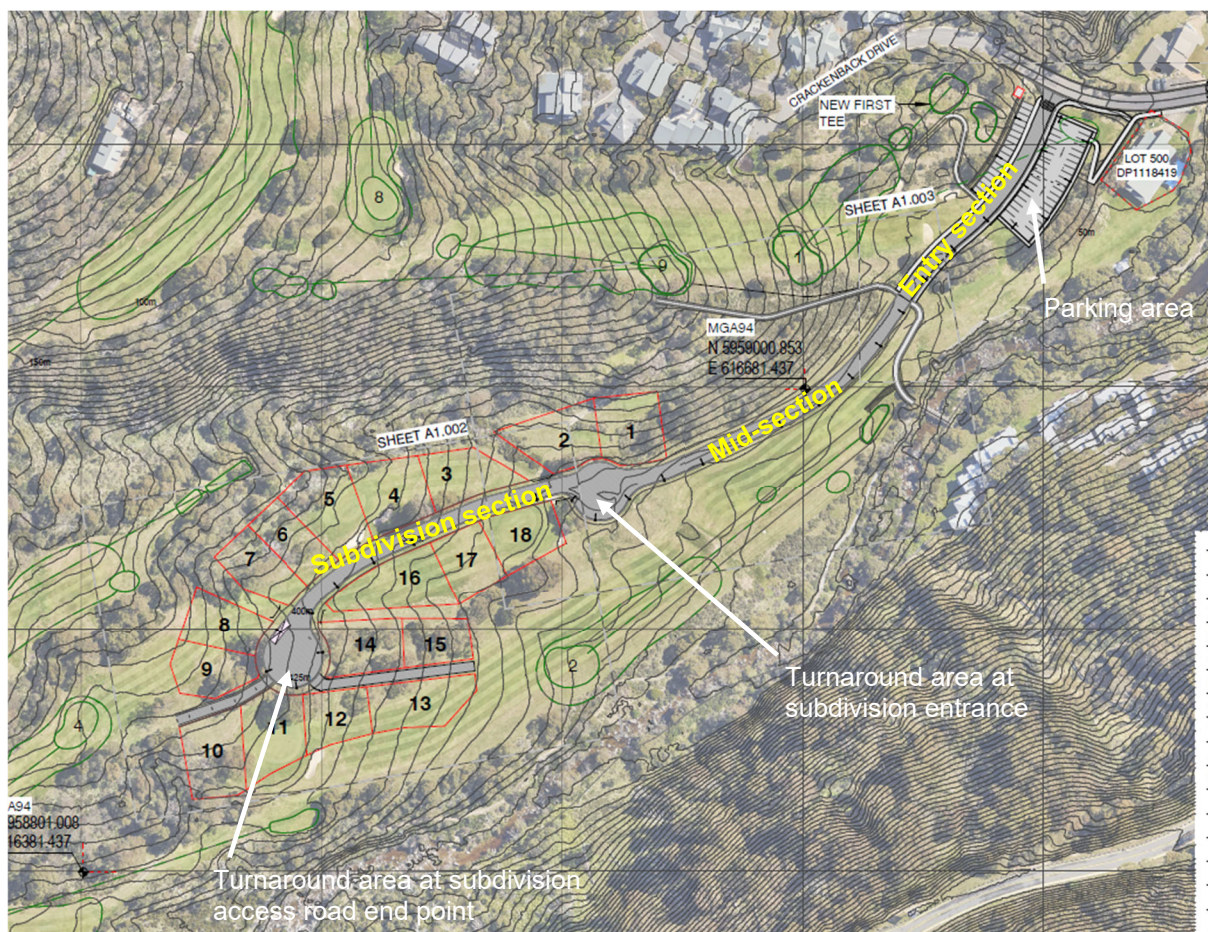


Figure 5 Revised subdivision access route

4.1.2 Proposed access road design

The proposed subdivision access road can meet PBP's safe access performance criteria (*'firefighting vehicles are provided with safe, all-weather access to structures'*, and *'provide safe access and egress fire firefighting vehicles while residents are evacuating'*).

The key features of the proposed subdivision access road are summarised below:

- Location: Within existing Thredbo Golf Course
- Connection to existing public road system: Junction on Crackenback Drive (refer to Figure 5)
- Road carriageway width: 6.1 metres (noting the entrance section design provides designated off-road car parking spaces).
- Road surface standard: All weather 2WD (bitumen sealed)
- Road alignment and oncoming traffic visibility: Absence of sharp bends and crests provides unimpeded visibility more than 100 metres ahead from all road points within the subdivision access road.
- Radiant heat flux exposure along the access road: The subdivision access road has minimal direct exposure to bushfire prone vegetation. As described in more detail in section 4.1.1 above, the entry section and subdivision section have no direct exposure to bushfire prone vegetation hazards being fully within irrigated, intensively maintained golf course areas or within the subdivision adjoined by cleared lots maintained as APZ. As subdivision lots are developed, the presence of ski lodge buildings within the subdivision will additionally provide substantial radiant heat shielding from any fire hazard sources potentially burning in isolated remnant vegetation patches to the north and west of the subdivision, and to the south from riparian vegetation along the Thredbo River. The only part of the entry road directly adjoined by retained native vegetation is the mid-section of the access road (~ 150 metre segment), this patch of vegetation will be less than 40 metres wide, is on an upslope above the road, and will be maintained as a managed remnant vegetation patch comprising discontinuous tree cover and managed snowgrass-dominated groundcover vegetation. On this basis it is concluded that these subdivision access road features will provide safe access by firefighting vehicles to all structures.
- It should be borne in mind that in accordance with the Thredbo Resort Bushfire Evacuation Plan prepared by KT Chief Fire Warden in consultation with RFS, NSW Fire & Rescue (Thredbo) and NPWS, all resort visitors, residents and non-essential staff are evacuated from within KNP when a bush fire Incident Management Team assesses a fire is potentially within 12 to 48 hours of potential impact on Thredbo Village. Due to Thredbo Alpine Village's location in a deep steep sided valley in the lee of the highest part of the main range, historically, potential fire threats to Thredbo Village have always provided ample advanced warning timeframe for planned and precautionary village evacuation. In practice, as has occurred in 2003 and 2020, all tourist accommodation is evacuated well prior to a fire threat and thus emergency services have clear access along resort roads, noting it can be expected this will also be the case in the proposed subdivision.

4.1.3 Meeting PBP performance criteria for subdivision access road

On the basis of the selected subdivision access road route, and proposed design specifications the performance criteria as per Table 5.3b of PBP can be met, as summarised in Table 6.

Table 6 Subdivision access compliance with PBP access performance criteria

PBP Table 5.3b access performance criteria	Proposal conformance with performance criteria
<i>Firefighting vehicles are provided with safe, all-weather access to structures</i>	The proposed bitumen sealed access road provides all-weather access. The selected access road route is mostly through either irrigated, intensively managed golf course area or running between cleared or built subdivision lots maintained as APZ. The 150 metre long mid-section of the access road will be adjacent to a managed remnant vegetation area where snow gum cover will be discontinuous and with maintained snowgrass ground cover. Retained individual trees within the managed remnant will be healthy, mature trees free of stem defects and therefore not vulnerable to failing during fire impact. On this basis, firefighters will be provided with safe access to the subdivision where they will have direct road access to all structures.
<i>The capacity of access roads is adequate for firefighting vehicles</i>	No bridges or crossings are required. The sealed road design will be adequate to carry fully loaded firefighting vehicles up to 23 tonnes.
<i>There is appropriate access to water supply</i>	Hydrant access will be located outside of parking reserves and road carriageways.
<i>Perimeter roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface</i>	Not applicable – no perimeter roads. In any case, the proposed 6.1 metre wide, sealed access road provides for safe simultaneous access/egress.
<i>Access roads (non-perimeter) are designed to provide safe access and egress fire firefighting vehicles while residents are evacuating</i>	The proposed 6.1 metre wide bitumen sealed access road provides two-way access/egress and two truck turnaround areas are provided – one at the end of the access road and one at the entrance to the subdivision area. The selected access road route is mostly through either irrigated, intensively managed golf course area or running between cleared or built subdivision lots maintained as APZ. The 150 metre long mid section of the access road will be adjacent to a managed remnant vegetation area where snow gum cover will be discontinuous and with maintained snowgrass ground cover. Retained individual trees within the managed remnant will be healthy, mature trees free of without stem defects and therefore not vulnerable to failing during fire impact. On this basis, firefighters and evacuating residents will be provided with safe access/egress to/from the subdivision.

4.2 Compliance with the aim and objectives of PBP

The aim of PBP 2019 can be met by achieving each of the performance criteria and acceptable solutions specified in Section 5 of PBP 2019 as detailed in Table 7 on the following page.

Table 7 PBP compliance

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		Noting that maximum BAL 10 for SFPP Tourist Accommodation which is the intended and allowable end-use for the subdivision lots:
ASSET PROTECTION ZONES (APZ)	Potential building footprints must not be exposed to radiant heat levels exceeding 10 kW/m² on each proposed lot Not applicable – performance-based 'Alternative Solution' developed in consultation with RFS	Performance-based solution proposed APZs for each of the 18 proposed subdivision lots are viable noting these APZ's will extend over sub-lease lot boundaries into the head lease golf course area maintained by Kosciuszko Thredbo Pty Ltd (head lease holder). The following APZ's can achieve BAL10 compliance for the notional building footprints identified in the DA: • Entire lot area for each of the 18 subdivision lots to be maintained as APZ IPA • Lots 1 to 10: APZ 18 metres to north, and also applicable from these lots in westerly direction (a minimum of 4 metres of the APZ will be internal within each lot noting KT's minimum 4 metres building setback inside lot boundaries) • Lots 1, 13, 15 and 18: APZ 18 metres to east (a minimum of 4 metres of the APZ will be internal within each lot noting KT's minimum 4 metres building setback inside lot boundaries) • Lots 10, 11, 12, 13, 17 & 18: APZ 32 metres to the south (outer 20 metres to be OPA) To the extent that the above APZs extend across subdivision lot boundaries into the head lease area within the golf course, KT agrees to maintain any portion of the APZ within the head lease area. APZ management will be in accordance with the Vegetation Management Plan at Appendix 1
	APZs are managed and maintained to prevent the spread of fire to the building. APZs is managed in accordance with the requirements of Appendix 4 of PBP	Can comply with Acceptable Solution APZ to be managed in accordance with PBP

Performance Criteria	Acceptable Solutions	Compliance notes
The APZ is managed in perpetuity APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are wholly within the leasehold area The APZ is located on lands with a slope less than 18 degrees.	Can comply with Acceptable Solution APZs are wholly within sublease lots and KT's head lease area The maximum land slope under the APZs does not exceed 10° In relation to the APZ OPA applied along the southern subdivision boundary, existing inner riparian zone vegetation along the Thredbo River will not be impacted by the OPA, and a narrow, no more than 10 metre wide strip of outer riparian zone vegetation can be retained undisturbed without compromising the OPA requirements to restrict tree canopy cover to less than 30% of the OPA and shrub cover to less than 20% of the OPA.
Landscaping is designed and managed to minimize flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignition LANDSCAPING	Compliance with the NSW RFS Asset Protection Zone Standards A clear area of low-cut lawn or pavement is maintained adjacent to the building Trees are located so that branches do not overhang the roof, the tree canopy is not continuous and any proposed windbreak is located on the elevation from which fires are likely to approach.	Can comply with Acceptable Solution All area within each of the 18 sub-lease lots not occupied by buildings will form part of the APZ, complying with Appendix 4 of PBP Any retained trees not to overhang roof areas Tree planting as part of the golf course redevelopment (for screening and/or golf play safety purposes) to be designed consistent with 'low threat vegetation' specifications, and where planting is proposed within an APZ, planting density can be designed to conform with APZ specifications. Landscaped areas are to comply with the Thredbo Golf Course Vegetation Management Plan (see Appendix 1)

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles are provided with safe, all-weather access to structures ACCESS	N/A – Performance-based solution proposed	Cannot comply with Acceptable Solutions for through road provision and perimeter road provision for three or more allotments – Performance based solution proposed which complies with performance criteria 1. All-weather access via bitumen-sealed subdivision access road 2. Safety for firefighter access to the subdivision is provided for by: * Entry section of the subdivision access road traverses clear, open, irrigated and intensively maintained golf playing areas and/or carpark – this section of the access road cannot be subject to direct impact by fire (smoke impact only) and fire cannot burn down trees adjacent to this access road section * The mid-section of the subdivision access road passes adjacent to a narrow (<40m wide) remnant vegetation section which will be managed as a managed grassy woodland (open discontinuous woodland tree canopy with a managed grass understorey), upslope from the road. Being within the golf course, it is possible, although unlikely, the remnant patch could burn during a bush fire, noting it would do so as a managed grass fire under a discontinuous sub-alpine woodland canopy on an upslope above the access road. This managed low-threat fuel condition will provide safe access for firefighters along this section. * The subdivision access section of the access road will be fully within the subdivision passing between lots maintained as APZs and with APZ widths extending beyond the lot boundaries such that firefighters entering the subdivision would not be exposed direct impact by fire (smoke impact only). No traffic management devices are proposed other than the two turnaround areas which facilitate fire appliance turnaround at the end of the access road and at the entrance to the subdivision. Neither maximum nor average road grade will exceed 10 degrees Hydrant location will not be within road carriageways or parking bays

Performance Criteria	Acceptable Solutions	Compliance notes
Capacity of access roads is adequate for firefighting vehicles.	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	Complies with Acceptable Solution
There is appropriate access to water supply	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005	Complies with Acceptable Solution All proposed lots will be serviced by reticulated water supply. Hydrants to be provided in accordance with the relevant clauses of AS 2419.1:2021

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
WATER SUPPLIES	An adequate water supply is provided for firefighting purposes	Reticulated water is to be provided to the development, where available.	Complies The proposed development will be serviced by reticulated water supply.
	Water supplies are located at regular intervals	Fire hydrant spacing, design and sizing comply with the relevant clauses of Australian Standard AS2419.1:2021	Can comply Compliance with fire hydrant spacing, design and sizing with the relevant clauses of Australian Standard AS2419.1:2021 is proposed No hydrants are proposed within any road carriageways
	The water supply is accessible and reliable for firefighting operations	Hydrants are not located within any road carriageway	
	Flows and pressure are appropriate	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021	Can comply The advice of a relevant authority or suitably qualified professional should be sought, for certification of hydrant design and installation in accordance with relevant legislation and Australian Standards

Performance Criteria		Acceptable Solutions	Compliance notes
ELECTRICITY SERVICES	The integrity of the water supply is maintained	The above-ground water service pipes external to the building are metal, including and up to any taps	Can comply All above ground water service pipes to be metal
	Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings	Where practicable, electrical transmission lines are underground.	Complies Electrical mains connection to lots will be underground.

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
GAS SERVICES	Location or design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	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; Above-ground gas service pipes external to the building are metal, including and up to any outlets	Can comply The advice of a suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and PBP Table 7.4a – Gas Services
	The proposed buildings can withstand bushfire attack in the form of embers, radiant heat and flame contact	N/A – No buildings are proposed at subdivision stage	Building envelopes within each subdivision lot can achieve a maximum BAL 10 exposure level with the proposed APZ.
CONSTRUCTION STANDARDS	Proposed fences and gates are designed to minimize the spread of bushfire	N/A at subdivision stage	Not Applicable No gates or fences proposed

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
EMERGENCY MANAGEMENT	A Bush Fire Emergency Management and Evacuation Plan is prepared	A Bush Fire Emergency Management and Evacuation Plan is prepared by the operator consistent with the RFS publication: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and the AS 3745:2010.	Can comply A Bushfire Evacuation Plan for the whole of Thredbo Alpine Resort prepared by KT is in place. As resulting lots/subleases are developed in the future (subject to DA consent) a Bush Fire Emergency Management and Evacuation Plan specific to the proposed development can be prepared, informed by and consistent with the Thredbo Alpine Village Bushfire Evacuation Plan.

4.3 PBP Objectives specific to Alpine Resorts

Error! Reference source not found. (previous pages) sets out how the proposed development complies with relevant PBP objectives for subdivision intended for future SFPP Tourist Accommodation use.

Section 6.6 of PBP also details specific objectives for SFPP infill development in Alpine Areas. **Error! Reference source not found.** below identifies how these objectives are met.

Table 8 PBP Section 6.6 specific objectives for Alpine Resorts

PBP Section 6.6 Objectives	Compliance
Provide an appropriate defensible space	Can comply - APZ to be provided in accordance Table 8 of this bushfire assessment.
Provide a better bush fire protection outcome for existing structures (eg. via ember protection)	Not applicable - no existing structures
Ensure new building work complies with the construction standards set out in AS3959	N/A at subdivision stage. Future building (subject to DA submission for future development within subdivision lots) can comply, with BAL 12.5 being applicable on the basis of the BAL10 APZs to be provided.
To ensure ongoing management and maintenance responsibilities are in place where APZs are proposed outside of the sub lease or leasehold area	Not applicable - APZ is fully within the sub lease and head lease area
Proposed APZs outside of the sub lease or head lease area are supported by a suitable legal mechanism to ensure APZs are managed under a binding legal agreement in perpetuity	Can comply APZ's do not extend outside the headlease area. APZ's extending outside sub-lease areas (outside the subdivision lots) extend into the head lease area which are to be maintained by the head lessee (Kosciuszko Thredbo Pty Ltd) under a binding legal agreement in perpetuity.
Written consent from the land managers is provided for all proposed works outside of the sub lease or leasehold area;	Not applicable - all proposed works are fully within the sub lease and head lease area
Ensure building design and construction standards enhance the chances of occupant and building survival	N/A at subdivision stage Future development of individual subdivision lots can comply. The subdivision design provides for future building evacuation on to the subdivision access road away from the fire hazard, with BAL 10 achieved for all nominal building envelopes.
Provide safe emergency management procedures	Can comply - Thredbo Alpine Resort Bushfire Evacuation Plan already in place, and site-specific plan proposed to be prepared as condition of consent.

4.4 Snowy Special Activation Precinct Masterplan

Section 11.5 of the Snowy Special Activation Precinct (SAP) Masterplan establishes aims and performance criteria for bushfire protection in the Alpine Precinct. The bushfire protection aims for the Alpine Precinct are principally met through compliance with *Planning for Bushfire Protection 2019*.

GHD notes the Snowy SAP bushfire performance criteria can also be met as summarised below in Table 9.

Table 9 Snowy SAP Performance Criteria conformance

Snowy SAP Performance Criteria	Conformance
A. Development is to: i. minimise perimeters exposed to the bushfire hazard. ii. minimise vegetated corridors that permit the passage of bushfire towards development. iii. provide for the siting of future development away from ridge-tops and steep slopes, within saddles and narrow ridge crests. iv. ensure capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development.	Can comply i. Subdivision lots are within a maintained golf course area, with remnant vegetation areas to be managed in accordance with a Thredbo Golf Course Vegetation Management Plan. ii. As above. iii. Subdivision located in the bottom of the Thredbo valley iv. Roads and utilities conformant with PBP, noting also that Thredbo roads and utilities have capacity to deal with peak tourist visitation periods.
B. Asset Protection Zones are to be provided and maintained between a bushfire hazard and future development and are designed to address the relevant bushfire attack mechanisms.	Can comply Proposed APZs designed to achieve BAL 10 level performance for notional building envelopes.
C. Adequate access is to be provided from all properties to the wider road network for park users emergency services and to provide access to hazard vegetation to facilitate bushfire mitigation works and fire suppression.	Can comply Proposed PBP compliant subdivision access road connects to the wider road network, and all APZs are accessible from the subdivision access road and golf course.
D. Development is to minimise levels of radiant heat, localised smoke and ember attack through development design and siting	Can comply APZ is designed to achieve BAL 10 performance for building envelopes within all subdivision lots.
E. The subdivision of land and location of developments should consider the future uses of land and the inclusion of roads into Asset Protection Zones	Can comply The APZ design has considered future development of lots for tourist accommodation, ensuring BAL 10 performance for future development can be met.

5. Conclusions

The requirements of PBP 2019 in relation to asset protection zones, the subdivision access road, and provision of services/utilities can be met for the proposed development, with Bushfire Protection Measure (BPM) requirements summarized in Table 10.

The aim of Planning for Bushfire Protection in respect of development on bushfire prone land is “to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to the development potential, site characteristics and protection of the environment”.

As documented in Section 4 of this bushfire assessment, the aims and objectives of PBP 2019 can be met for the proposed development.

5.1 Recommendations for compliance with Performance Criteria

The bushfire protection measures, and standard identified in this report are aligned to the acceptable solutions for each performance measure within Chapter 5 of PBP 2019, as are applicable for subdivision for SFPP Tourist Accommodation Holiday Let developments. These performance criteria are summarised in Table 10.

Table 10 Recommendations and summary of performance criteria – PBP 2019

Bushfire Protection Measure (BPM)	Recommended conditions for BPM application
Asset Protection Zones (Per Appendix 4 PBP, 2019)	Minimum APZ specifications for the proposed Thredbo Golf Course subdivision: – The full extent of unbuilt area within each subdivision lot to be established and maintained as an APZ – Inner Protection Area. APZ maintenance within subdivision lots will be the responsibility of sub-lease lot owners. – Notional building envelopes indicated in the DA for each lot will result in APZ's extending beyond sub-lease lot boundaries such that for the bushfire protection of future built developments within subdivision lots, APZ's are required to extend into the head lease area within the golf course. Accordingly, KT will need to provide legally binding acknowledgement that all portions of APZ's extending beyond sublease boundaries will be the responsibility of KT to establish and maintain. Noting that actual APZ dimension will be determined as part of the DA process for future development of each individual lot within the proposed subdivision, indicatively, the following minimum APZ widths have been assessed: – Extending from the northern or north-western elevations of building footprints in Lots 1 to 10: Minimum APZ = 18 metres – Extending from the western elevation of the building footprint in Lots 7, 8, 9 and 10: Minimum APZ = 18 metres – Extending from the eastern elevation of the building footprint in Lots 1, 13, 15 and 18: Minimum APZ = 18 metres – Extending from the southern elevation of building footprints in Lots 10, 11, 12, 13, 17 and 18: Minimum APZ = 32 metres incorporating an allowable Outer Protection Area (OPA) of 20 metres
Construction requirements	Noting that the DA which is the subject of this bushfire assessment is for land subdivision (and not for building construction within individual subdivision lots) no construction standard is applicable. However, future building construction within building envelopes identified in the DA will need to comply with BAL-12.5 construction requirements in AS3959:2018 <i>Construction of buildings in bushfire-prone areas</i> (AS3959) or the National Association of Steel Framed Housing (2014) <i>Steel Framed Construction in Bush Fire Areas</i> (NASH Standard).

Bushfire Protection Measure (BPM)	Recommended conditions for BPM application
Access (per Appendix 3 PBP, 2019)	GHD recommends the subdivision access road plan incorporated in the DA be accepted as a performance-based solution conforming with the relevant performance criteria for subdivision access roads. It is further recommended the planned subdivision access road comply with the following PBP requirements: – A minimum carriageway width of 5.5 m (kerb to kerb) consistent with PBP requirements for non-perimeter access roads – Turning head dimension compliance with Appendix 3 of PBP – Other minimum functional specifications as for “non-perimeter roads” in Table 5.3b of PBP.
Services – water, electricity, and gas	Water: – Reticulated water to be provided to the development. – Fire hydrants installed as part of development works are to be constructed to ensure fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2021; hydrants are not located within any road carriageway – Fire hydrant flows and pressures are to comply with the relevant clauses of AS 2419.1:2021. – All above-ground water service pipes are to be metal, including and up to any taps. Electricity: – Electrical services to all proposed lots are underground Gas: – Gas services infrastructure to lots to be underground

6. References

- Blackash Bushfire Consulting (2021) *Snowy Mountains Special Activation Precinct Bushfire Strategic Study* prepared for WSP. Submitted by WSP to the NSW Department of Planning, Industry and Environment.
- Kosciuszko Thredbo Pty Ltd (2020 Edition) Thredbo Bushfire Evacuation Plan
- New South Wales Rural Fire Service (2019). *Planning for Bushfire Protection – A guide for councils, planners, fire authorities and developers*. NSW Government.
- New South Wales Rural Fire Service (2014). *Development Planning - A guide to developing a Bush Fire Emergency Management and Evacuation Plan*. NSW Government
- New South Wales Rural Fire Service (2014). *Thredbo Bush Fire Preparation Map*. Map prepared by NSW RFS Customer Service Centre South. NSW Government
- New South Wales ePlanning Spatial Viewer (2022). NSW Government.
- SAI Global (2018) *Australian Standard AS 3959:2018 Construction of buildings in bushfire prone areas*

Appendix 1

Vegetation Management Plan: Thredbo golf course and subdivision

Thredbo golf course and subdivision – Vegetation Management Plan

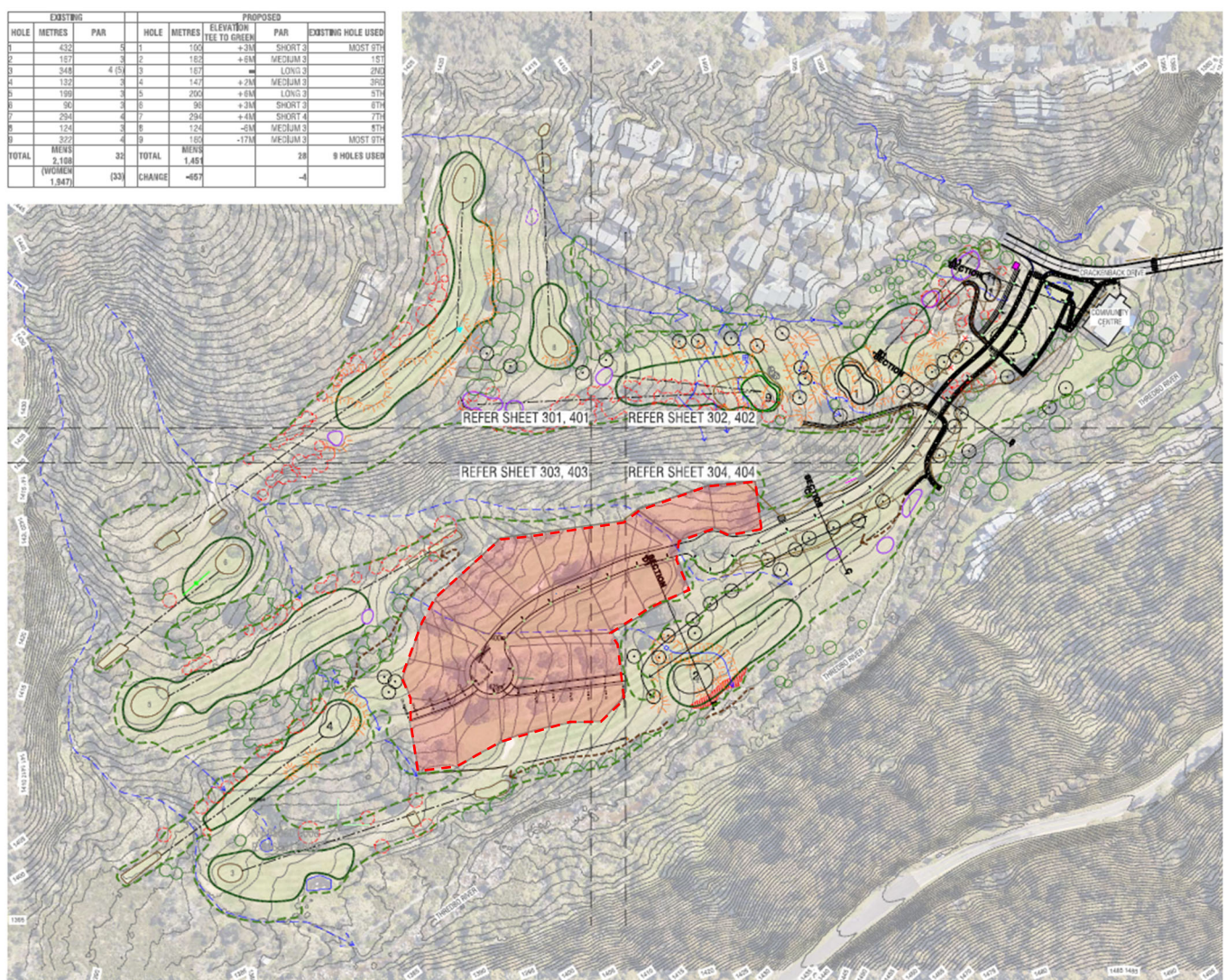
This Vegetation Management Plan identifies the approach and specifications for vegetation management within the Thredbo Golf Course, including the subdivision situated within the golf course area.

For mitigation of bushfire risk, the subdivision within the golf course has a system of Asset Protection Zones (APZ's) applied as conditions of consent for the subdivision. These APZ's are important for reducing the degree of bush fire hazard to which buildings and structures within the subdivision may potentially be exposed in the event of a bushfire impacting the golf course area, thereby reducing bushfire safety risk for any building occupants and for any fire and emergency service personnel responding to bushfire incidents in that location. Maintenance of the APZ's, in perpetuity are therefore important for public and firefighter safety. The requirements for establishing and maintaining APZ's, as well as remnant vegetation areas within the golf course area, are set out in this plan.

1. Thredbo Golf Course site

The Thredbo Golf Course site is situated within the Thredbo Alpine Resort area, fully within the Thredbo Alpine Resort lease area, for which Kosciuszko Thredbo Pty Ltd is the head lessee.

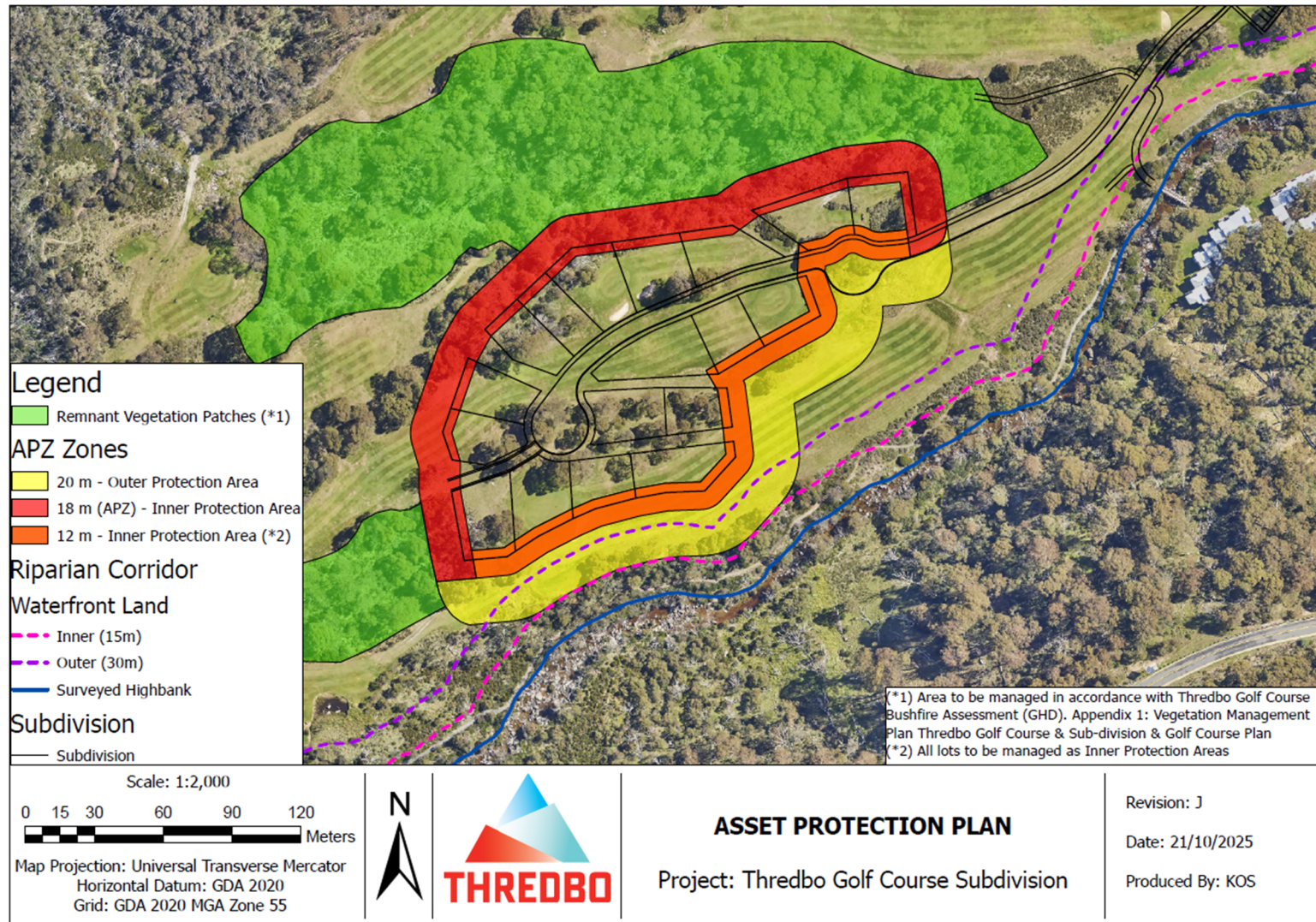
Map 1 below depicts the layout of the Thredbo Golf Course, including the subdivision location and proposed sublease lot boundaries situated within the golf course.



VMP Map 1 - Redesigned Thredbo Golf Course layout and proposed golf course subdivision location

2. Thredbo Golf Course Subdivision and Asset Protection Zones (APZ's)

An 18 lot subdivision is located within the Thredbo Golf Course. APZ's apply to all the area within the subdivision lots, and to designated areas around the subdivision, beyond the sub-lease lot boundaries. A plan view of the subdivision and surrounding APZ is depicted at Map 2. A lot by lot quantification of the APZ dimensions is tabulated at Table 1.



VMP Map 2 – Asset Protection Zone and managed remnant vegetation patch locations

VMP Table 1 Thredbo Golf Course subdivision – Lot-specific Asset Protection Zone dimensions

Lot #	APZ dimensions
All	The full area within each Lot is APZ, and minimum building setback from lot boundaries is 4 metres
1	APZ extension beyond lot boundary: • 14 metres to the north (IPA) • 14 metres to the east (IPA) • 28 metres to the south (outer 20m is OPA, remainder IPA)
2	APZ extension beyond lot boundary: • 14 metres to the north (IPA) • 28 metres to the south (outer 20m is OPA, remainder IPA)
3	APZ extension beyond lot boundary: • 14 metres to the north (IPA)
4	APZ extension beyond lot boundary: • 14 metres to the north (IPA)
5	APZ extension beyond lot boundary: • 14 metres to the north and north-west (IPA)
6	APZ extension beyond lot boundary: • 14 metres to the north-west (IPA)
7	APZ extension beyond lot boundary: • 14 metres to the north-west (IPA)
8	APZ extension beyond lot boundary: • 14 metres to the north-west (IPA)
9	APZ extension beyond lot boundary: • 14 metres to the north-west (IPA)
10	APZ extension beyond lot boundary: • 14 metres to the west (IPA) • 28 metres to the south (outer 20m is OPA, remainder IPA)
11	APZ extension beyond lot boundary: • 28 metres to the south (outer 20m is OPA, remainder IPA)
12	APZ extension beyond lot boundary: • 28 metres to the south (outer 20m is OPA, remainder IPA)

Lot #	APZ dimensions
13	APZ extension beyond lot boundary: 14 metres to the north(IPA)
14	APZ extension beyond lot boundary: Nil – Lot 14 is surrounded on all sides by other Lots (and the sub-division access road)
15	APZ extension beyond lot boundary: 14 metres to the east
16	APZ extension beyond lot boundary: 14 metres to the east (IPA)
17	APZ extension beyond lot boundary: 14 metres to the west (IPA)
18	APZ extension beyond lot boundary: 28 metres to the south (outer 20m is OPA, remainder IPA) 14 metres to the east
NN	Vacant gaps between adjacent lots (2-3; 7-8; 12-14; 13-15; 14-15; 15-16) are to be maintained as APZ

3. Standards for APZ maintenance

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

When designed and maintained correctly, an APZ is intended to reduce the risk of direct flame contact on the asset, and mitigate the risk of damage to the built asset from intense radiant heat and ember attack.

The standards for managing vegetation within APZ's are published in Appendix 4 of Planning for Bushfire Protection (RFS, 2019), with further detail provided in the RFS document Standards for Asset Protection Zones (RFS, undated)⁴.

The APZ can be comprised of two sub-areas – an Inner Protection Area (IPA) and an Outer Protection Area (OPA). Specifications for vegetation management in the APZ IPA and APZ OPA are identified below.

VMP Table 2 - APZ maintenance standards

Inner Protection Area (IPA)	Outer Protection Area (OPA)
Trees - Canopy cover should be < 15% of the IPA - Tree crowns should not touch or overhang buildings - Canopy base pruning to achieve a crown-base height of ≥ 2 metres - The crowns of retained trees should be separated from other trees by 2 to 5 metres	Trees - Canopy cover should be < 30% of the OPA - The crowns of retained trees should be separated from other trees by 2 to 5 metres Note: The only area of OPA applied is along the outer 20 metres of the APZ applied along the southern side of the subdivision (to lots 10, 11, 12, 13, 17 and 18). Canopy cover from trees growing in the inner riparian zone is < 30% of the total OPA).
Shrubs - Create large discontinuities or gaps between retained clumps of shrubs - Shrubs should be removed from underneath tree canopies - Shrubs should not form more than 10% ground cover vegetation - Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.	Shrubs - shrubs should not be allowed to form a continuous canopy within the OPA - Shrubs should not form more than 20% ground cover vegetation within the OPA Note: The only area of OPA applied is along the outer 20 metres of the APZ applied along the southern side of the subdivision (to lots 10, 11, 12, 13, 17 and 18). Shrub cover located in the inner riparian zone constitutes < 20% of the total OPA. It is further noted that maintenance of the golf course playing area along Hole 2, and the golf cart access-way to Hole 3, together with ongoing maintenance of the Riverside Track, will prevent future shrub cover expansion, keeping the proportion of OPA occupied by shrub cover to less than 20%.
Grass - grass should be kept mown (as a guide grass should be kept to no more than 100mm in height during the bushfire danger period) - leaves and vegetation debris should be removed during mowing.	Grass - grass should be kept mown (as a guide grass should be kept to no more than 100mm in height during the bushfire danger period) - leaves and vegetation debris should be removed during mowing.

⁴ https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf

Timing

PBP emphasizes the particular importance of maintaining APZ vegetation in advance of the bushfire season – see notes below for maintaining green reduced-height and density cover during the alpine fire season.

Notes on APZ grass cover maintenance in alpine resort areas

In most areas of NSW, and particularly in the alpine environment, landscape vegetation cover is not in a condition able to support fire spread all year round. Reflecting this, in NSW, the statutory Bush Fire Danger Period runs from 1 October to 31 March annually, and is able to be varied by the NSW RFS Commissioner. In alpine resort areas such as Thredbo, the landscape will rarely, if ever, support bushfire spread in October or November as this is typically a peak growth season for groundcover vegetation after the post-winter thaw. At this time, new snowgrass and other groundcover vegetation growth is in a green condition, and soils are typically still retaining significant moisture. In areas where grass cover is cut at least annually, multiple seasons growth of dead thatch (dead grass from previous years' growth) is unable to accumulate and thus only a single season's groundcover growth is present with snowgrass dominated grass cover in a green condition under cyclic annual cutting (or grazing) regimes. This means that for the bushfire hazard reduction purpose of APZ's, grass does not need to be trimmed below 100mm at all times of the year – a single cut prior to grass curing reaching approximately 60% cured will serve to reduce grass height and cover, and cause ground cover vegetation to respond with new green growth.

Accordingly, a well-timed single-pass grass slashing/mowing in the APZ in early summer (December) before grass curing exceeds 60% can achieve APZ objectives for grass cover management in the alpine resort areas.

4. Maintenance of remnant vegetation patches within the Thredbo Golf Course

In this Vegetation Management Plan designated areas of remnant vegetation patches (which adjoin APZ areas) are mapped (green colour-washed areas on VMP Map 2). Although not part of the APZ applying to the subdivision, ongoing vegetation management is required to maintain reduced fuel loads within these designated golf course remnant vegetation patches.

The following vegetation management specifications are identified for these non-APZ mapped remnant vegetation patches:

Tree cover

Tree cover is comprised of mixed age snow gums and black sallee. Mature canopy-dominant trees should be retained, however suppressed trees and young sapling-stage regeneration under mature trees should be thinned out to provide a woodland stand structure. Damaged or senescent trees with substantial butt defects affecting more than 50% of the basal area of the tree should be removed.

Shrub cover

Low shrub cover (< 2 metres height) can be retained in open patches where tree cover is absent, however shrubs underneath retained trees should be thinned such as not to exceed 20% of ground cover vegetation.

Grass cover

Grass cover in the snow gum/black sallee woodland understorey should be managed to prevent multi-annual accumulations of dead grass thatch and to maintain managed green or cut condition during summer (December to February inclusive). A single annual pass grass cut using brushcutters is appropriate to achieve the required condition, timed in December when the annual growth pulse is at or towards its end and grass curing is yet to reach 60%.

5. Golf course playing areas

Golf course playing areas include tees, greens and shoulders, fairways, bunker shoulders, cut rough playing areas and walking/cart transit areas between greens and tees. Much of the playing area including tees, greens and a significant portion of fairways are irrigated. These areas are intensively managed for golf-play, and are maintained in a low-threat vegetation condition (as recognized in PBP at section A1.10).

The golf playing areas will be maintained in accordance with the golf course design specifications.

Pursuant to providing visual screening amenity and/or golf play safety, where any areas of golf course tree planting are applied within an APZ, planted trees shall conform to APZ requirements (not exceed 15% APZ cover; individuals or clusters to be separated by 2-5 metres, and lower branches pruned up to not less than 2 metres above the ground).



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