

A stylized topographic map with contour lines in shades of green and grey, occupying the left side of the page.

## Bushfire Protection Assessment

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### **Loreto Normanhurst-Stage 1 Works and Master Plan**

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## DOCUMENT TRACKING

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This document has been prepared by Eco Logical Australia Pty Ltd in conjunction with Loreto Normanhurst.

## LIMITATIONS

The bushfire protection measures recommended in this report do not completely remove the risk to life and property, and they do not guarantee that a development will not be impacted by a bushfire event. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

### Disclaimer

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## Abbreviations

Abbreviation	Description
AS 3959	Australian Standard 3959-2018 'Construction of buildings in bushfire prone areas'
APZ	Asset protection zone
BAL	Bushfire Attack Level
BFPL	Bush fire prone land
DA	Development application
EP&A Act	Environmental Planning and Assessment Act 1979
FDI	Fire Danger Index
IPA	Inner protection area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
OPA	Outer protection area
PBP	'Planning for Bush fire Protection 2019'
RFS	NSW Rural Fire Service
SFPP	Special Fire Protection Purpose

## 1. Property and proposal

**Table 1** identifies the subject land and outlines the type of development proposed.

**Table 1: Subject site and development proposal summary**

Street address:	91-93 Pennant Hills Road Normanhurst
Postcode:	2076
Lot/DP no:	Lot 5 DP 1218765; Lot 16 DP 6612; Lots 20 – 23 and 25 – 36 DP 6612; Lot 1 DP 34834; Lot 1 DP 114580; Lot 3 DP 1217496; Lot 1 – Lot 3 DP 1218765; Lot B DP327538; Lot 1 DP 809066; Lot C DP 366271; Lot 4 DP 1218765; Lot 1 DP 136156.
Local Government Area:	Hornsby Shire Council
Fire Danger Index (FDI)	100
Current land zoning:	R2 Low Density Residential
Type of development proposed:	Special Fire Protection Purpose (SFPP)

### 1.1 Description of proposal

The proposal is for the construction of State Significant Development (SSD) to be submitted to the Department of Planning and Environmental (DPE) for a new site Master Plan and Stage 1 development at the existing Loreto Normanhurst School at 91-93 Pennant Hills Road Normanhurst. (see **Figure 1** and **Figure 2**).

Stage 1 will involve the construction of a new boarding house facility, a link road and carparking facilities. Given the proposed development is classified as State Significant Development this is required to be assessed by the *Department of Planning and Environment* (DP&E). The preparation of a BPA is a requirement of the Secretary's Environmental Assessment Requirements (SEARs) ref no SEAR 8996 issued 12 February 2018.

The proposed SSD development consists of the following:

- The Stage 1 amendments including:
  - A 5 Storey Boarding house to accommodate up to 216 boarders.
  - Kerb upgrades along the Mount Pleasant Avenue and construction of two vehicular driveways
  - Garden Plaza
  - Osborn Road to Mt Pleasant Avenue link road
  - Interim Osborn Road surface carpark
  - Sports courts and partially underground carpark
  - Tennis courts and second partially underground carpark.
  - Landscaping works
  - Tree removal
  - Expansion of services and utilities infrastructure as required.

- Masterplan amendments, being:
  - Secondary school upgrade
  - Junior school upgrade
  - Mary Ward building upgrade
  - Gymnasium
  - Gonzaga Barry centre extension
  - All weather playing fields
  - Pedestrian bridge link to Mary Ward wing.

The subject land is partially mapped as bushfire prone on the Shire of Hornsby Bush Fire Prone Land (BFPL) map (See **Figure 3**) however, the proposed development (habitable buildings) is located outside of this area and is greater than 100 m from the hazard to the south.

The proposed temporary carpark and underground carpark, although located within the Bush Fire Prone area to the south-west of the site, these have not been included as part of this assessment as the temporary parking arrangements do not involve a building/structure and the permanent parking is to be located underground.



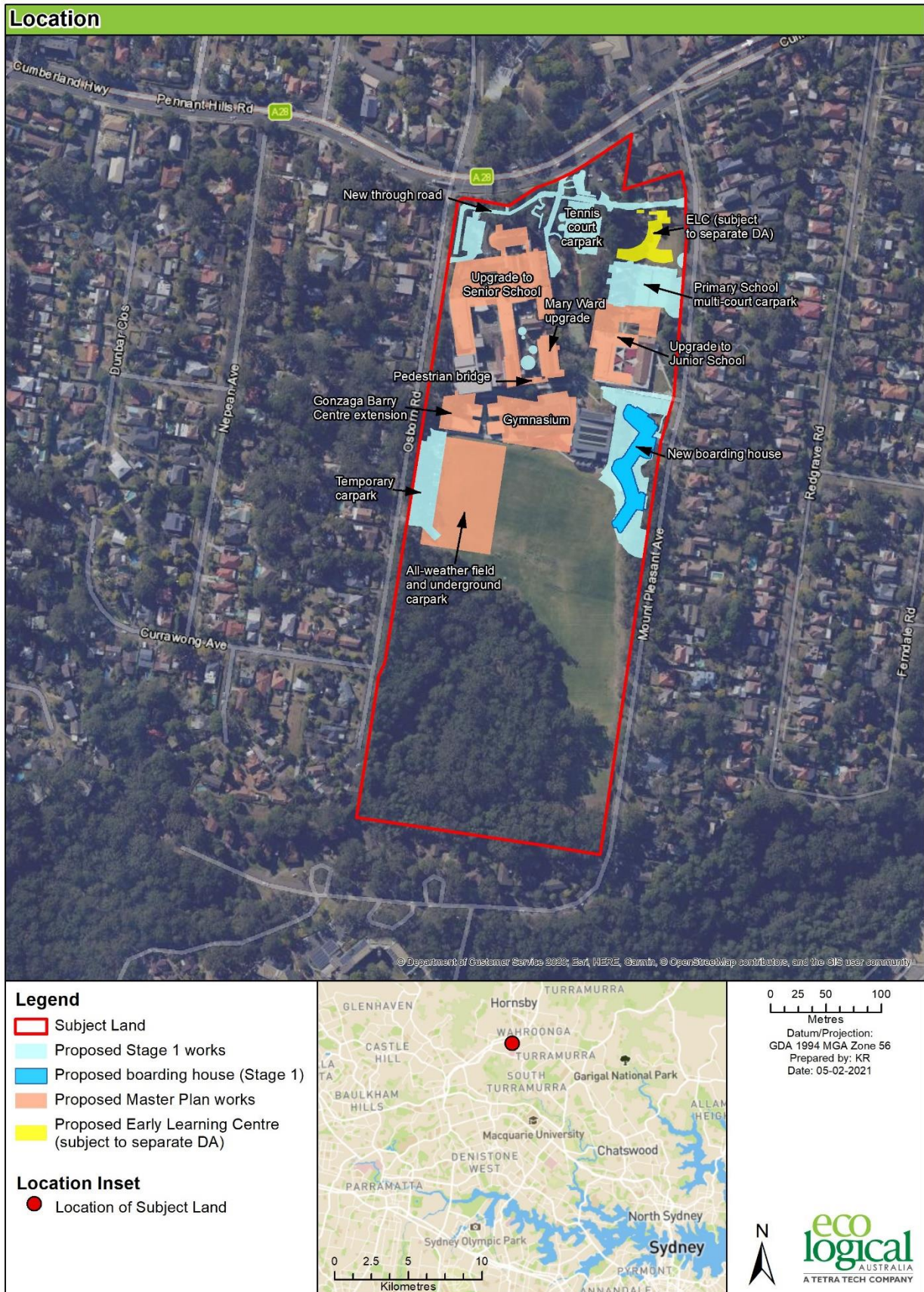


Figure 1: Proposed location of Stage 1 works and Masterplan within the subject site



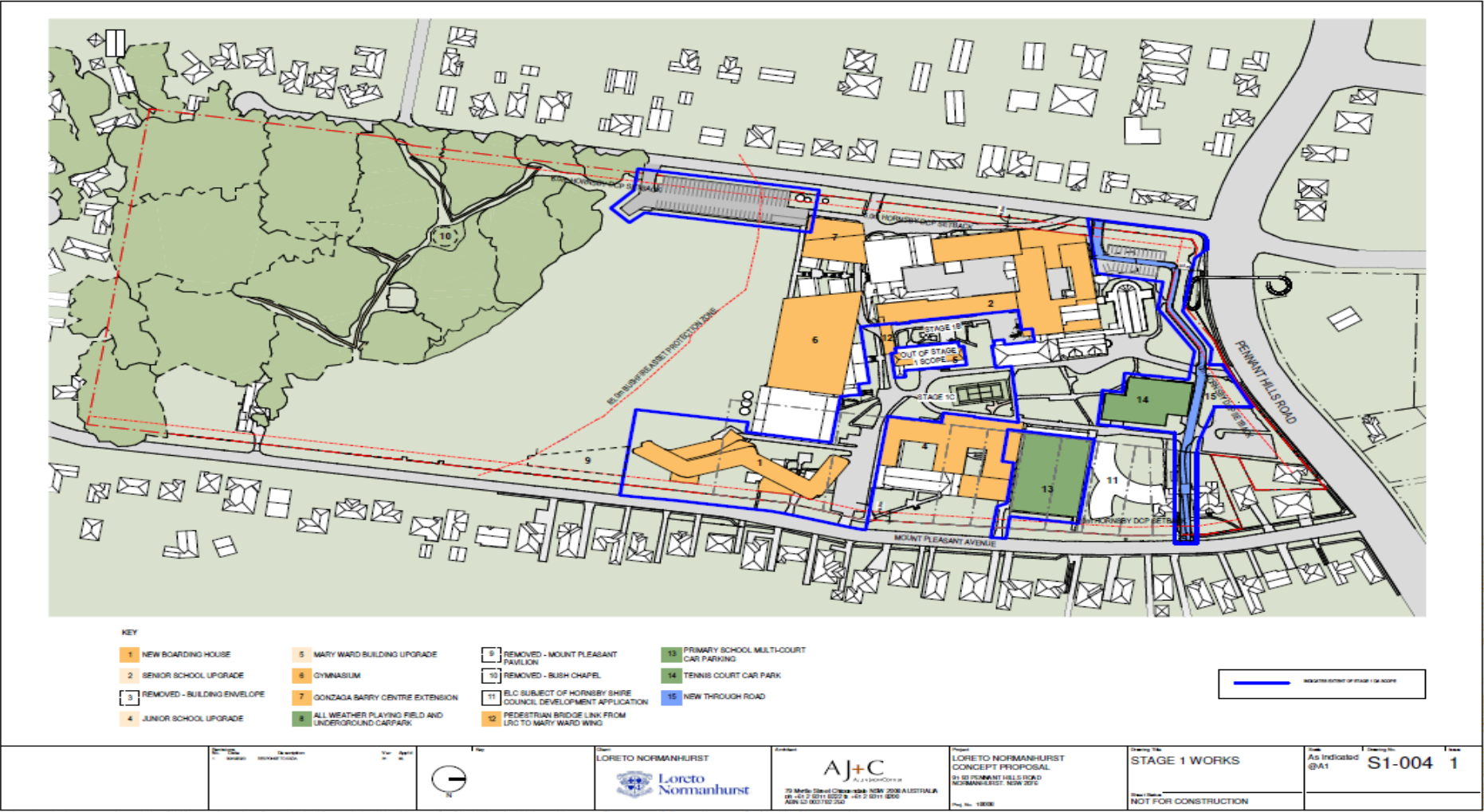


Figure 2: Site plan

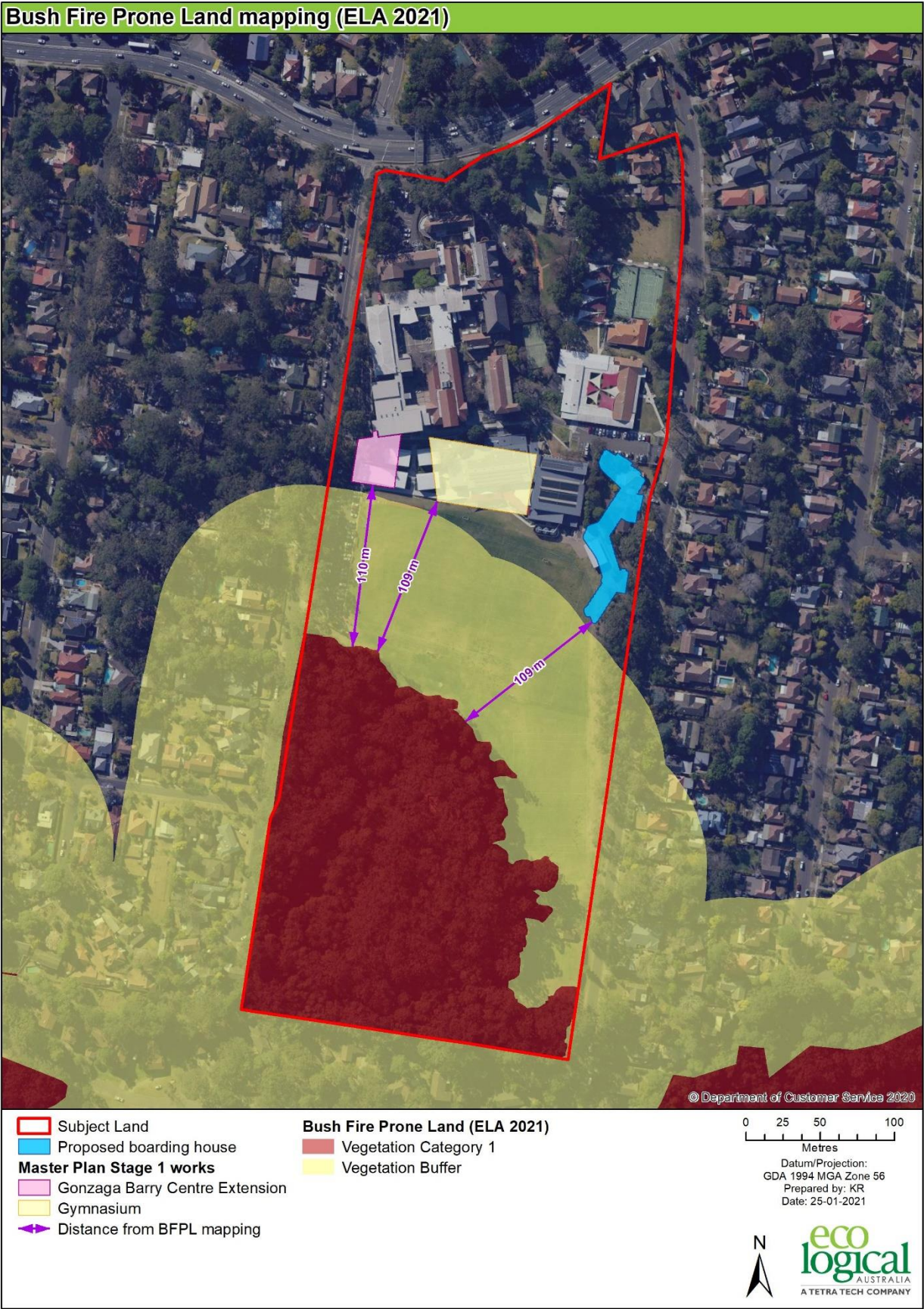


Figure 3: Bushfire Prone Land Map of the site



## 1.2 Assessment process

Being a Special Fire Protection Purpose (SFPP) development, the integrated development proposal was assessed in accordance with Section 100B of the *Rural Fires Act 1997* and *Planning for Bush Fire Protection* (RFS 2019), herein referred to as PBP.

The development is also considered multi-storey residential and the PBP requirements are addressed in **Section 5**.

This assessment is based on the following information sources:

- Background documentation provided by Carmichael Tompkins Property Group;
- Information contained within the site plan from AJ+C (Drawing No., **Figure 2**);
- Previous ELA site inspection undertaken on 5/12/2018; and
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, NearMap and the NSW Government Planning Portal).

**Table 2** identifies the bushfire protection measures assessed and whether an acceptable or performance solution is being proposed.

**Table 2: Summary of bushfire protection measures assessed**

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
Landscaping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Water supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electrical services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7
Emergency management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4
Multi-storey Development	N/A	N/A	5

## 1.3 Significant environmental features

An assessment of significant environmental features, threatened species, populations or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

There is no impact footprint resulting from bushfire protection measures however The Minister for Planning is the determining authority for this development; they will assess more thoroughly any potential environmental issues.

## 1.4 Aboriginal cultural heritage

An assessment of any Aboriginal cultural heritage objects (within the meaning of the *National Parks and Wildlife Act 1974*) that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

There is no impact footprint resulting from bushfire protection measures however The Minister for Planning is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

## 2. Bushfire hazard assessment

### 2.1 Process

The site assessment methodology set out in Appendix 1 of PBP has been utilised in this assessment to determine the required APZ and Bushfire Attack Level (BAL) construction requirements.

**Figure 4** and **Table 3** show the effective slope predominant vegetation representing the highest bushfire threat potentially posed to the proposed development from various directions.

### 2.2 Vegetation assessment

In accordance with PBP, the predominant vegetation formation has been assessed for a distance of at least 140 m from the subject land in all directions.

The predominant vegetation influencing fire behaviour has been determined from the Office of Environment and Heritage (OEH 2016) vegetation maps and revised where required by site assessment.

### 2.3 Slope assessment

In accordance with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation.

The effective slope has been determined from 2 m contour data and confirmed from site assessment.

### 2.4 Summary of assessment

As shown in **Figure 4**, the primary bushfire hazard affecting the proposed development (Stage 1 and Master Plan) is vegetation located greater than 100 m away to the south and south-west from all building footprints.

This area of vegetation located greater than 100 m away is approximately 3.5 ha and consists of 'Turpentine-Grey Iron Bark Open Forest' and 'Sydney Blue Gum-Blackbutt-Smooth-barked Apple Moist Shrubby Open Forest' vegetation. This vegetation is classified as 'Forest' by PBP. Where the vegetation meets the managed sports field, the slope is gentle, and the land well maintained. This is shown in the photo located in **Appendix B**.

No slope transects (including slope, vegetation formation, and required APZ) were assessed in this report for both the south and south-west aspects given there is no requirement to assess the bushfire hazard greater than 100 m away from the proposed development footprint.

In all other directions, there are managed lands greater than 140 m being in the form of existing residential properties and educational institutions.

**Table 3: Bushfire hazard assessment, APZ requirements and BALs**

Transect #/Aspect	Slope	Vegetation Formation	SFPP APZ	Existing APZ	Bushfire Attack Level (BAL)	Comments
Boarding School (South-west)	N/A	N/A	N/A	109 m	BAL-LOW	<p>Assessment applies to the Stage 1 Boarding School development (See <b>Figure 2</b>)</p> <p>APZ existing and managed entirely within the subject site to the east, north and west property boundaries and to the perimeter of 'forest' vegetation in the southern portion of the property.</p>
Gonzaga Barry Centre Extension (South)	N/A	N/A	N/A	110 m	BAL-LOW	<p>Assessment applies to portion of proposed Gonzaga Barry Centre Extension (See <b>Figure 2</b>)</p> <p>APZ existing and managed entirely within the subject site to the east, north and west property boundaries and to the perimeter of 'forest' vegetation in the southern portion of the property.</p>
Gymnasium (South)	N/A	N/A	N/A	109 m	BAL-LOW	<p>Assessment applies to portion of proposed Master Plan development for the Gymnasium (See <b>Figure 2</b>)</p> <p>APZ existing and managed entirely within the subject site to the east, north and west property boundaries and to the perimeter of 'forest' vegetation in the southern portion of the property.</p>
All other directions				Managed land		



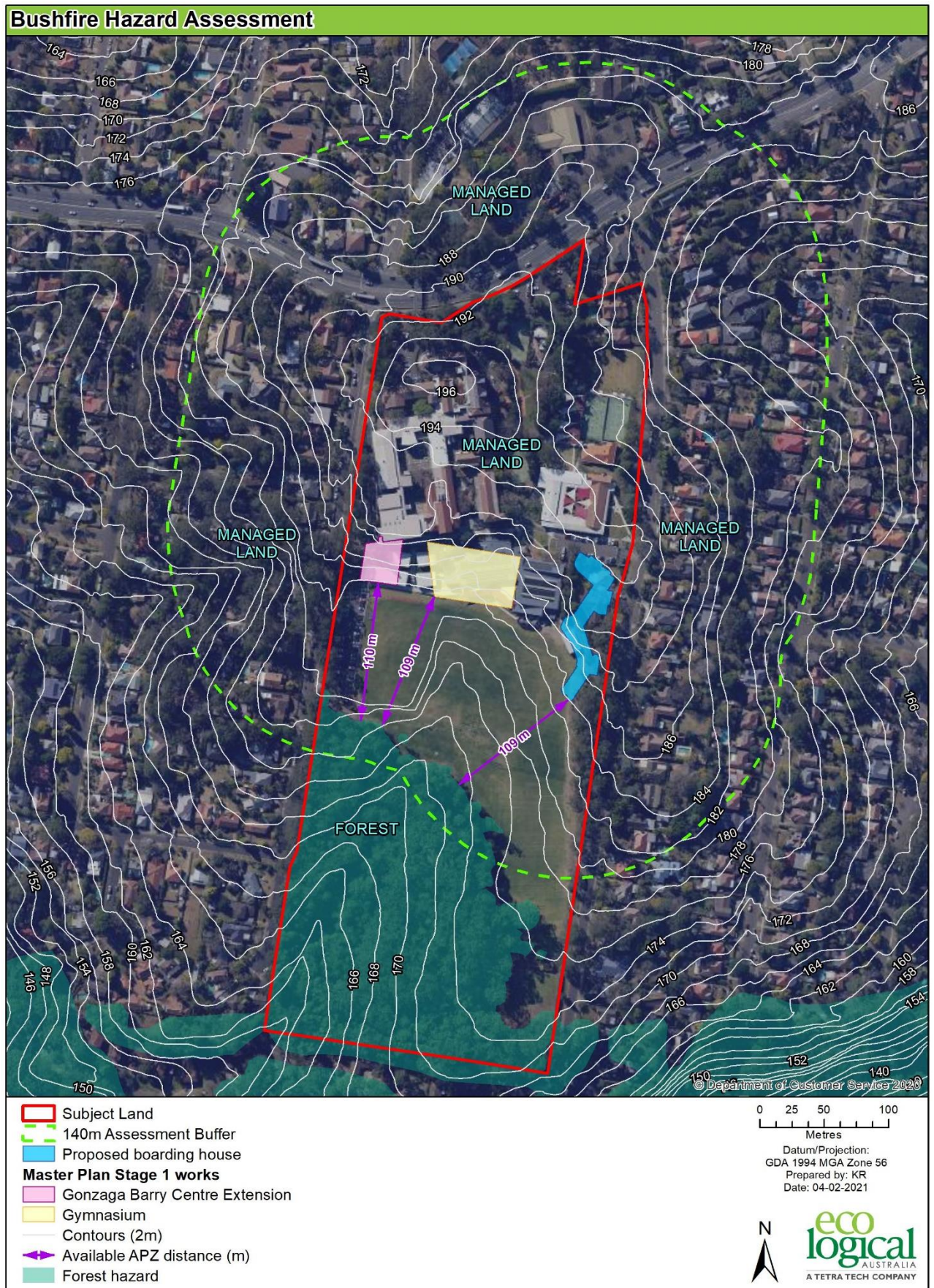


Figure 4: Bushfire hazard assessment

### 3. Bushfire protection measures

#### 3.1 Asset Protection Zones

No additional APZ is required as there is no bushfire hazard within 100 m of the proposed development as detailed in **Section 2.4**.

The entire site to be managed as an IPA to the east, north, and west aspects. To the south, at a minimum, manage as an IPA to the current perimeter of the 'Forest' vegetation as shown in **Figure 4**.

The IPA to be managed to the specification as details in **Appendix A**.

#### 3.2 Landscaping

Any new landscaping is to comply with the requirements and specifications of **Table 4**.

**Table 4: Landscaping requirements and compliance (adopted from Table 6.8a of PBP)**

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Landscaping is managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4 of PBP; and	<b>Can comply</b> APZ / Landscaping is to be managed in accordance with PBP. Landscaping specifications provided in <b>Appendix A</b> .
	Fencing is constructed in accordance with Section 7.6 of PBP.	Fencing to be constructed in accordance with Section 7.6 of PBP.

#### 3.3 Construction standards

The building construction standard is based on the determination of the BAL in accordance with Appendix 1 of PBP. The BAL is based on known vegetation type, effective slope and managed separation distance between the development and the bushfire hazard.

The proposed habitable buildings for Stage 1 (Boarding House) and Master Plan (Gymnasium and Gonzaga Barry Centre Extension) development is exposed to **BAL-LOW** (no bushfire construction requirements as identified in **Table 3**).

#### 3.4 Access

The proposed development is greater than 100 m from the bushfire hazard therefore no bushfire response is required.

Public road access currently to the subject land and development is via Mount Pleasant Avenue to the east; Osborn Road to the west; and Pennant Hills Road to the north.

There is a through proposed property access Osborn Road to Mt Pleasant Avenue link road to be constructed in the northern portion of the property running in a east to west direction. Refer to **Figure 1** and **Figure 2**.



### 3.5 Water supplies

The proposed development is serviced by a reticulated water supply (**Appendix B – Photo 2**). The hydrant design and other fire safety requirements may require expansion to achieve the relevant National Construction Code (NCC) specifications.

### 3.6 Electricity services

The site is currently serviced by above ground electricity supply however will be underground for the proposed development.

### 3.7 Gas services

The proposed development is greater than 100 m from the bushfire hazard therefore no bushfire response is required.

## 4. Emergency and Evacuation Planning

It is recommended bushfire risk be considered in all future school emergency management and evacuation planning for the site.

## 5. Multi-storey development response

The proposed boarding house development contains 6 levels including a basement level and is considered 'multi-storey' residential development.

Given the proposed development is greater than 100 m from the bushfire hazard no bushfire response is required. Construction should however achieve the relevant National Construction Code (NCC) specifications.

## 6. Conclusion

The proposed Special Fire Protection Purpose (SFPP) development has been assessed against the specifications and requirements of 'Planning for Bush Fire Protection 2019', as outlined in **Table 5** below.

**Table 5: Development Bushfire Protection Solutions and Recommendations**

Bushfire Protection Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	No additional APZ required as detailed in <b>Section 2.4</b> . The existing IPA to be maintained and in perpetuity to <b>Section 3.1</b> and the specifications detailed in <b>Appendix A</b> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.1
Landscaping	Any future landscaping meets the requirements of PBP listed in <b>Appendix A</b> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	The proposed development is exposed to BAL-LOW (no bushfire construction requirements apply).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	The proposed development is greater than 100 m from a bushfire hazard therefore no bushfire response is required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Water supply	The proposed development is serviced by a reticulated water supply ( <b>Appendix B – Photo 2</b> ). This may require expansion under NCC requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electricity service	Electricity services to the site are aboveground however will be underground to the proposed development.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas service	The proposed development is greater than 100 m from a bushfire hazard therefore no bushfire response is required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7
Emergency Management	It is recommended bushfire risk be considered in all future school emergency management and evacuation planning for the site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4
Multi-storey development	Given the proposed development is greater than 100 m from the bushfire hazard no bushfire response is required. Construction should however achieve the relevant National Construction Code (NCC) specifications.	N/A	N/A	5

## 7. Recommendations

It is recommended that the proposed development be approved with consent conditions based on the findings in **Table 5**.



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## 8. References

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners* - issued December 2019. Australian Government Publishing Service, Canberra.

Office of Environment and Heritage (OEH). 2016. *The Native Vegetation of the Sydney Metropolitan Area*.



## Appendix A - Asset protection zone and landscaping standards

The APZ management specified in **Table 6** applies to the site in accordance with **Section 3.1** and are to be maintained in perpetuity with the maintenance undertaken at least once per year and prior to the commencement of the fire season.

Further details on APZ implementation and management can be found on the NSW RFS website (<https://www.rfs.nsw.gov.au/resources/publications>).

**Table 6: APZ management specifications**

Vegetation Strata	Inner Protection Area (IPA)	Outer Protection Area (OPA)
Trees	<p>Tree canopy cover should be less than 15% at maturity;</p> <p>Trees (at maturity) should not touch or overhang the building;</p> <p>Lower limbs should be removed up to a height of 2 m above ground;</p> <p>Canopies should be separated by 2 to 5 m; and</p> <p>Preference should be given to smooth barked and evergreen trees.</p>	<p>Tree canopy cover should be less than 30%; and</p> <p>Canopies should be separated by 2 to 5 m.</p>
Shrubs	<p>Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;</p> <p>Shrubs should not be located under trees;</p> <p>Shrubs should not form more than 10% ground cover; and</p> <p>Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.</p>	<p>Shrubs should not form a continuous canopy; and</p> <p>Shrubs should form no more than 20% of ground cover.</p>
Grass	<p>Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and</p> <p>Leaves and vegetation debris should be removed.</p>	<p>Should be kept mown to a height less than 100 mm; and</p> <p>Leaf and other debris should be removed.</p>

## Appendix B – Site Photos



Photo 1: View of Forest vegetation and managed land to the south east



Photo 2: Plan of Hydrant locations throughout the subject land.

