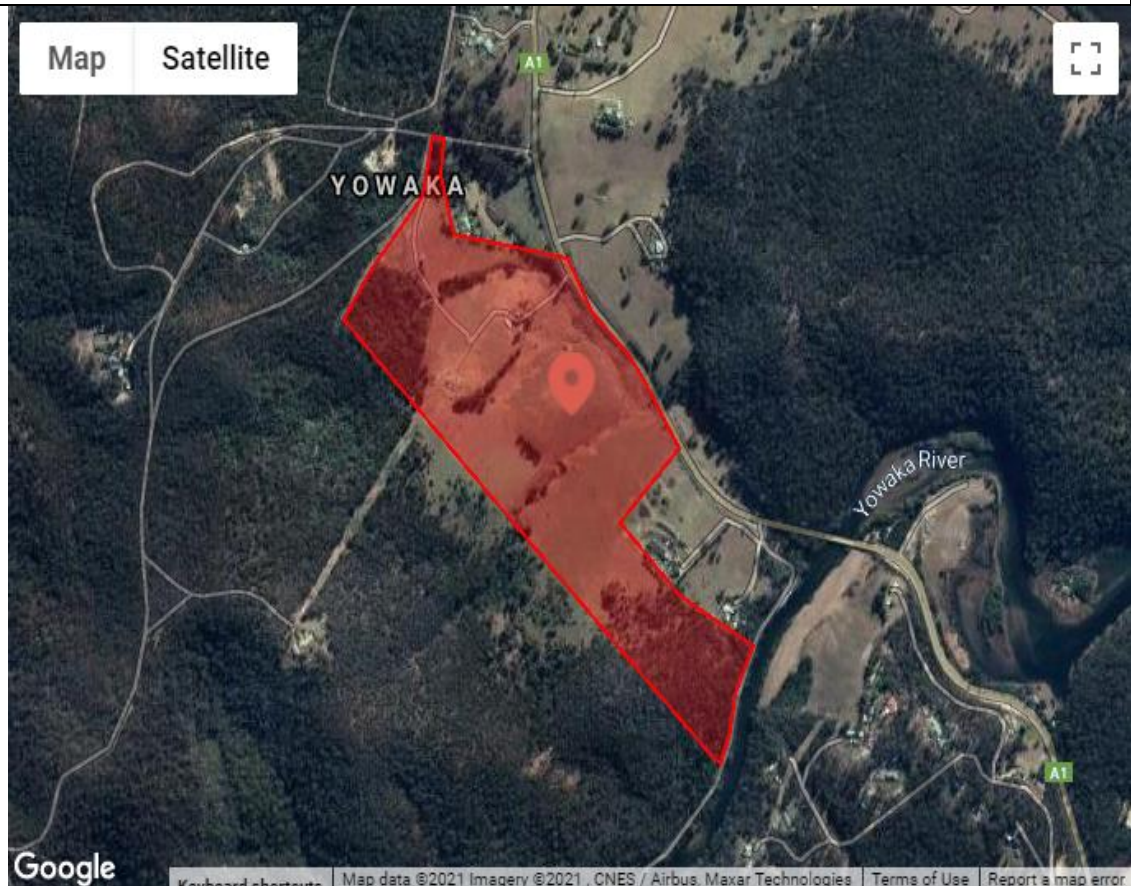


BUSH FIRE ASSESSMENT REPORT

Prepared for Graeme Payten
Lot 711 DP:1128593
South Pambula NSW 2549



Prepared by FIRESENSE, August 2022

PROPERTY AND TYPE OF DEVELOPMENT

Bushfire and Construction Standard Assessment for:

Proponent: Mr Graeme Payten
Email : payten@bigpond.com
Phone
Property location: Lot 711 DP:1128593
South Pambula NSW 2549

Locality: South Pambula adjacent to Princes Highway

Local Government Area: Bega Valley

Existing lots: One.
Proposed Lots: Fifteen

Development Type: E4 Environmental Living.

The assessment considers the immediate surrounding area (up to 140m around the lots) and is now known as the study area and denoted on maps at the end of this report.

The methodology for the site assessment for bushfire attack is based on *Planning for Bush Fire Protection (PBP 2019) guidelines*.
Minimum Asset Protection Zones (APZ's) are for residential subdivision purposes (BAL-29).

Vegetation extent within the study area has been derived from available *Aerial Photo Interpretation (API)*, NSW Government SIX Maps online spatial data, and site inspections (ground truth) undertaken during August and September 2021 prior to the preparation of the report.

Slope measurements provided in this report were derived from onsite measurements using either a Suunto Instrument Clinometer (model PM-5/360PC) or a Laser Technology True Pulse 200 rangefinder (with inclination measurement).

Photographic evidence of the subject site and surrounds taken during the site inspection are also included in the report.

Site / Development Description & Address

- *The address of the subject property is 23 Summerhill Road, Greigs Flat or 3810 Princes Highway, Greigs Flat that is in South Pambula NSW 2549 (Map 1).*
- *The property can be located on the Pambula 1:25000 topographic map sheet (8824-2S 2nd Edition) at GR547061.*
- *Lot 711 DP:1128592 is approximately 41ha in size.*

- *The proposal is to divide the site into 15 lots, two that have existing houses (proposed Lots 4 & 5) and thirteen that will be available for construction of dwellings within a building envelope to BAL-29 standard.*
- *The site is predominantly managed grassland as evidenced by maps in the report and is grazed and slashed (see photos) to reduce fuel load.*
- *The site and surrounding area have an easterly aspect and fall towards the Princes Highway along its eastern boundary. It then drains into Yowaka River a further 600m to the south, indicated by the drainage lines and contours on Map 2.*
- *The site is crossed west to east by four creek/drainage lines falling west to east across the site giving it an undulating landform (see map 2)*
- *Existing rural subdivision is adjacent to and surrounds the site (Maps 1 & 2).*
- *The site is mapped as bushfire prone land (BFPL) according to the NSW Rural Fire Service bush fire prone land online mapping tool (accessed 12 August 2021 - see cover map).*

Bush Fire Landscape Assessment

The 15 lot subdivision proposal has significant forested areas upslope to the west, south and east and significant urban and rural residential areas to the north and south. The forest areas nearby are on private property then extend to lands managed by NSW Forestry Corporation.

Nullica State Forest has a road access network and is accessible to fire fighting vehicles. The management agency has significant practised and coordinated fire response plans and are participants in the Bush Fire Risk Management Plan and Operations Plan processes of the Bega Bush Fire Management Committee (BFMC).

There are no identified fire paths in the area and the potential impact on the property is not significantly higher than the broader surrounding landscape. It could be considered lower risk due to the grassland cover, position downslope from forest, undulating not steep landscape, and the readily accessible nature of the site proposal for access and egress via additional roads and emergency access tracks.

The site of the development is managed grassland/farmland and is situated downslope from all forest vegetation, and as such the site is exposed to a lesser extent than the nearby forest landscapes with higher bush fire risk.

The development of assets on the site is appropriate as there is direct access to the Princes Highway along its eastern boundary. The site is gently undulating allowing for trafficable access and lower fuel loads than steeper forested environs.

The Princes Highway provides access and egress to the north and south for emergency response units and evacuation to nearby Neighbourhood Safer Places e.g. Pambula Beach Surf Club.

Land Use Assessment

The proposal is to provide Rural Residential lifestyle lots that are appropriate and in demand at the location due to the cleared grassland nature of the site. It is of an undulating nature with proximity to similar land use with the site being downslope

from forested environments and near to the Princes Highway for rapid access and egress.

The proposal has the space, vegetation, and landform to readily meet deemed to satisfy setbacks and building standards set out in Planning for Bushfire protection 2019.

The sighting of rural subdivision in this agricultural land provides the opportunity for potential owners to set up their properties in a fire wise manner due to the lack of obstructions, favourable terrain and the presence and breadth of readily managed accessible grassland.

Access and Egress

The site is currently accessed via Summerhill Road a two lane all-weather gravel road then a 5m wide bitumen sealed property access road running north to southeast to the two current on site dwellings.

The proposal includes a new all-weather dual lane bitumen road with access from the Princes Highway past the existing houses (see maps) and leading south to near proposed Lots 14 and 15 ending in a turning circle suitable for large fire fighting vehicles.

A property access road will access Lots 14 and 15 and provide a through road/escape route and alternative emergency service access and egress further south along the Princes Highway via a gate (see maps 3&4).

The current access road onto the site from Summerhill Road is a single lane all weather bitumen surfaced road and will revert to an emergency access/egress when the proposal is completed, and alternative access roads are constructed.

The existing and proposed network is more than adequate to deal with evacuating residents from the fifteen proposed lots and allow responding emergency services along a major route (i.e., Princes Highway) to access the properties from the north, east or south.

The provision of a perimeter road to the west is not appropriate and would be unsafe as this would lead firefighters into steeper forested corners of the site where dwellings/assets are not proposed, and where terrain is difficult to safely engineer suitable access to the northwest and southwest corners of the site.

A safer and more logical option is for firefighters to access the forest/grassland interface as this is accessible through proposed Lots 4, 7, 11, 12 and 13, then along the alternative access /egress to the south of proposed Lots 14 and 15 with an emergency access southeast to the Princes Highway. The internal lot fence lines could be gated to facilitate this.

Emergency Services

The subdivision proposal provides for 2 existing and 13 new residences that will not unduly impact on the provision of emergency services in the area as it provides better access across the site and the ability to comply with PBP 2019 deemed to satisfy provisions. The village of South Pambula to the immediate north and

settlements along Nethercote Rd and in the Yowaka area to the immediate south, are much larger and the proposal could be considered infill development to complement the existing land use. The development of the site will provide better access across the site and provide assets with appropriate setbacks/APZ's to meet the deemed to satisfy requirements of PBP.

BUSH FIRE THREAT ASSESSMENT

Vegetation

The site is predominantly cleared (Map 1) with the dominant vegetation cover being improved pasture (kikuyu and small areas of native kangaroo grass). There is forest vegetation in the steeper northwest and southwest corners of Lot 711.

The forested area in proposed Lot 1 has been significantly reduced over the past several years than is displayed in the aerial photos due to pasture establishment within the proposed the building envelope however some forest will need to be removed for APZ establishment.

The forest vegetation is made up of Stringybark and Ironbark species with Sedge, Casuarina and Kunzea understory. Planted native trees are evident along creek and fence lines for amenity shade and windbreak purposes

The vegetation surrounding the site ranges from: (Map1)

- Dry Sclerophyll Forest and forest regrowth upslope to the west.
- A low cliff line /road cutting then the Yowaka River and built rural lots immediately to the south.
- The Princes Highway then managed pasture, drainage lines and forest across and upslope to the east.
- Private land with forest vegetation, Summerhill Road and rural lots and farmland and South Pambula village upslope to the north.
- Further to the west and south is Nullica State Forest (approximately 1000m) and Ben Boyd National Park to the east (approximately 2500m) as well as freehold land to the north.

Slope/APZ Table for 15 proposed lots on Lot 711 DP:1128593

Direction	NORTH	SOUTH	EAST	WEST
Land Use/ Vegetation surrounding site to 140m+	Forest, Summerhill Road, existing rural house lots, and farmland.	Rocky cliff line 3- 4m, Yowaka River then managed rural lots.	The Princes Highway, grassland, drainage lines then forest.`	Forest and regrowth forest.
<i>Proposed Lots</i>	All @ BAL-29			
1	Upslope 36m APZ	Downslope 5-10 24m APZ	Across slope 13m APZ	Across slope 36m APZ
2	Upslope then downslope 10m APZ to northeast	Across slope to forest 13m APZ to southwest	Downslope 5-10 grassland 10m APZ to southeast	Upslope to grass then forest 10m APZ to southwest
3	Downslope 5-10 Grassland 13m APZ	Upslope Grassland 10m APZ	Downslope 5-10 Grassland 13m APZ	Upslope Grassland 10m APZ
4 <i>Existing house</i>	Downslope 5-10 Grassland 13m APZ	Across slope Grassland 10m APZ	Downslope 0-5 Grassland 12m APZ	Downslope 0-5 Grassland Forest 23m APZ
5 <i>Existing house</i>	Across slope Grassland 10m APZ	Across slope Grassland 10m APZ	Downslope 0-5 Grassland 12m APZ	Upslope Grassland 10m APZ
6	Across slope Grassland 10m APZ	Downslope 5-10 Grassland 13m APZ	Downslope 5-10 Grassland 13m APZ	Upslope Grassland 10m APZ
7	Across slope Grassland 10m APZ	Downslope 0-5 Grassland 12m APZ	Downslope 5-10 Grassland 13m APZ	Upslope Grassland 10m APZ
8	Downslope 0-5 Grassland 12m APZ	Downslope 0-5 Grassland 12m APZ	Downslope 0-5 Grassland 12m APZ	Upslope Grassland 10m APZ
9	Downslope 0-5 Grassland 12m APZ	Downslope 0-5 Grassland 12m APZ	Downslope 0-5 Grassland 12m APZ	Upslope Grassland 10m APZ
10	Upslope Grassland 10m APZ	Downslope 5-10 Grassland 13m APZ	Downslope 0-5 Grassland 12m APZ	Upslope Grassland 10m APZ
11	Across slope Grassland 10m APZ	Downslope 10-15 Grassland 15m APZ	Downslope 10-15 Grassland 15m APZ	Upslope Grassland/Forest 24m APZ
12	Downslope 10-15 Grassland 15m APZ	Upslope Grassland/Forest 24m APZ	Up/across slope Grassland 10m APZ	Downslope 5-10 Grassland/Forest 36m APZ
13	Downslope 5-10 Grassland 13m APZ	Upslope Grassland /Forest 24m APZ	Downslope 5-10 Grassland 13m APZ	Across upslope Grassland /Forest 24m APZ
14	Downslope 5-10 Grassland 13m APZ	Downslope 5-10 Grassland 13m APZ	Downslope 5-10 Grassland 13m APZ	Upslope Grassland 10m APZ
15	Downslope 5-10 Grassland 13m APZ	Downslope 5-10 Grassland 13m APZ	Downslope 5-10 Grassland 13m APZ	Upslope Grassland 10m APZ

BUSH FIRE PROTECTION MEASURES FOR THE PROPOSAL

Asset Protection Zones

1. APZ Recommendation for proposed Lots

- a) *The vegetation setbacks to achieve BAL-29 rated building construction level for residential dwelling construction on this site as described in the table above are outlined for each of the fifteen proposed lots below. The APZ's should be managed as per standards provided in PBP (Appendix 4 pp 106-8).*

Lot No.	North	South	East	West
1	36m	24m	13m	36m
2	10m	13m	10m	10m
3	13m	10m	13m	10m
4	13m	10m	12m	13m
5	10m	10m	12m	10m
6	10m	13m	13m	10m
7	10m	12m	13m	10m
8	12m	12m	12m	10m
9	12m	12m	12m	10m
10	10m	13m	12m	10m
11	10m	15m	15m	24m
12	15m	24m	10m	36m
13	13m	24m	13m	24m
14	13m	13m	13m	10m
15	13m	13m	13m	10m

Construction Standards

Construction Standards are assessed as BAL-29 on all elevations facing grass or forest fuels with the identified APZ's provided, BAL levels may be reduced by increasing APZ distances where practical and possible while maintaining APZ works within the lots.

2 Construction Standard Recommendations

- BAL-29 construction level on all proposed lots can be readily achieved*
- The existing two dwellings may require additional works to meet BAL-29 construction standards or to a lesser extent (i.e. lower BAL) with larger APZ provision.*
- Such works needs to include the provision of dedicated water supplies and metal screens (2mm size) to opening windows and doors.*
- Enclosing of subfloor spaces so that embers are prevented from entering.*
- And developing and maintaining APZ's –Both houses have large lawn grass areas surrounding them*

Proposed Lot1 is of higher risk than other lots due to its aspect, proximity to hazardous forest vegetation on surrounding slopes. This lot may require larger set back's and/or increased construction standards such as BAL 40 on the north and west elevations to mitigate this threat along with improving the perimeter trail along the corner of the lot boundary with drainage and passing bays.

Site Management

Due to the presence of forest vegetation upslope to the north, west and east of Lot 711, it would be prudent to manage proposed lots with dwellings via appropriate screen or ember trap plantings and mowing or grazing grasslands in perpetuity thereby restricting the regrowth of forest vegetation. A legal instrument or covenant would be required on any new lots to maintain the predominantly grassland nature of areas outside APZ's as Outer Protection Areas.

Gardens and lawns should be maintained to reduce the passage of fire fronts. Garden materials and plant selection should be considered for their lower flammability properties due to potential ember falls and grass kept short at 100mm in height during summer.

PBP Asset Protection Zone Requirements (2019-Appendix 4 pg. 106) sets out the standards which need to be met within an APZ and areas outside designated APZ's. Lots should be maintained as Outer Protection Areas as per the standard (*PBP pg. 107*) to keep the grassland nature of the site and prevent any forest regrowth.

Occupiers should consider preparing a personal Bush Fire Survival Plan as found on the NSW Rural Fire Service website and maintaining property access roads in good condition to readily allow sufficient space for the passage of Category 1 firefighting vehicles.

Water Supply

Reticulated water supply is not available in this urban location. The provision of a dedicated firefighting water supply on each proposed lot is required. *PBP (Tables 5.3c & 5.3d pp 47-8)* determines large rural/lifestyle lots (>1000m²) to provide 20,000L of dedicated firefighting water supply per lot that needs to be accessible within 4m of a large Category 1 firefighting vehicle.

Several dams are available across the site and may provide water in summer, however the Yowaka River is 600m to the south and is a reliable and accessible water source for firefighting purposes.

All above ground water service pipes are to be metal, including and up to any taps and above ground water storage tanks shall be concrete or metal.

3 Water Supply Recommendations for proposed development

- a. A 20,000L dedicated firefighting water storage per lot, accessible (within 4 metres) to large Category 1 firefighting vehicles. (PBP Table 5.3c & 5.3d pp 47-48).
- b. All above ground water supply tanks and fittings should be metal or concrete and taps and pipes external to the buildings are to be metal.
- c. Residents should have a suitable pump and sufficient length hoses to reach all corners of the building and to defend the dwelling from a fire a passing fire front

Electricity and Gas supplies

Electricity supplies meet specifications in “Vegetation Safety Clearances” issued by Energy Australia (NS179 April 2002)

Gas supplies should be installed to comply with the requirements of the relevant authority with release valve discharging away from buildings.

Property Access and Public Road System Capacity

The property is currently accessed via Summerhill Road from the Princes Highway on the eastern side of the site.

It is proposed to construct a new all-weather two-lane public access road from the Princes Highway onto the site near and towards the existing houses (east to west), then north and south to appropriate turning circles (see maps 3&4).

Property access roads will leave the 6m bitumen all-weather public road towards the individual dwellings on the lots.

Access for firefighting vehicles will be required onto the site and the proposed public road is to provide safe operational access onto and along the site with compliant property access roads leading directly to dwellings/structures and water supply for emergency services.

Emergency services and residents will be able to access and evacuate from the area and as outlined in *PBP (Access 5.3.2 Table 5.3b pg. 44)* and summarised in the property access recommendations.

The proposal places the property access roads to the dwellings from the Princes Highway via the proposed public road. It is the shortest route to most of the proposed lots, away from any hazard forest vegetation.

No access roads will travel through forest vegetation however alternative access/egress will be through a minimum of forest vegetation to the north (112m) then east via Summerhill Road (managed farmland) to the Princes Highway. The ability to turn north may only apply if safety and traffic management requirements are met.

Any roads or trail access and egress to the west is inappropriate and unsafe due to the upslope terrain into broader forested areas and is not a sensible direction of travel during a large bushfire event.

All property access roads will be two wheel drive all weather roads. There will be two access roads into and out of the development being the direct access from the Princes Highway as the public access and one additional restricted turn access and egress route as described above.

The property access roads do not require passing bays as they do not pass through a forest, woodland, or heath vegetation environment but rather through extensive grassland that allows fire fighting vehicles to pass readily. (PBP table 5.3b pg. 46 pt. 3)

4 Access Requirements

- a. *Firefighting vehicles are provided with safe all-weather access to structures.*
 - *Property access roads are two-wheel drive all-weather.*
 - *Construction of any traffic management devices are not to inhibit emergency service vehicles.*
 - *Dead end roads incorporate a minimum 12m outer radius turning circle and signposted as a dead end road.*
 - *Roll top kerbing should be used to the hazard side of the road (if installed).*
- b. *The capacity of access roads is adequate for firefighting vehicles i.e. road surfaces are sufficient to carry fully loaded fire fighting vehicles, up to 23 tonnes.*
- c. *There is appropriate access to water supply(in this case static supplies at each dwelling)*
- d. *Hydrants are located outside parking reserves and carriageways to ensure access to reticulated water (NB not relevant in this situation).*
- e. *Hydrants are provided in accordance with AS2419.1:2005.(not relevant in this instance)*
- f. *There is suitable access for Category 1 fire trucks to within 4m of static water supply where no reticulated supply is available.*
- g. *Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.*
 - *Minimum 5.5m kerb to kerb.*
 - *Parking provided outside carriageway width.*
 - *Hydrants located clear of parking areas.*
 - *Curves of roads have minimum inner radius of 6m.*
 - *Road crossfall does not exceed 3 degrees.*
 - *A minimum vertical clearance of 4m to any overhanging obstructions including tree branches is provided.*

Conclusion

Based on the above assessment and recommendations for bush fire compliance, the consent authority should determine that this building development proposal meets the requirements of *Planning for Bush Fire Protection (2019)* as required under the Rural Fires Act, 1997.

Should any of the above information need clarification or further discussion, please contact the author.



Peter Windle
Bush Fire Planning Consultant
August 2022

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DISCLAIMER: Bushfire mitigation or protection measures as identified, recommended, or purported by this report may not guarantee that the proposed building development will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather conditions, and the behaviour of building occupants or fire fighters defending the building/property when exposed to severe or greater bushfire attack conditions

PHOTOGRAPHS.



Photo1

Taken facing west upslope across managed grassland towards existing dwelling on proposed Lot 4. Photo shows managed grassland upslope behind the house towards Forest vegetation that is between 60m and 80m up or across slope from the house.



Photo 2.

Taken facing south across the site/proposed lots showing its undulating nature due to creek lines crossing the paddocks, falling west to east. The site rises to its southern end then falls sharply to the Yowaka River. Note the managed grassed nature of the site with forest vegetation upslope to the south behind which is the Yowaka River



Photo 3

Taken facing east towards the Princes Highway, just visible across gully. offsite then rises across managed grassland to forest vegetation. Note managed grassland on site and shed near existing dwelling and garden trees in mid ground of photo



Photo 4

Taken facing north towards Forest vegetation upslope in the northeast corner of the site and further offsite. Main existing dwelling is upslope to the left of vehicle.



Photo 5

Powerline easement leading downslope onto the property with the property boundary located at the bottom of the slope. Neighbouring forest vegetation upslope from the boundary.



Photo 6

Taken facing west across and upslope to one of the existing houses on site. The access is from the Princes Highway and the proposed new access onto the development will start upslope to the right of this photo. Note cleared mown nature of site and dominance of grassland.



Photo 7

Taken facing north from near the existing older dwelling showing predominant managed grassland nature of the site.

Tree cover immediate upslope RHS is neighbouring property. Site rises to forest on rear RHS of photo.

Creek line in photo mid ground with remnant trees along it.



Photo 8

Taken facing southwest showing the managed grassland nature of the site.

There is forest upslope to the west and the site is of an undulating nature due to drainage lines crossing the lot from west to east.



Note drainage line in lower LHS of photo.



Photo 9

Taken facing west upslope across proposed Lot 11 toward neighbouring forest vegetation. Site provides setbacks for APZ provision and grassland fuels can be managed by landowners more easily than forest fuels across this site due to its cleared managed nature. A covenant can be placed on lots to maintain grassland vegetation across site by maintaining all of lots to Outer Protection Area APZ standards such as tree canopy cover less than 30% & separated by 2 to 5m with a <20% non continuous shrub layer.

	<p>Photo 10 Taken facing south from one of the dams on the property looking across to Lots 14 and 15. Note grazed clear nature of lots, forest vegetation is across highway upslope from site.</p>
	<p>Photo 11 Taken facing south at the gate into proposed Lot 1 showing the pasture /grassland of the lot developed in years past. This differs to the API photo that underlies the maps that show more vegetation cover in the area than is currently present. There is a fire trail along the boundary fence line behind the forest vegetation in the corner of the property, but it is steep and unsuitable for Category 1 vehicles though Categories 7 and 9 could gain access.</p>
	<p>Photo12 Taken facing northeast from near proposed Lot 13 looking towards the Princes Highway (the eastern site boundary) and across proposed Lots 5,8 , 9 and 10 with the existing house on Lot 5. Note managed cleared grassland, bottom of slope location, highway perimeter and broad area of green grassland upslope to forest >100m away.</p>

	<p>Photo 13</p> <p>Taken facing north across proposed Lots 7, 8, 10, 11, 12 and part of Lot 13, showing the managed pastured nature of the site. In the distance to the RHS are planted windbreak trees and in the far distance on the LHS is remnant Forest in the top corner of the site (see maps)</p> <p>The Forest vegetation is all upslope from the proposal and the property is clean and scrub free.</p> <p>Note fence line with Forest grassland interface where access is relatively easy.</p>
	<p>Photo 14</p> <p>Taken facing upslope to the southwest from the building envelope area available on lot 13 towards the forested hill in the southwest corner of the site.</p> <p>Note forest vegetation upslope with grassland separation distance of >100m available.</p>
	<p>Photo 15</p> <p>Taken facing east across proposed Lots 14 & 15 towards the Princes Highway.</p> <p>Photo shows that the southern boundary is the fence line running towards power lines that have concrete poles and runs north south across the site.</p> <p>Note gentle grade and managed pasture.</p>

