Bushfire Assessment Report

Planning Proposal – Winter Sports World

At:
2-4 Tench Avenue,
Jamisontown NSW

Reference Number: 201364

Prepared For: Winter Sports World Pty Ltd

7th May 2020



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List of Abbreviations:

APZ Asset Protection Zone

AS3959 Australian Standard 3959 – 2018 as amended

BAL Bushfire Attack Level

BPMs Bushfire Protection Measures

BPLM Bush Fire Prone Land Map

Council Penrith City Council

DA Development Application

EP&A Act Environmental Planning and Assessment Act - 1979

ESD Ecologically Sustainable Development

FRNSW Fire & Rescue NSW

IPA Inner Protection Area

NCC National Construction Code

NP National Park

NSP Neighbourhood Safer Places

OPA Outer Protection Area

PBP Planning for Bush Fire Protection – 2019

ROW Right of Way

RF Act Rural Fires Act - 1997

RFS NSW Rural Fire Service

SBFS Strategic Bush Fire Study

SEPP State Environmental Planning Policy

SFPP Special Fire Protection Purpose

SWS Static Water Supply

Executive Summary

Building Code and Bushfire Hazard Solution P/L has been commissioned by Winter Sports World Pty Ltd to investigate and report the relevant Bushfire Protection Measures (BPMs) applicable to a Planning Proposal to facilitate construction of a winter sporting facility.

The winter sporting facility will comprise of a 300m long indoor ski slope and includes the following ancillary facilities:

- ice skating rink;
- ice climbing facilities;
- · rock climbing facilities;
- altitude training;
- gymnasium and training facilities;
- hotel accommodation (approximately 170 hotel rooms and a function centre); and,
- food and drink premises (bars, cafes and restaurants).

The proposed hotel accommodation component of the proposal is a listed Special Fire Protection Purpose under section 100b of the Rural Fires Act 1997. The future Development Application will subsequently require a Bushfire Safety Authority from the NSW Rural Fire Service.

The subject site is an existing allotment (Lot 1 DP 38950) known as 2 - 4 Tench Avenue, Jamisontown. The site is zoned SP3: Tourist and is currently occupied by a single detached dwelling.

The planning proposal seeks to amend the Penrith Local Environment Plan 2010 by inserting a local provision in to Part 7 (Additional Local Provisions). The site specific local provision seeks to:

- increase the maximum building height to 54m;
- add a maximum floor space ratio of 1.2:1 and/or a maximum floor space ratio of 1.45:1 if the development features a hotel component;
- introduce the requirement for a design competition; and;
- insert a "sunset clause" to cease the local provision applying three years after the date the LEP amendment is made.

In this instance the subject site is depicted on Penrith City Council's Bushfire Prone Land Map as containing designated Category 2 Vegetation and its associated 30 metre buffer zone. The subject site is therefore considered 'bushfire prone'.

In relation to this planning proposal Penrith City Council is required to apply section 9.1(2) of the Environmental Planning and Assessment Act 1979. Direction 4.4 Planning for Bushfire Protection identifies matters for consideration for proposals that affect or are in proximity to land mapped as bushfire prone. Under these directions the following objectives apply:

- i. to protect life, property and the environment from bush fire, by discouraging the establishment of incompatible land uses in bush fire prone areas; and
- ii. to encourage sound management of bush fire prone areas.

The vegetation mapped as being Category 2 Vegetation is located within the eastern half of the subject site and the rear portion of private allotments further east along Blaikie Road. Following a detailed inspection of the subject area most of the area mapped Category 2 Vegetation was found to be slashed / grazed pastures and did not pose a threat at that time.

A Strategic Bush Fire Study has been undertaken and concluded the proposal is appropriate in the bush hazard context.

In addition to the Strategic Bush Fire Study an assessment of the proposal against section 6 'Special Fire Protection Purpose Developments' of Planning for Bush Fire Protection 2019 has concluded the future Development Application has the capacity to comply.

A key consideration for planning proposals in bushfire prone areas is limiting or excluding incompatible development commensurate with the level of risk. In this regard the subject site is considered to have a low bushfire risk.

The proposal satisfies all relevant specifications and requirements of Planning for Bush Fire Protection 2019.

1.0 Introduction

The subject site comprises of an existing allotment (Lot 1 DP 38950) known as 2 - 4 Tench Avenue, Jamisontown and located within Penrith City Council's local government area.

The planning proposal seeks to amend the Penrith Local Environment Plan 2010 by inserting a local provision in to Part 7 (Additional Local Provisions) to facilitate construction of a winter sporting facility.

The winter sporting facility will comprise of a 300m long indoor ski slope and includes the following ancillary facilities:

- ice skating rink;
- ice climbing facilities;
- rock climbing facilities;
- altitude training;
- · gymnasium and training facilities;
- hotel accommodation (approximately 170 hotel rooms and a function centre); and,
- food and drink premises (bars, cafes and restaurants).

The proposed site specific local provision seeks to:

- increase the maximum building height to 54m;
- add a maximum floor space ratio of 1.2:1 and/or a maximum floor space ratio of 1.45:1 if the development features a hotel component;
- introduce the requirement for a design competition; and;
- insert a "sunset clause" to cease the local provision applying three years after the date the LEP amendment is made.

In this instance the subject site is depicted on Penrith City Council's Bushfire Prone Land Map as containing designated Category 2 Vegetation and its associated 30 metre buffer zone. The subject site is therefore considered 'bushfire prone'.

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide an independent bushfire assessment together with appropriate recommendations for bushfire mitigation measures considered necessary having regard to development within a designated 'bushfire prone' area.

3.0 Scope of this Report

The scope of this report is limited to providing a bushfire assessment and recommendations for the subject site. Where reference has been made to the surrounding lands, this report does not purport to directly assess those lands; rather it may discuss bushfire impact and/or progression through those lands and possible bushfire impact to the subject site.

4.0 Referenced Documents and Persons

Comments provided are based on the requirements of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), the Rural Fires Act 1997, the Rural Fires Regulation 2013, the RFS document known as 'Planning for Bush Fire Protection – 2019' for the purposes of bushfire hazard determination and Australian Standard 3959 – 2018 titled 'Construction of buildings in bushfire-prone areas' as amended for building/structural provisions.

Company representatives have undertaken a detailed site inspection of the subject property and surrounding area.

The plans prepared by Environa Studio (issue B, dated 10.12.2019) have been relied upon for this assessment.

5.0 Aerial Image, BPLM, Site Plan & Zoning



Figure 01: Aerial view of the subject site

Figure 02: Extract from Penrith City Council's Bushfire Prone Land Map

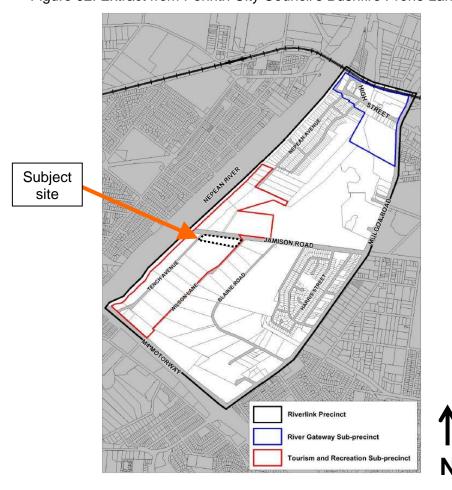


Figure 03: Extract of the Penrith Development Control Plan (2014)

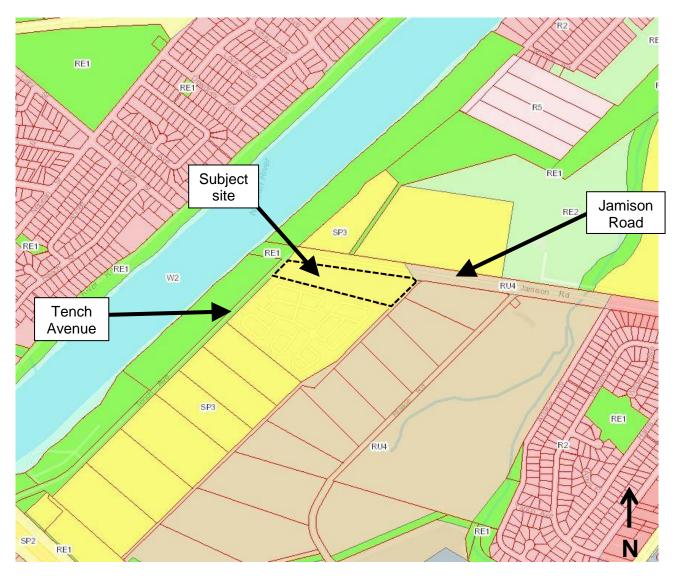


Figure 04: Land zoning of the subject area

Subject site (outlined in black) zoned SP3: Tourist

6.0 Bushfire Assessment

6.01 Preface

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and/or the Rural Fire Service. All development within affected areas is subject to the application of the relevant specifications and requirements of 'Planning for Bush Fire Protection - 2019' (PBP).

Set back distances for the purpose of creating Asset Protection Zones (APZ's) must be applied and any buildings must then conform to corresponding regulations detailed in Australian Standard 3959 – 2018 'Construction of buildings in bushfire prone areas'.

Planning for Bush Fire Protection – 2019, (PBP) formally adopted on the 1st March 2020 provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

The thrust of the document is to ensure that developers of new properties or sub-divisions include the constraints associated with the construction of buildings in bushfire prone areas within their proposed development sites. PBP is applicable to proposed development on land containing Category 1, 2 or 3 Vegetation and / or their associated buffer zones.

In this instance the subject site is depicted on Penrith City Council's Bushfire Prone Land Map as containing designated Category 2 Vegetation and its associated 30 metre buffer zone.

When preparing a planning proposal s.9.1(2) of the EP&A Act is required to be applied. Direction 4.4 'Planning for Bushfire Protection' of the s9.1(2) Direction, applies when a Council prepares a draft LEP that affects, or is in proximity to, land mapped as bushfire prone. Under these directions the following objectives apply:

- i. to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas; and
- ii. to encourage sound management of bush fire prone areas.

Under direction 4.4 the Commissioner of the NSW RFS must be consulted and any comments taken into account. As part of the consultation process with the NSW RFS, a bush fire assessment is required to be submitted to demonstrate compliance with the s9.1(2) Directions and PBP.

Consideration must be given to limiting or excluding incompatible development in bushfire affected areas commensurate with the level of risk. A key principle to ensure this is that future development is designed and sited capable of complying with PBP.

We provide the following assessment in consideration of the above and Planning for Bush Fire Protection 2019 to highlight the suitability of the site for residential development and the relevant bushfire protection measures.

6.02 Strategic Bush Fire Study

Planning proposals which relate to bushfire prone properties require the preparation of a Strategic Bush Fire Study. The Strategic Bush Fire Study (SBFS) provides opportunity to assess the broader landscape and ultimately assesses whether the new zone and proceeding development is appropriate in the bushfire hazard context.

While the proposal does not include a rezoning we have adopted the SBFS framework to demonstrate the proposed site specific local provision is suitable in a broader bushfire planning context.

Once the strategic assessment is addressed in the SBFS, an assessment of whether the proposal can comply with PBP must then be carried out. The assessment against PBP is addressed in section 6.03 of this report.

The following assessment details the components in Table 4.2.1 of PBP which are addressed in the SBFS.

Bushfire Landscape Assessment

The Bushfire Landscape Assessment component considers the likelihood of a bushfire and its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.

Location

The subject site is an existing allotment (Lot 1 DP 38950) known as 2-4 Tench Avenue, Jamisontown. The site is zoned SP3: Tourist and is currently occupied by a single detached dwelling.

The subject site is located within Penrith City Council's local government area.

The subject site has street frontage to Jamison Road to the north, Tench Avenue to the west and Wilsons Lane to the east and abuts Nepean Shores Riverside Resort and Conference to the south.

Vegetation

The subject site was predominately found to comprise of grazed / slashed pastures.

As part of this bushfire assessment process consideration has been given to all existing vegetation within neighbouring allotments and any retained or proposed vegetated areas within the subject site. In this regard all grounds within the subject site not built upon will be maintained to the standard of an Asset Protection Zone.

The vegetation identified as posing a bushfire hazard to the subject site is identified on Penrith City Council's Bush Fire Prone Lands Map as being within the eastern half of the subject site and the rear portion of private allotments further east along Blaikie Road.

We have undertaken detailed inspection of the subject property and surrounding area and identified that most of the vegetation mapped Category 2 Vegetation was slashed / grazed pastures and did not pose a grassfire threat.

On a review of historic high resolution aerial imagery, dating back to 2009 (source: Nearmap), we are satisfied that the management practices identified onsite are regularly undertaken and consequently most of the land mapped Category 2 Vegetation is considered to be 'Managed Land'.

While still being subject to periodic management the grounds within the eastern portion of 418-440 Jamison Road, beyond the existing dwelling and auxiliary structures, were found to present a grassland threat on occasion. This grassland area was found to be marginally greater than a hectare in size. As a conservative assessment we have assessed this land as presenting a Grassland threat.

No other bushfire hazard was identified within the 140 metre assessment area in any direction.

It is acknowledged that there is a narrow band of vegetation along the southern bank of the Nepean River, between managed parklands / playgrounds and the Nepean River. This vegetation is not identified as being Category 1, 2 or 3 Vegetation on Council's Bush Fire Prone Lands Map. We concur with Council's mapping of this area and do not consider the vegetation along the southern bank of the Nepean River to pose a bushfire threat.



Figure 05: Aerial view of the subject area with vegetation assessment Subject site outlined in yellow, building envelope shaded in red

Slope and Topography

The slope that would most significantly affect bushfire behaviour must be assessed for at least 100 metres from within the Grassland hazard.

The most significant bushfire impact from the east would be a grassfire burning across slope toward the subject site.

The slope that would **most significantly** influence bushfire impact was determined onsite using an inclinometer and verified using 1 metre LiDar contour mapping of the subject area to be:

O degrees across slope within the hazard to the east



Figure 06: ELVIS – Geoscience Australia contour mapping of subject area (1m contours)

Fire Weather

The subject site is located within the Greater Sydney Region Fire Area which attracts a Fire Danger Index (FDI) of 100 for bushfire planning purposes.

Previous Bushfire History

There are areas within NSW that have significant fire history and are recognised as known fire paths. In a planning context it is important to identify these locations and ensure incompatible development is not proposed.

In this instance there have been no recorded wildfires or hazard reductions within the immediate surrounding area.

There were also no visual indicators of previous fires at the time of our inspection.

The closest recorded wildfires were found to be located >2 kilometres to the southwest and west of the subject site (1982-83 and 2001-02).

The subject site is therefore <u>not</u> considered to be within a known fire path. Furthermore in consideration of the previous bushfire history the likelihood of a bushfire occurring within the immediate area is considered unlikely.

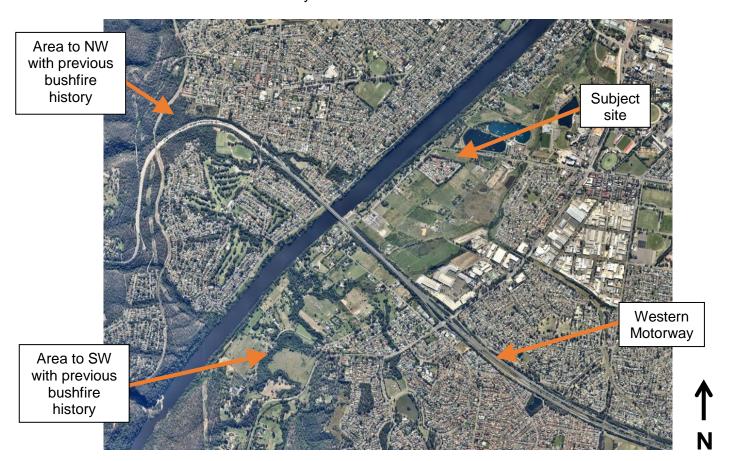


Figure 07: Aerial view of the subject area

Potential Fire Behaviour

The land around the subject site was found to be subject to periodic management and subsequently does not pose a bushfire threat. As a conservative assessment we have addressed a grassland hazard within the adjacent property to the east.

In applying the parameters described in this section and accepted assessment methodology described in PBP bushfire design modelling indicates the vegetation posing a hazard to the east has the following potential outputs:

Bushfire Behaviour	Output
Flame Length	8.63 metres
Rate of Spread	16.9 km/h
Fire Intensity	52,390 kW/m

In applying the calculated forward rate of spread to the identified grassland hazard it should be noted that a fire will travel the total width of the hazard in 38.3 seconds. This does not account for the growth phase of the fire, however being a grassland hazard this is reasonably fast (typically within minutes under the assessment parameters). It should also be noted that a fire burning under this scenario would be travelling east to west which is not commonly associated with severe fire behaviour / weather conditions.

Access & Suppression

Access for attending fire services to undertake early suppression is a key factor in whether a fire has the opportunity to develop into a quasi-steady state at which point the opportunity to control / extinguish the fire becomes far more challenging.

Where good access is available it provides opportunity to control / extinguish a fire in its growth phase before developing further and consequently becoming more difficult to conduct direct attacks.

In this particular instance the grassland hazard has street frontage to Jamison Road to the north and Blaikie Road to the east, with both roads having hydrants located throughout.

In consideration of the comprehensive access available to the vegetation and its exposure to the public the identification and subsequent early extinguishment of a grassfire is considered likely.

Land Use Assessment

The Land Use Assessment identifies the most appropriate locations in the Masterplan area for the proposed land uses.

In this instance the proposal does not include a broad masterplan but rather a site specific local planning provision to facilitate a future winter sports facility.

The future winter sports facility includes tourist accommodation which is a listed Special Fire Protection Purpose (SFPP) under section 100B of the Rural Fires Act 1997. SFPP development is one which is occupied by people who are considered to be at-risk members of the community.

The proposed winter sports facility building, inclusive of the tourist accommodation, will be located >110 metres from any identified hazard. In consideration of the large separation distance and low likelihood of a grassfire event occurring we are of the opinion the proposed site specific local planning provision and future winter sports facility is appropriate.

It is noted that Nepean Shores Riverside Resort and Conference which is located immediately to the south of the subject site is identified as having a 'Low' risk rating in Cumberland Zone Bush Fire Management Committee – Bush Fire Risk Management Plan 2010. This classification is consistent with our assessment of the subject site.

Access and Egress

It is important to assess the capacity of both the existing and proposed road networks both within and external to a proposed masterplan area.

While the proposal does not include a broad masterplan the future winter sports facility will accommodate large numbers of persons and therefore the consideration of access and egress opportunities from the site should be considered.

In a bushfire context it is considered extremely unlikely that a mass evacuation of the site would be ordered due to the threat of a grassfire. Grassfires burn quickly and given the identified hazard is less than a hectare in size the area will burnout prior to an effective evacuation being undertaken.

Furthermore the general construction type of the proposed building will provide ample protection to staff and occupants seeking refuge in the building, negating the need to evacuate.

Regardless the key evacuation routes from the subject site are to the east via Jamison Road and southwest along Tench Avenue. Jamison Road and Tench Avenue were found to exceed the minimum carriageway requirements for non-perimeter roads as described in section 5.3.2 of PBP.

It is noted that the closest registered Neighbourhood Safer Place (Glenmore Parkway, Glenmore Park and Leonay Parade, Leonay) are located closer to the larger bushfire hazards (with previous bushfire history) and are therefore not logical evacuation points for occupants of the subject site.

In consideration of the surrounding road network and risk posed to the subject site the existing access and egress routes are considered acceptable.

Emergency Services

In some circumstances the scale of a planning proposal warrants a need to include provisions for a new fire station.

The subject site is located within the NSW Fire and Rescue area and has six (6) fire stations (NSW Rural Fire Service and NSW Fire & Rescue) located within 5 kilometres (measure in line of sight) (source street-directory.com.au).

The existing fire service coverage is considered acceptable.

Infrastructure

An assessment of the issues associated with infrastructure and utilities must be undertaken. This assessment is to include the ability of the reticulated water system to deal with a major bushfire event in terms of pressures, flows and spacing of hydrants.

The subject site is connected to reticulated towns water which in this locality is serviced by Sydney Water. The capabilities of the broader hydrant network is the responsibility of Sydney Water. The modest size of the future winter sports facility is unlikely to have a significant adverse impact on this system.

The future winter sports facility will include an internal hydrant system. The sizing, spacing and pressures of the internal hydrant system must comply with AS2419.1-2005.

6.03 Planning for Bush Fire Protection

As the strategic issues have been satisfactorily addressed in the SBFS, an assessment of whether the proposal can comply with PBP is required.

The proposed hotel accommodation component of the proposal is a listed Special Fire Protection Purpose under section 100b of the Rural Fires Act 1997. The development proposal must therefore satisfy section 6 'Special Fire Protection Purpose Developments' of PBP.

This section addresses the future winter sports facilities capacity to comply with section 6 of PBP.

Asset Protection Zones

Asset Protection Zones (APZs) for Special Fire Protection Purpose development are determined from Table A1.12.1 of Planning for Bush Fire Protection 2019 (PBP) or bushfire design modelling achieving a radiant heat impact of no more than 10 kW/m² at the building footprint.

The minimum required Asset Protection Zone for the future winter sports facility was determined from Table A1.12.1 of PBP to be 42 metres to the east.

The available separation distance from the identified grassland hazard to the proposed building was found to be >110 metres.

The available separation consists of the land within the subject site (including roads), Wilson Lane and neighbouring dwelling, auxiliary structures and associated maintained curtilage within a neighbouring private allotment.

The future winter sports facility exceeds the minimum required Asset Protection Zones as detailed in PBP 2019 by over twofold.

Fire Fighting Water Supply

The future winter sports facility will include an internal hydrant system. The sizing, spacing and pressures of the internal hydrant system must comply with AS2419.1-2005.

Hydrants are also available along Jamison Road, Tench Avenue and surrounding public roads for the replenishment of attending fire services.

The future winter sports facility has the capacity to comply with the Water Supply requirements as detailed in section 6.8.3 of PBP.

Property Access – Fire Services & Evacuation

The subject site has street frontage to Jamison Road to the north, Wilson Lane to the east and Tench Avenue to the west.

Planning for Bush Fire Protection addresses design considerations for internal roads (public roads) for properties determined to be bushfire prone.

The proposed design includes one-way loop roads from Jamison Road to the north and Wilson Lane to the east. These loop roads provide an 8 metre carriageway exceeding the requirement for non-perimeter roads as described in section 6.8.2 of PBP.

The proposed loop from Wilson Lane has been design to cater for large coaches and subsequently is more than sufficient to accommodate a Category 1 fire appliance.

Attending fire services can access to the identified grassland hazard via Jamison Road to the north or Blaikie Road to the east for fire suppression activities.

We are satisfied that the proposed internal road system has the capacity to comply with the requirements for Access under section 6.8.2 of PBP 2019.

7.0 Site & Bushfire Hazard Determination

7.01 Planning for Bush Fire Protection - 2019

Planning for Bush Fire Protection – 2019 (PBP) is applicable to those lands determined as being within a 'bushfire prone area' in accordance with a local Bushfire Prone Land Map as provided by the Rural Fire Service and Councils.

The most appropriate method of determining site bushfire hazard under the terms of PBP is to consider the site in a singular form.

Bushfire prone areas are defined as those areas;

- containing or within 100m of Category 1 Vegetation; or
- containing or within 30m of Category 2 or 3 Vegetation.

7.02 Australian Standard AS 3959 – 2018 'Construction of buildings in bushfire –prone areas'

Australian Standard 3959 – 2018 'Construction of buildings in bushfire-prone areas' provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. The Australian Standard 3959 specifies construction standards for buildings within various Bushfire Attack Levels as determined by the Planning for Bush Fire Protection – 2019 document. The NSW Rural Fire Service will not accept deemed to satisfy provisions for BAL Flame Zone and therefore have a NSW variation to the listed standard provisions of BAL FZ under AS3959 - 2018.

7.03 Correlation between bushfire impact and AS3959

Bushfire Attack Level	Maximum radiant heat impact (kW/m²)	Level of construction under AS3959-2018
Low		No special construction requirements
12.5	≤12.5	BAL - 12.5
19	12.6 to 19.0	BAL - 19
29	19.1 to 29.0	BAL - 29
40	29.1 to 40.0	BAL - 40
Flame Zone	>40.0	BAL FZ No deemed to satisfy provisions

7.04 Viable Construction Method

The objectives of Planning for Bush Fire Protection – 2019 are for the protection of life including fire fighters. Provided these objectives can be met the construction of buildings is feasible and both the Rural Fire Service and Council should be in a position to consider such applications.

The highest Bushfire Attack Level to the future winter sports facility was determined from Table A1.12.5 of PBP19 to be 'BAL Low'. There are therefore no specific requirements for construction under AS 3959 – 2018 'Construction of buildings in bushfire prone areas', specifically this is detailed within section 4 of the standard which states "The Bushfire Attack Level BAL—LOW is based on insufficient risk to warrant specific bushfire construction requirements".

8.0 Conclusion

The subject site comprises of an existing allotment (Lot 1 DP 38950) known as 2 - 4 Tench Avenue, Jamisontown and located within Penrith City Council's local government area.

The planning proposal seeks to amend the Penrith Local Environment Plan 2010 by inserting a local provision in to Part 7 (Additional Local Provisions) to facilitate construction of a winter sporting facility.

In this instance the subject site is depicted on Penrith City Council's Bushfire Prone Land Map as containing designated Category 2 Vegetation and its associated 30 metre buffer zone. The subject site is therefore considered 'bushfire prone'.

We are satisfied that the subject site and proposed winter sports facility has the capacity to comply with the relevant specifications and requirements of Planning for Bush Fire Protection 2019.

Furthermore we are satisfied that the proposed winter sports facility, in combination with the bushfire protection measures discussed herein will not result in areas that are difficult to evacuate, create control difficulties during a bushfire or adversely affect other bush fire protection strategies or place existing development at increased risk.

We are therefore in support of the planning proposal.

Should you have any enquiries regarding this project please contact me at our office.

Prepared by

Building Code & Bushfire Hazard Solutions P/L

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9.0 Annexure 01

List of Referenced Documents

- a) Environmental Planning and Assessment Act 1979
- b) Rural Fires Act 1997 as amended
- c) "Planning for Bush Fire Protection"
- NSW Rural Fire Services 2019
- d) 'Construction of buildings in bushfire prone areas'
- AS 3959 2018 (as amended) – Standards Australia
- e) 'Penrith City Council's Bushfire Prone Land Map
- f) Acknowledgements to:

NSW Department of Lands - SixMaps

Nearmap.com

Geoscience Australia (ELVIS)

QGIS

Street-directory.com.au

- g) Plans prepared by Environa Studio (issue B, dated 10.12.2019)
- h) Cumberland Zone Bush Fire Management Committee Bush Fire Risk Management Plan 2010
- i) NPWS Fire History Wildfires and Prescribed Burns Fire History dataset, NSW Department of Planning, Industry and Environment (2018)

Attachments

Attachment 01: Nil