

Bushfire Hazard Assessment

The Pines Caravan Park Expansion



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Prepared for: Hometown Australia Holdings Pty Ltd
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Bushfire Disclaimer

This report in no way suggests or guarantees that a bushfire or grass fire will not occur at the Project Site and/or impact the proposed development. This report advises on matters published by the NSW Rural Fire Service in the guideline Planning for Bushfire Protection 2019 and other advice available from that organisation. Due consideration has been given to site conditions and to appropriate legislation and documentation available at the time of writing. The report is therefore current at the time of writing only.

Certification

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UPR	Description	Date Issued	Issued By
3779-1031	Version 1	25/08/2021	Veronica Silver

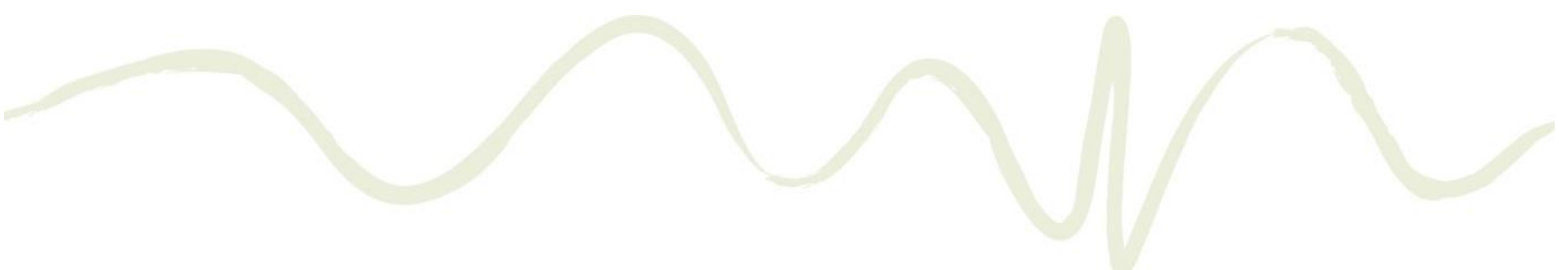
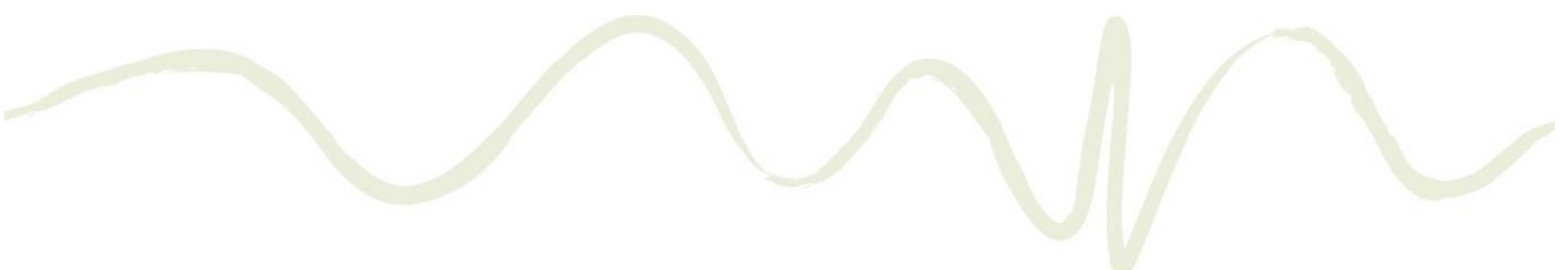


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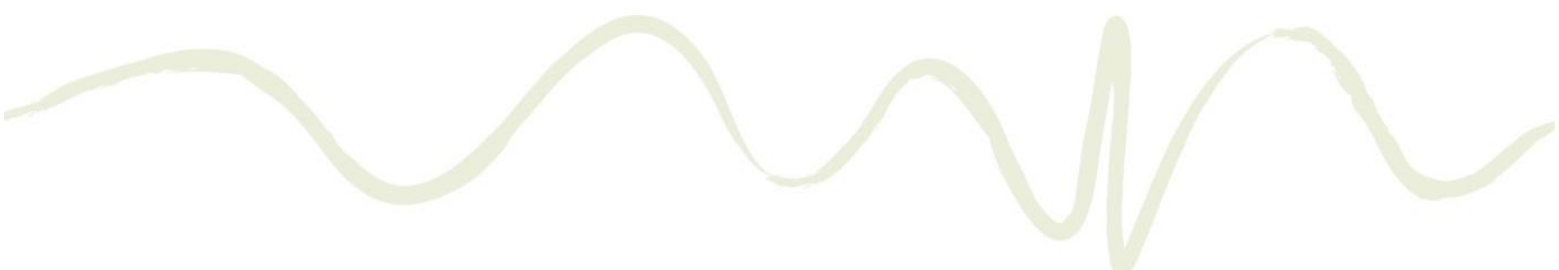
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Executive Summary

This Bushfire Hazard Assessment is for a modification to the approved expansion of The Pines Caravan Park located on bushfire prone land at Lot 106 DP1144462, 8 Hearnese Lake Road, Woolgoolga. The Pines is a 120-site caravan park comprising long-term sites occupied by moveable dwellings, communal facilities and designated accommodation for an on-site manager.

The proposed modification is substantially the same as the approved development and does not add or remove any key elements of the approved use, site yield, development footprint, infrastructure, asset protection or vegetation management. The approved development comprises the provision of an additional 53 caravan sites (modified consent now permits 47 sites) in the south-western portion of the site in an area that is currently not improved by any structures or infrastructure. Consent also permits removal of existing vegetation within the development layout, revegetation of areas along Hearnese Lake and Double Crossing Creek and removal of three effluent storage ponds and a water storage dam.

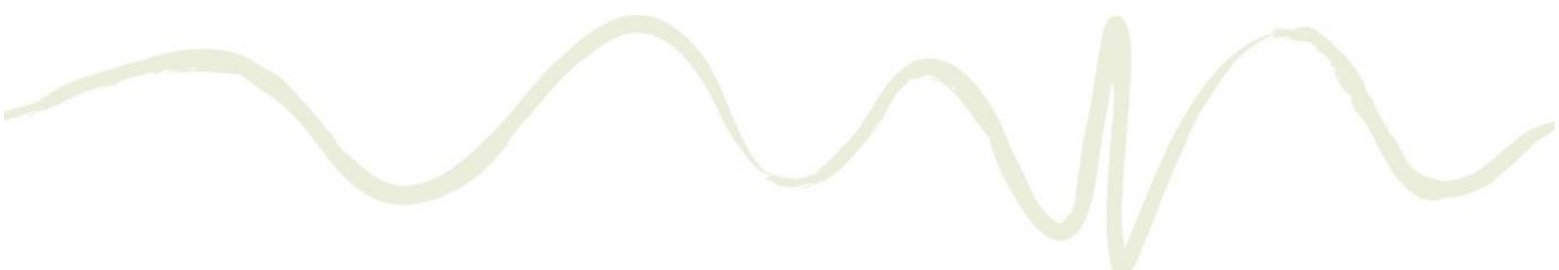
The proposed modification includes the following components:

- Move Lots 1 – 8 west approximately 10 m to give Lot 9 frontage to Road 2.
- Remove the extension of Road 1 to the north-west.
- Retain the existing road connection at the north-east of the development area, as per the existing Approval to Operate.

This report seeks to update the approved Bushfire Hazard Assessment for the proposed expansion prepared by Australian Bushfire Assessment Consultants in September 2009. Whilst applications under the now repealed Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and state significant projects are exempt from requiring a Bushfire Safety Authority (BFSA) under Section 100B of the *Rural Fires Act 1997*, and are not required to be assessed under Section 4.14 of the EP&A Act, the requirements of Planning for Bushfire Protection (PBP) 2019 still need to be applied. The NSW Department of Planning, Industry and Environment (DPIE) is responsible for assessing the development application with the Minister for Planning and Public Spaces being the consent authority.

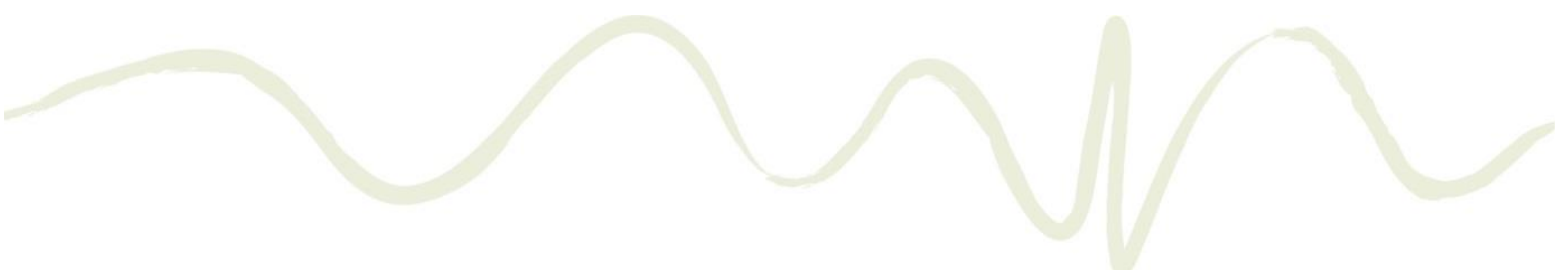
The following table provides a summary of the recommendations and method of assessment for each consideration relating to PBP 2019.

Criteria	Recommendation	Method of Assessment
Asset Protection Zones (APZ)	■ An APZ is to be managed for 25 m to the south and east of the proposed lots.	Acceptable solution
Landscaping	■ The proposal and general management of the site is to comply with Appendix 4 of PBP 2019.	Acceptable solution
Bushfire Attack Levels	■ The proposed dwellings are to be constructed to BAL 29.	Acceptable solution
Access	■ Access is to be in accordance with Section 6.8.2 of PBP 2019 except for the width of the 130 m long Road 3.	Acceptable solution
Services – Water, Gas and Electricity	■ Water, gas and electrical services is to be installed in accordance with Section 6.8.3 of PBP 2019.	Acceptable solution



Criteria	Recommendation	Method of Assessment
Emergency Management Planning	■ A Bushfire Emergency Management and Evacuation Plan be prepared in accordance with Section 6.8.4 (Emergency Management Planning) of PBP 2019 for the site.	Acceptable solution

This Bushfire Hazard Assessment has taken into consideration the proposal, hazard vegetation, effective slope, local bushfire risk conditions and Fire Danger Index detailed within PBP 2019. This assessment demonstrates that bushfire protection measures are available and can be implemented to facilitate the expansion of The Pines caravan park and associated works. The proposed development can achieve the deemed-to-satisfy criteria and the aims and objectives of PBP 2019.



1. Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by Hometown Australia Holdings Pty Ltd to prepare a Bushfire Hazard Assessment for a modification to the approved expansion of the existing caravan park within the south-western corner of The Pines, Lot 106 DP1144462, 8 Hearnese Lake Road, Woolgoolga, referred to herein as 'the site'. The expansion area will be referred to herein as 'the proposal footprint'. The Pines is located on bushfire prone land (BPL).

This Bushfire Hazard Assessment will accompany the Statement of Environmental Effects prepared by Hometown Australia Management to be submitted to Department of Planning, Industry and the Environment (DPIE) to modify the existing Consent for an expansion of The Pines caravan park, under Section 4.55(1A) of *Environmental Planning & Assessment Act 1979*. The expansion was approved (08_0005) on 4 June 2012 and modified (Mod 08_0005 Mod 1) by way of decision dated 24 July 2018.

This report serves to:

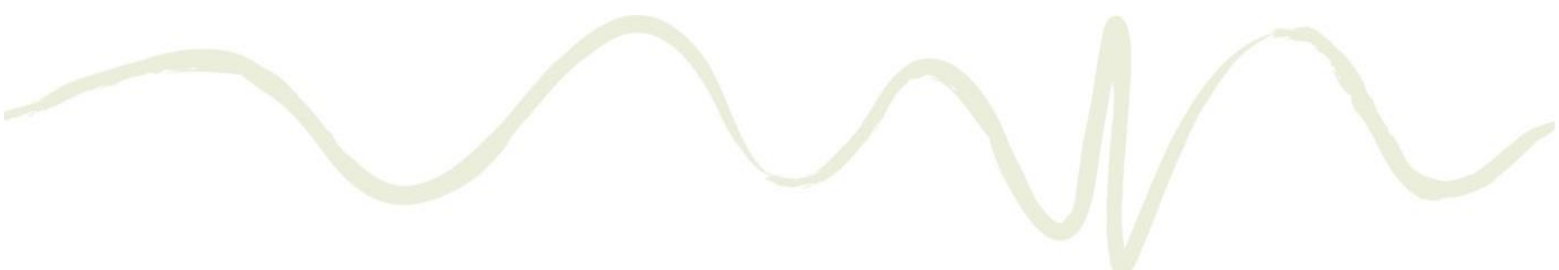
- Update the Bushfire Hazard Assessment prepared by Australian Bushfire Assessment Consultants in September 2009.
- Address conditions of consent C33 and C43 of Project Approval 08_0005
- Identify the site and proposed development
- Determine the bushfire threat
- Identify precautions required to improve the chances of building survival in the event of a bushfire.

1.2 Legislative Framework

The assessment contained in this report has been prepared with regard to:

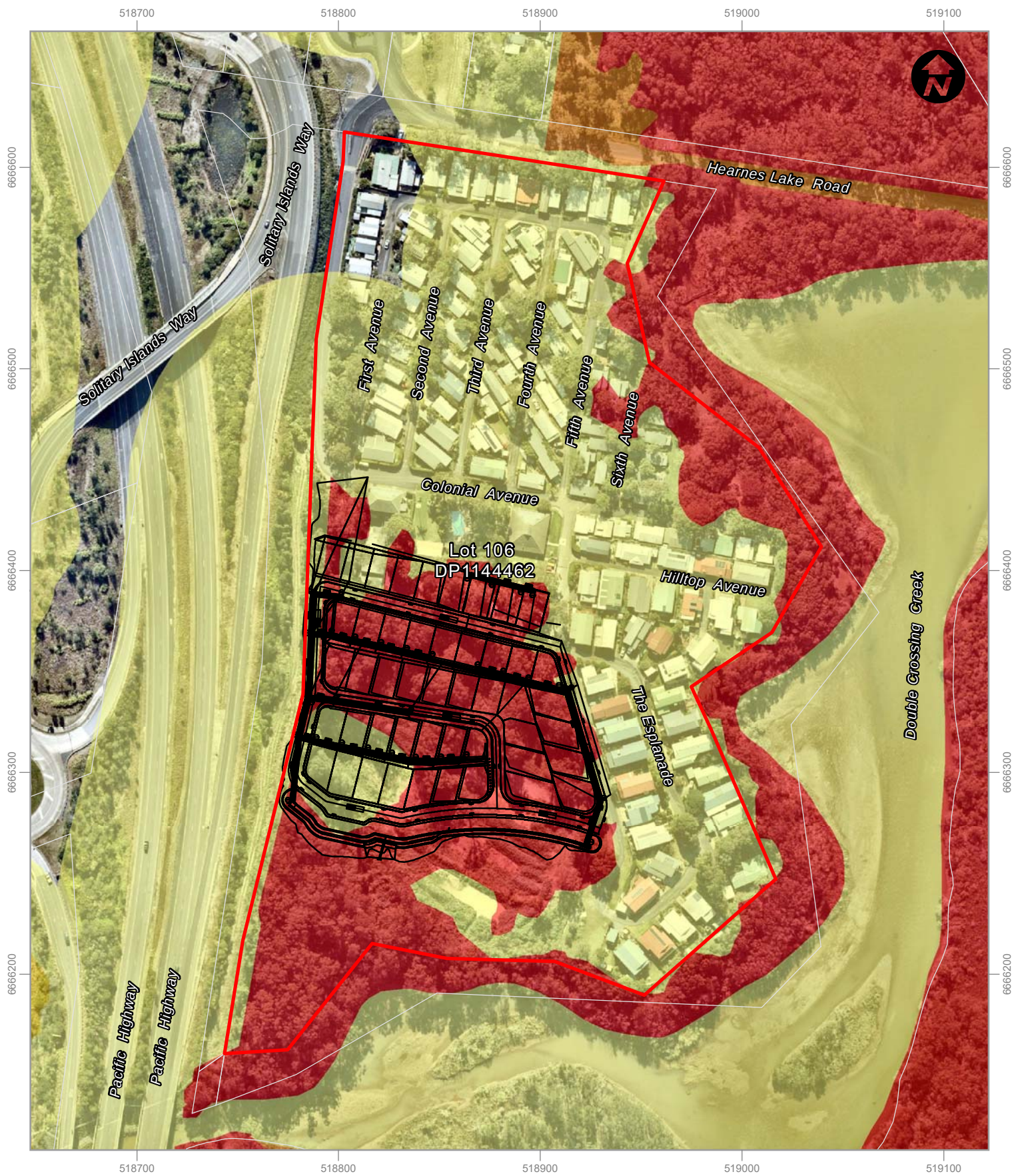
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- Environmental Planning and Assessment Regulation 2000
- *Rural Fires Act 1997*
- Australian Standard 3959-2018 Construction of Buildings in Bushfire Prone Areas
- National Association of Steel-framed Housing (NASH) Standard
- Building Code of Australia (Volume 2)
- Planning for Bushfire Protection (PBP) 2019.

Whilst applications under the now repealed Part 3A of the EP&A Act and state significant projects are exempt from requiring a Bushfire Safety Authority (BFSA) under Section 100B of the *Rural Fires Act 1997*, and are not required to be assessed under Section 4.14 of the EP&A Act, the requirements of Planning for Bushfire Protection (PBP) 2019 still need to be applied. The NSW Department of Planning, Industry and Environment (DPIE) is responsible for assessing the development application with the Minister for Planning and Public Spaces being the consent authority.



1.3 Bushfire Prone Land

Coffs Harbour City Council's bushfire prone land (BPL) mapping has been prepared as a requirement of Section 10.3 of the EP&A Act and in accordance with the NSW Rural Fire Services (RFS) '*Guideline to Bushfire Prone Land Mapping*'. Council's BPL mapping indicates that the site is mapped as both category 1 vegetation and buffer to category 1 vegetation (refer to **Illustration 1.1**). It should be noted however that the category 1 vegetation within the southern portion of the site has been approved for removal as part of the expansion.



LEGEND

- Site boundary
- Proposed expansion
- Vegetation Category 1
- Vegetation Category 2
- Vegetation Category 3
- Vegetation Buffer

0 50 Metres

GDA 1994 MGA Zone 56

Bushfire Prone Land Map - Illustration 1.1

2. Background

2.1 Existing Approval

The Pines is a 120-site caravan park comprising long-term sites occupied by moveable dwellings, communal facilities and an on-site manager.

A Part 3A Major Project Approval has been granted (08_0005) by the then NSW Department of Planning (DoP) for the provision of an additional 53 caravan sites (modified consent now permits 47 sites) in the south-western portion of the site in an area that is currently not improved by any structures or infrastructure. Consent also permits removal of existing vegetation within the development layout, revegetation of areas along Hearn's Lake and Double Crossing Creek and removal of three effluent storage ponds and a water storage dam. Works have begun to remove the three effluent storage ponds and the water storage dam (refer to **Plates 2.1-2.2**).



Plate 2.1 View west showing clearing for effluent ponds/water storage dam and associated vegetation removal



Plate 2.2 View south-west showing spoil from removal of effluent ponds/water storage dam amongst mature eucalypts

2.2 Location and Description

The site is described in real property terms as Lot 106 DP1144462, 8 Hearn's Lake Road, Woolgoolga. It is accessed via an entry road that extends south from Hearn's Lake Road. Woolgoolga is located within the CHCC Local Government Area approximately 1.5 km south of Woolgoolga or 26 km north of Coffs Harbour (refer to **Illustration 2.1**).

The site slopes from 19 m AHD (Australian Height Datum) at the office entrance in the west down to 4 m AHD in the east and south along Double Crossing Creek (AHD). The Pines is a well landscaped caravan park with mature Eucalypts and landscaped gardens throughout (refer to **Illustration 2.2**).

The site and proposal footprint are mapped under State Environmental Planning Policy [SEPP] (Coastal Management) 2018 as being within a 'coastal environmental area'.

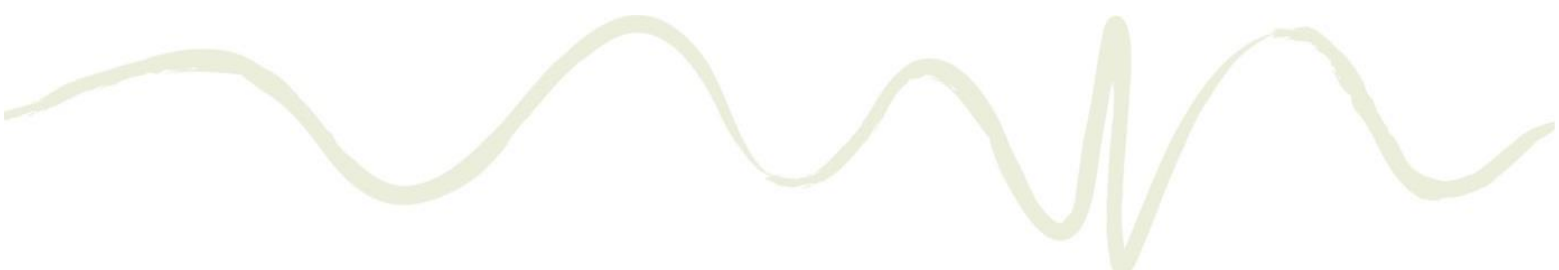


Table 2.1 provides a quick reference for the location and description details of the site.

Table 2.1 Site Detail Summary

Site Details	
Lot/DP	Lot 106 DP1144462
Street Address	8 Hearnese Lake Road, Woolgoolga
Elevation	Slopes from 19 m AHD at the office entrance in the west down to 4 m AHD in the east and south along Double Crossing Creek (AHD).
Site Area	8.7 ha
Proposal Footprint	1.9 ha
Coffs Harbour Local Environmental Plan 2013 zoning	RE2 Private Recreation
Fire Weather Area	North Coast
Fire Danger Index (FDI)	80
Fire Control Centre	Coffs Harbour

2.3 Zoning and Land Use

The site is zoned RE2 Private Recreation pursuant to Coffs Harbour Local Environmental Plan 2013.

The site comprises long-term sites occupied by moveable dwellings. The site is bordered to the south and east by Hearnese Lake (refer to **Plates 2.3** and **2.4**), an Intermittent Closed and Open Lake or Lagoon (ICOLL). A narrow strip of council owned Public Reserve containing native vegetation separates the site from the ICOLL. The site is bordered by Hearnese Lake Road to the north. The road is a crown road and is unsealed east of the caravan park. To the west the site is bordered by the Pacific Motorway. Native vegetation adjacent to the western portion of the site was cleared as part of the Sapphire to Woolgoolga Pacific Highway upgrade and construction of the South Woolgoolga Interchange at the junction of Hearnese Lake Road.

Land west of the Pacific Highway is zoned for rural purposes and has extensive tracts of native vegetation. To the east of the site is a strip of coastal Crown Land incorporating vegetated dunes, a SEPP 26 littoral rainforest and Sandy Beach. This coastal area is designated a 'Habitat Protection Zone' as part of the Solitary Islands Marine Park (SIMP).

Further east at the end of Hearnese Lake Road, is an approved but as yet undeveloped 42 lot subdivision (MP07_0075) and three privately owned residential lots with access to Hearnese Lake Road via separate driveways. To the north is an estuarine wetland system and land zoned for industrial purposes followed by the residential development of the township of Woolgoolga. The land to the south of Hearnese Lake is grazing land, which has concept approval for residential subdivision of up to 200 lots (MP05_0083). Further south is the suburb of Sandy Beach.



Plate 2.3 View north-east over Hearn's Lake

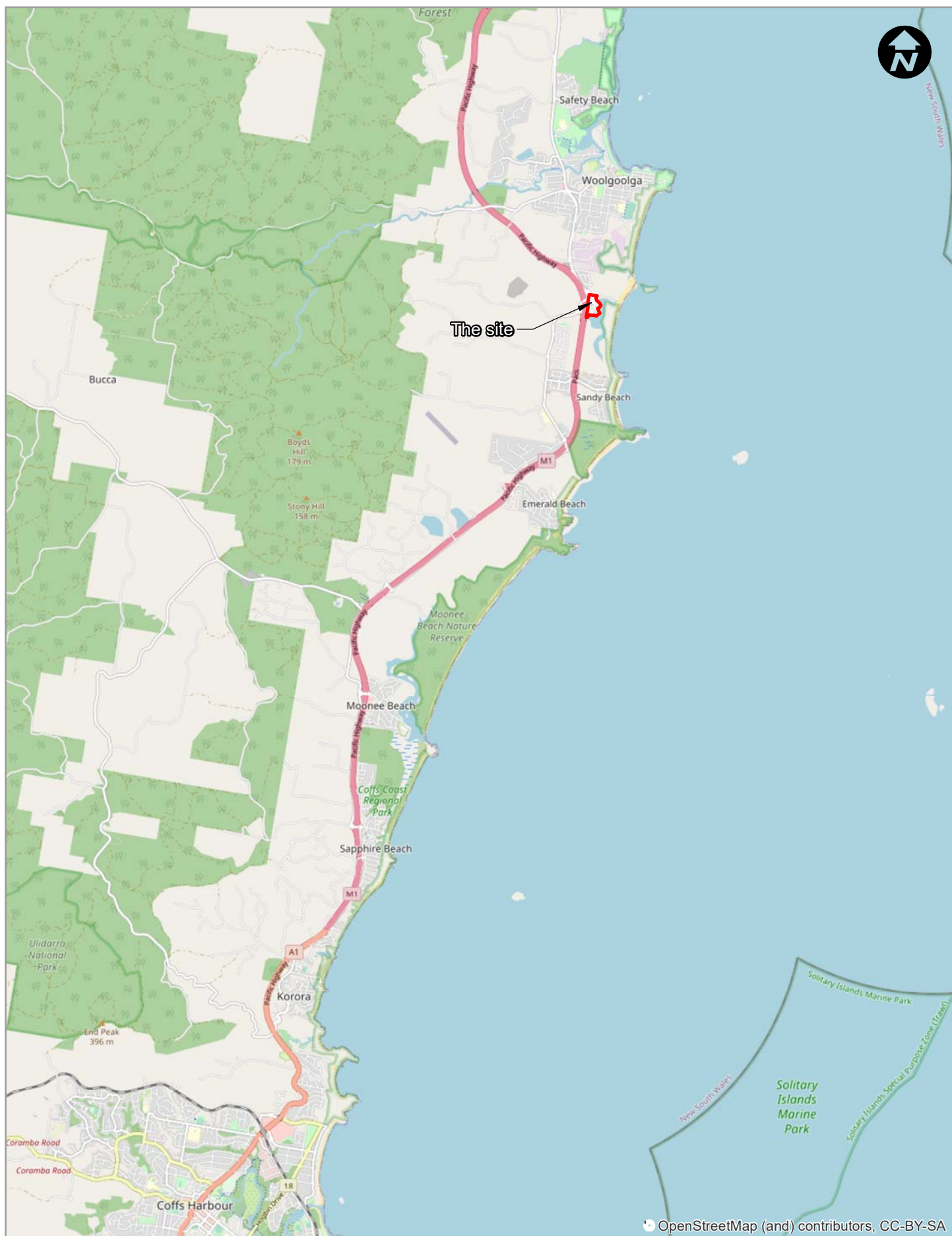


Plate 2.4 View south over Double Crossing Creek

2.4 Proposed Development

The proposed modification is substantially the same as the approved development and does not add or remove any key elements of the approved use, site yield, development footprint, infrastructure, asset protection or vegetation management (refer to **Appendix A**). The proposed modification includes the following components:

- Move Lots 1 – 8 west approximately 10 m to give Lot 9 frontage to Road 2.
- Remove the extension of Road 1 to the north-west.
- Retain the existing road connection at the north-east of the development area, as per the existing Approval to Operate.



Site Locality - Illustration 2.1

518700 518800 518900 519000 519100



LEGEND

- Site boundary
- Cadastre
- Proposed expansion work
- Contour at 2m intervals
- Watercourse

GDA 1994 MGA Zone 56

0 50 Metres

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environmental management and design

Bushfire Hazard Assessment - The Pines Caravan Park Expansion
3779-1036

Site Analysis - Illustration 2.2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: VJS
Source of base data: Nearmap 04/07/2021
Date: 18/08/2021

3. Planning for Bushfire Protection Assessment

3.1 Bushfire Assessment

The following subsections were informed by site visits undertaken by GeoLINK on 4 November 2020 and 17 March 2021.

3.1.1 Vegetation

The site comprises managed land with Dry Blackbutt Open Forest in the form of scattered canopy trees and little or no native understorey as the understorey is regularly slashed or comprises caravan park infrastructure and trees and shrubs planted for landscaping purposes (refer to **Plates 3.1** and **3.2**).

Vegetation around south-eastern boundary of the site, fringing Hearn's Lake and Double Crossing Creek comprises forested wetlands as mapped by CHCC fine-scale vegetation mapping. This vegetation also comprises mangroves. Forested wetland is regarded in Keith (2006) and PBP 2019 as Forest (Coastal Swamp Forest).

The proposal footprint comprises Dry Blackbutt Open Forest which has been approved to be cleared for the expansion and is in its early stages of construction. This forest is mapped as category 1 vegetation and is regarded as the main bushfire hazard vegetation (refer to **Illustration 1.1**). Forest vegetation between the site and Pacific Highway to the west is also mapped as category 1 vegetation however, this vegetation has also been removed for construction of the Pacific Highway upgrade.



Plate 3.1 View north showing eastern edge of proposed expansion



Plate 3.2 Mature eucalypts approved for removal throughout existing car parking area for expansion

Vegetation surrounding the proposed expansion has been assessed in terms of potential fire hazard over a distance of 140 m, using the formation classes provided within Section A1.2 of PBP 2019. Dominant vegetation formations in each relevant direction from the expansion are provided in **Table 3.1**.

Table 3.1 Predominant Vegetation Formation for Proposed Expansion

Direction	Predominant Vegetation Formation
North	Managed Land (removable dwellings, pool, community building, office building).
South	Forest (proposed revegetation in accordance with Vegetation Management Plan), Forested wetlands, low hazard vegetation (mangroves).
East	Managed Land (removable dwellings), Forested wetlands, Forest, low hazard vegetation (mangroves).
West	Managed Land (Pacific Highway).

3.1.2 Slope

Site topography consists of a low central ridge towards the middle of the site with the land falling north-east, south-east and south with elevation ranging from a high point of approximately 19.19 m AHD down to approximately 3.5 m AHD along the Hearn's Lake foreshore.

The effective slope is that slope within the hazard which most significantly affects fire behaviour of the site having regard to the vegetation formation. The effective slope for the proposal has been assessed over 100 m and is provided in **Table 3.2**.

Table 3.2 Effective Slope

Direction	Degrees
North	-
South	0-5
East	0-5
West	-

3.1.3 Fire (Weather Area)

Coffs Harbour City Council local government area is located within the 'North Coast' fire area, with a Fire Danger Index (FDI) rating of 80.

3.1.4 Bushfire Season

Prevailing weather conditions associated with the bushfire season of the Mid North Coast are strong, west to north-west winds, accompanied by high temperatures and lower relative humidity (Mid North Coast Bush Fire Management Committee 2018).

3.2 Bushfire Protection Measures

3.2.1 Asset Protection Zones

An Asset Protection Zone (APZ) is a fuel-reduced area surrounding a built asset or structure. APZ requirements have been calculated based on the effective slope, vegetation formations and FDI rating in accordance with Table A1.12.1 (*Minimum Distances for APZs – SFPP development <10 kW/m² @ 1200K*) of PBP 2019 (refer to **Table 3.3**).

Table 3.3 Asset Protection Zones for Expansion Based on Table A1.12.1

Direction	Vegetation Formation	Effective Slope Category	APZ
North	Managed Land	-	-
South	Forest	0-5	79
East	Forest	0-5	79
West	Managed Land	-	-

Section 6.3.2 of PBP 2019 states that the acceptable solution for manufactured housing is the provision of an APZ which achieves 10 kW/m² commensurate with SFPP developments in line with Table A1.12.1. Where evidence can be provided which confirms that dwellings within the manufactured home estate will be constructed to the appropriate construction standards under AS 3959-2018 or NASH Standard, an APZ can be provided which meets 29 kW/m² in line with Tables A1.12.2-A1.12.3.

APZs have therefore also been calculated based on the effective slope, vegetation formations and FDI rating in accordance with Table A1.12.3 (*Minimum Distances for APZs – residential development <29 kW/m² @ 1090K*) of PBP 2019 (refer to **Table 3.4**).

Table 3.4 Asset Protection Zones for Expansion Based on Table A1.12.3

Direction	Vegetation Formation	Effective Slope Category	APZ
North	Managed Land	-	-
South	Forest	0-5	25
East	Forest	0-5	25
West	Managed Land	-	-

APZs should consist of open areas with minimal fuel at ground level that could be set alight by bushfire. Some trees and shrubs are permissible within the APZ, provided crown separation can be achieved and vegetation does not overhang buildings. In addition, no combustible materials (e.g. wood piles, flammable building materials) should be stored in the APZ.

The inner protection area (IPA) is the area closest to the asset and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and be a defensible space. In accordance with Appendix A4.1.1 of PBP 2019, vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below one centimetre in height and be discontinuous.

Table 3.5 assesses compliance with the acceptable solutions of PBP 2019 relating to APZs for the proposed expansion.

Table 3.5 Assessment of APZ Compliance with Table 6.8a of PBP 2019

<i>Performance Criteria</i>	<i>Acceptable Solution</i>	<i>Application</i>	<i>Compliant with Acceptable Solution</i>
Radiant heat levels of greater than 10 kW/m² (calculated at 1200 K) will not be experienced on any part of the building. Variation - Manufactured home estates: APZs achieve radiant heat levels that are commensurate with the construction standard for the proposed dwellings.	An APZ in accordance with Table A1.12.1 in Appendix 1 of this document is provided to all new dwellings; or An APZ in accordance with Table A1.12.2 or A1.12.3 in Appendix 1 of this document is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29.	The calculated APZs in accordance with A1.12.1 cannot be achieved within the site due to the requirement to revegetate the area south of the proposed expansion. APZs will therefore be provided in accordance with A1.12.3 and construction standards will need to comply with BAL-29.	Yes
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	Slope has been calculated to be 0-5 therefore APZs are on slopes less than 18 degrees.	Yes
APZs are managed and maintained to prevent the spread of fire to the building. The APZ is provided in perpetuity.	■ the APZ is managed in accordance with the requirements of Appendix 4 of PBP 2019, and is wholly within the boundaries of the development site; ■ APZ are wholly within the boundaries of the development site; and ■ other structures located within the APZ need to be located further than 6 m from the refuge building.	■ APZs will be managed in accordance with the requirements of Appendix 4 of PBP 2019. ■ APZs will be located within the boundaries of the site. ■ Regular maintenance of the APZ will be undertaken by the management for the life of the development.	Yes



LEGEND

- Site boundary
- 25 m Asset Protection Zone
- Expansion lot layout
- Proposed expansion work

GDA 1994 MGA Zone 56

0 30 Metres

Asset Protection Zones - Illustration 3.1

3.2.2 Landscaping

Managed areas of the site including the pool area comprise planted trees and shrubs for landscaping purposes. The expansion will include some landscaping which will be undertaken in accordance with Appendix 4 of PBP 2019.

Table 3.6 assesses compliance against the acceptable solutions of PBP 2019 relating to landscaping.

Table 3.6 Assessment of Landscaping Compliance with Table 6.8a of PBP 2019

<i>Performance Criteria</i>	<i>Acceptable Solution</i>	<i>Application</i>	<i>Compliant with Acceptable Solution</i>
Landscaping is designed and 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 2019.	Landscaping will be in accordance with Appendix 4 of PBP 2019.	Yes
	Fencing is constructed in accordance with section 7.6 of PBP 2019.	No fencing is proposed.	N/A

3.2.3 Construction Standards

As per Table 6.8a and Section 6.3.2 of PBP 2019, for manufactured home estates, where an APZ in accordance with Table A1.12.1 of PBP is provided, which (based on the above vegetation formation and effective slope) would be 79 m to the north-east and south and 42 m to the south-east, BAL-12.5 will apply OR where an APZ in accordance with Table A1.12.3 of PBP is provided which (based on the above vegetation formation and effective slope) would be 25 m APZ to the south and north-east and a 10 m APZ to the south-east, all new dwellings will be constructed up to BAL-29 standards.

Table 3.7 assesses compliance against the acceptable solutions of PBP 2019 relating to construction standards.

Table 3.7 Assessment of Construction Standard Compliance with Table 6.8a of PBP 2019

<i>Performance Criteria</i>	<i>Acceptable Solution</i>	<i>Application</i>	<i>Compliant with Acceptable Solution</i>
The proposed building can withstand bushfire attack in the form of wind, embers, radiant heat and flame contact. Variation - Manufactured home estates: The proposed manufactured home can withstand bushfire attack in the form of wind, embers, radiant heat and flame contact.	Where an APZ is provided in accordance with Table A1.12.1 in Appendix 1 of this document the construction standards of BAL-12.5 shall apply; or Where an APZ is provided in accordance with Table A1.12.3 in Appendix 1 of this document the construction standards of BAL-29 shall apply.	APZs are proposed in accordance with Table A1.12.3 of PBP therefore BAL-29 shall apply.	Yes

3.2.4 Access

The site is accessed via an entry road that extends south from Hearn Lake Road. Hearn Lake Road extends along the northern boundary of the site but is only sealed from the site entrance west to the junction with the Pacific Highway. From its intersection with Hearn Lake Road, the Pacific Highway affords two-way travel to either the north or south. East of the site, Hearn Lake Road is a no-through gravel road that extends to Sandy Beach. Beach access could be used for evacuation in an emergency situation (last resort).

The entry to the caravan park is a sealed, two-way road that connects with the internal road network within the caravan park. None of the roads within the existing caravan park, or those proposed to be constructed within the expansion, will traverse heavily vegetated areas.

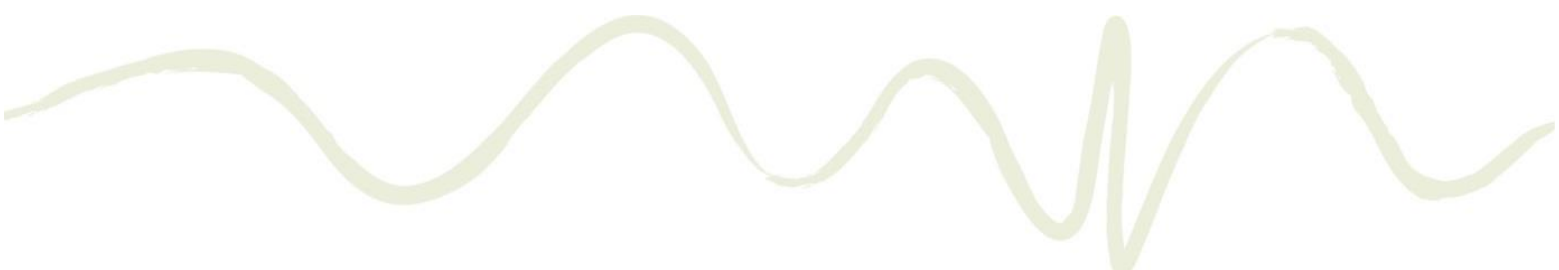
Existing roads throughout the existing caravan park provide one and two way access to the existing sites. New internal roads are proposed as indicated on the site plan (refer to **Appendix A**).

The proposed expansion includes 47 additional lots which is likely to result in an increased number of cars by 47.

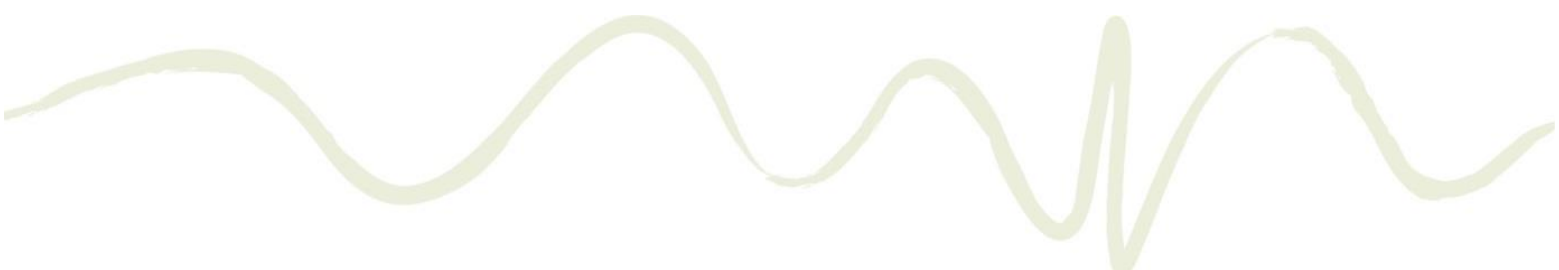
Table 3.8 assesses compliance against the acceptable solutions of PBP 2019 relating to access.

Table 3.8 Assessment of Access Compliance with Table 6.8b of PBP 2019

Access Component	Performance Criteria	Acceptable Solution	Application	Compliant
Firefighting Vehicles	Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	SFPP access roads are two-wheel drive, all-weather roads.	Hearn Lake Road is a sealed, two-wheel drive, all-weather road from the site access to the junction with the Pacific Highway. All proposed roads will also be two-wheel drive, all-weather roads.	Yes
		Access is provided to all structures.	All 47 proposed lots will have frontage to a through road.	Yes
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Any traffic management devices within public roads will be designed and constructed to facilitate emergency service vehicles.	Yes
		Access roads must provide suitable turning areas in accordance with Appendix 3.	All proposed access roads have suitable turning areas in accordance with Appendix 3.	Yes
		One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	No one way public roads are proposed.	N/A



Access Component	Performance Criteria	Acceptable Solution	Application	Compliant
Access and Road Capacity	The 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.	Access from Hearn's Lake Road and the proposed roads will be sealed and able to carry fully loaded firefighting vehicles (up to 23 tonnes). No bridges or causeways are required as part of this proposal.	Yes
Access to Water	There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	Hydrants will be located outside of parking areas and road carriageways.	Yes
		Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005.	Hydrants will be provided in accordance with relevant clauses of AS 2419.1:2005.	Yes
		There is suitable access for a Category 1 fire appliances to within four metres of the static water supply where no reticulated supply is available.	Reticulated water supply is available.	N/A
Perimeter Roads	Perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	There are two-way sealed roads.	Road 1 will form a perimeter road around the western and southern edge of the expansion. Road 4 will join the eastern side of the expansion with the existing caravan park. All proposed roads are two-way sealed roads.	Yes
		Minimum 8 m carriageway width kerb to kerb.	Road 1 will be 6 m wide in a 8.5 m road reserve. Road 2 will be 6 m wide in a 8.75 m road reserve. The kerbs will either be flush or mountable.	Yes
		Parking is provided outside of the carriageway width.	Parking will be provided outside the carriageway width.	Yes
		Hydrants are to be located clear of parking areas.	Hydrants will be located clear of parking areas.	Yes
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	All proposed roads will be through roads. Proposed Road 1 will be 250 m long and proposed Road 2 will be 120 m long.	Yes



Access Component	Performance Criteria	Acceptable Solution	Application	Compliant
		Curves of roads have a minimum inner radius of 6 m.	All proposed roads will have a minimum inner radius of 6 m.	Yes
		The maximum grade road is 15° and average grade is 10°.	All proposed roads will have grades less than 10°.	Yes
		The road crossfall does not exceed 3°.	The proposed crossfall of all roads will not exceed 3°.	Yes
		A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	A minimum vertical clearance of 4 m will be provided to all proposed roads.	Yes
Non-perimeter Roads	Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	Minimum 5.5 m width kerb to kerb.	Road 3 is a 130 m long proposed non-perimeter road and will be 4 m wide in a variable width road reserve. Kerbs will be either flush or mountable so that passing of vehicles can be achieved.	No
		Parking is provided outside of the carriageway width.	No parking is proposed.	N/A
		Hydrants are located clear of parking areas.	Hydrants will be located clear of parking areas.	Yes
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	All proposed roads will be through roads. Proposed Road 3 is 130 m long and links to Road 1.	Yes
		Curves of roads have a minimum inner radius of 6 m.	All proposed roads will have a minimum inner radius of 6 m.	Yes
		The maximum grade road is 15° and average grade is 10°.	All proposed roads will have grades less than 10°.	Yes
		The road crossfall does not exceed three degrees.	The proposed crossfall of all roads will not exceed 3°.	Yes
		A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	A minimum vertical clearance of 4 m will be provided to all proposed roads.	Yes

3.2.5 Services – Water, Gas and Electricity

Reticulated water is available to the site via Council's 100 mm water main which runs north-south from Hearn's Lake Road. Fire hydrants and hose reels are located throughout the existing caravan park (refer to **Plates 3.3** and **3.4**).

The relevant provisions of the Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds, and Movable Dwellings) Regulation 2005 (the Regulation) require the provision of fire hydrants throughout the park so that no part of a site or community building within the caravan park will be situated more than 90 metres from a fire hydrant. The Regulation also requires the provision of fire hose reels throughout the Park so that each site in the caravan park can be reached by a fire hose.



Plate 3.3 Hydrants located within existing caravan park

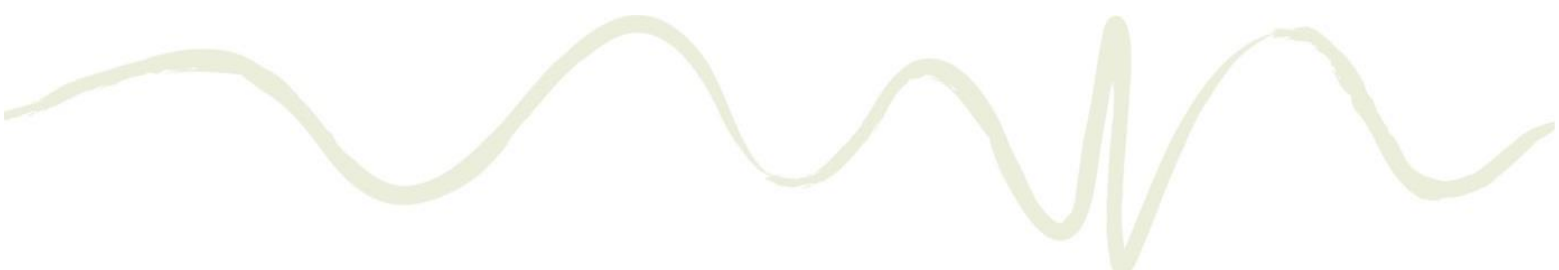


Plate 3.4 Hose reels located within existing caravan park

Table 3.9 assesses compliance against the acceptable solutions of PBP 2019 relating to water, gas and electricity services.

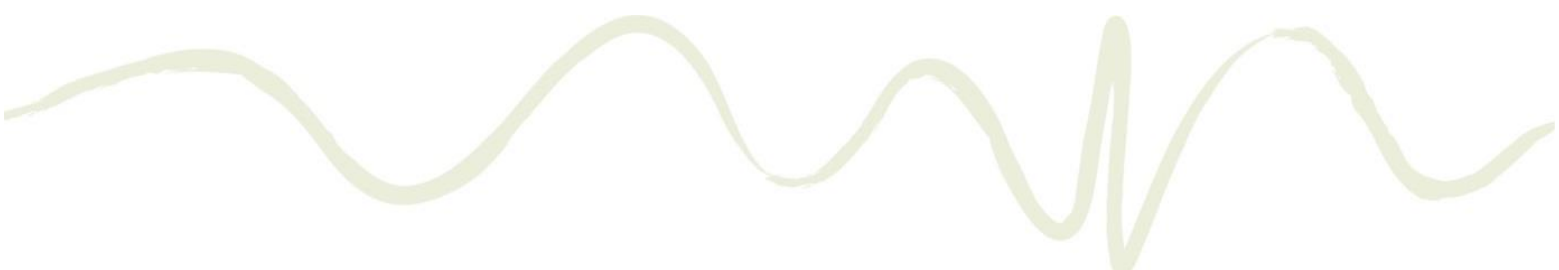
Table 3.9 Assessment of Services Compliance with Table 6.8c of PBP 2019

Service Component	Performance Criteria	Acceptable Solution	Application	Compliant
Water supply	An adequate water supply for firefighting purposes is installed and maintained.	Reticulated water is to be provided to the development, where available.	Reticulated water is available on site and to the proposed expansion.	Yes
		A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.	N/A reticulated water is available.	N/A
	Water supplies are located at	Fire hydrant spacing, design and sizing comply with the	Fire hydrant spacing, design and sizing will	Yes



Service Component	Performance Criteria	Acceptable Solution	Application	Compliant
	regular intervals. The water supply is accessible and reliable for firefighting operations.	relevant clauses of AS 2419.1:2005.	comply with the relevant clauses of AS 2419.1:2005.	
		Hydrants are not located within any road carriageway.	Hydrants will not be located within the access road carriageway.	Yes
		Reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads.	The proposed expansion will use a ring main system along proposed Road 1.	Yes
	Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	A test may be required to determine that sufficient flows and pressures comply with the relevant clauses of AS 2419.1:2005.	Yes
	The integrity of the water supply is maintained.	All above-ground water service pipes external to the building are metal, including and up to any taps.	All above-ground water service pipes external to each building will be metal, including and up to any taps.	Yes
	Water supplies are adequate in areas where reticulated water is not available.	■ A connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; a 65 mm Storz outlet with a ball valve is fitted to the outlet; ■ ball valve and pipes are adequate for water flow and are metal; ■ supply pipes from tank to ball valve have the same bore size to ensure flow volume; ■ underground tanks have an access hole of 200 mm to allow tankers to refill direct from the tank; ■ a hardened ground surface for truck access is supplied within four metres of the access hole; ■ above-ground tanks are manufactured from concrete or metal; ■ raised tanks have their stands constructed from	N/A reticulated water is available.	N/A

Service Component	Performance Criteria	Acceptable Solution	Application	Compliant
		non-combustible material or bush fire-resisting timber (see Appendix F AS 3959); ■ unobstructed access is provided at all times; ■ tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and ■ underground tanks are clearly marked; ■ all exposed water pipes external to the building are metal, including any fittings; ■ where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; Any hose and reel for firefighting connected to the pump shall be 19 mm internal diameter; and ■ fire hose reels are constructed in accordance with AS/NZS 1221:1997 Fire hose reels, and installed in accordance with the relevant clauses of AS 2441:2005 Installation of fire hose reels.		
Electricity Services	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.	Existing electrical services are above ground. Where possible, new electrical services will be underground.	Yes
		Where overhead, electrical transmission lines are proposed as follow: ■ lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and ■ no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3	Existing electrical services are above ground. Where possible, new electrical services will be underground and meet the acceptable solutions.	Yes



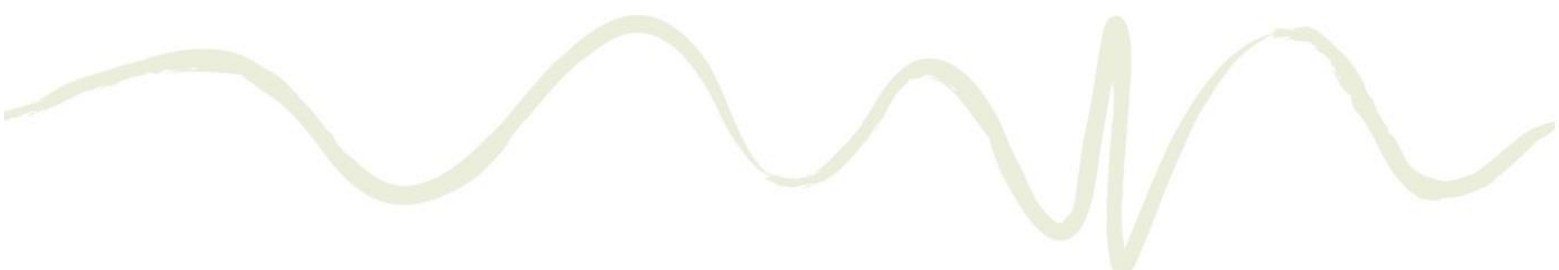
Service Component	Performance Criteria	Acceptable Solution	Application	Compliant
		<i>Guideline for Managing Vegetation Near Power Lines.</i>		
Gas Services	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used.	Bottled gas will be installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping will be used.	Yes
		All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side.	All fixed gas cylinders will be kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side.	Yes
		Connections to and from gas cylinders are metal.	Connections to and from gas cylinders will be metal.	Yes
		If gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2 m away from any combustible material, so they do not act as a catalyst to combustion.	Safety valves will be directed away from each building and at least 2 m away from any combustible material.	Yes
		Polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.	No polymer-sheathed flexible gas supply lines will be used.	Yes
		Above-ground gas service pipes external to the building are metal, including and up to any outlets.	Above-ground gas service pipes external to each building will be metal, including and up to any outlets.	Yes

3.2.6 Emergency Management Planning

A Bushfire Emergency Management and Evacuation Plan prepared in accordance with Section 6.8.4 (Emergency Management Planning) of PBP 2019 will be prepared for the site. The Bushfire Emergency Management and Evacuation Plan will then be approved by the relevant authority in accordance with the RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* and AS 3745:2010. The plan should be regularly monitored and amended when required and details of its contents included during induction of new staff members. Detailed plans of all emergency assembly areas including on and offsite arrangements as stated in AS 3745-2010 should be clearly displayed and an annual trial emergency evacuation conducted. **Table 3.10** assesses compliance against the acceptable solutions of PBP 2019 relating to emergency management plans.

Table 3.10 Assessment of Emergency Management Compliance with Table 6.8d of PBP 2019

Performance Criteria	Acceptable Solution	Application	Compliant with Acceptable Solution
Bush Fire Emergency Management and Evacuation Plan is prepared.	<i>Caravan and camping grounds variation:</i> A Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: ■ The NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i>; ■ Australian Standard AS 3745:2010 Planning for emergencies in facilities.	A Bushfire Emergency Management Plan will be prepared for the site.	Yes
	The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.	The plan will include a mechanism for the early relocation of occupants.	Yes
Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan.	An Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual.	An Emergency Planning Committee comprising staff and residents will be formed to prepare and implement an Emergency Procedures Manual upon redevelopment.	Yes
	Detailed plans of all emergency assembly areas including on-site and off-site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted.	Emergency assembly areas will be clearly displayed. Annual emergency evacuation trials will be conducted.	Yes



4. Recommendations and Conclusion

4.1 Recommendations

It is recommended that the following bushfire protection measures are applied to the proposed development and be included in the conditions of approval:

- The area south and east of the proposed lots for a distance of 25 m are to be maintained as an APZ.
- Landscaping be in accordance with Appendix 4 of PBP 2019.
- All lots within the expansion be constructed to BAL-29.
- Access is to be in accordance with Section 6.8.2 of PBP 2019.
- Water, gas and electrical services be installed in accordance with Section 6.8.3 of PBP 2019
- A Bushfire Emergency Management and Evacuation Plan be prepared in accordance with Section 6.8.4 (Emergency Management Planning) of PBP 2019 for the site.

4.2 Conclusion

This Bushfire Hazard Assessment has taken into consideration the design of the approved and modified expansion, existing vegetation, effective slope, local bushfire risk conditions and Fire Danger Index detailed within Planning for Bushfire Fire Protection 2019. Adequate and appropriate bushfire hazard protection measures are available, and can be implemented, to facilitate the expansion at The Pines Caravan Park, Lot 106 DP1144462, 8 Hearn's Lake Road, Woolgoolga. The proposed development achieves the deemed-to-satisfy criteria and complies with the aims and objectives of Planning for bushfire Protection.

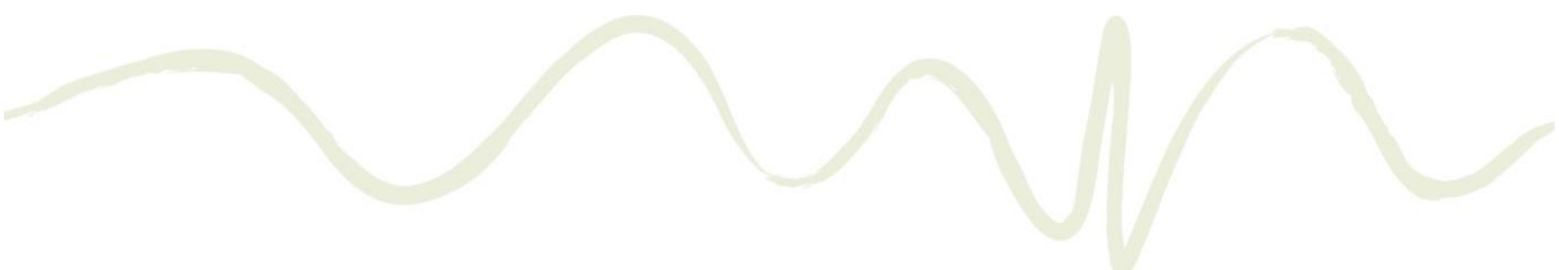
Prepared by:



Veronica Silver

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Grad. Dip (Bushfire Protection),
Grad. Dip (UrbRegPlan)
BPAD-L2 16289

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References

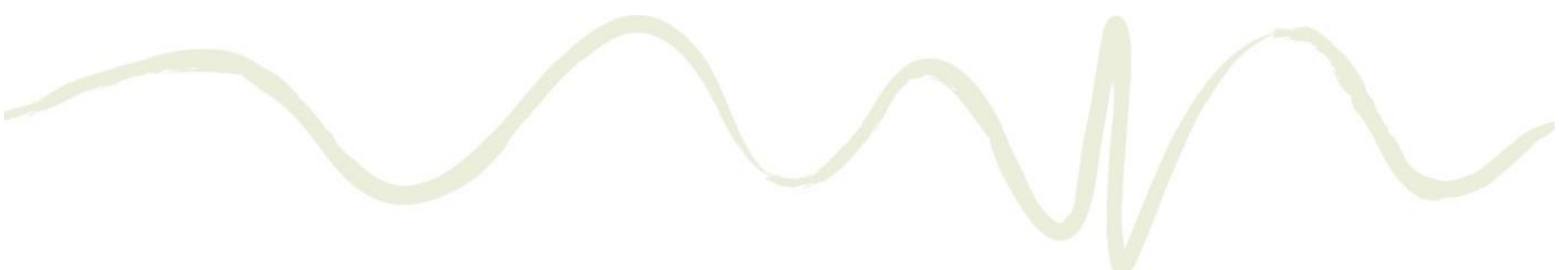
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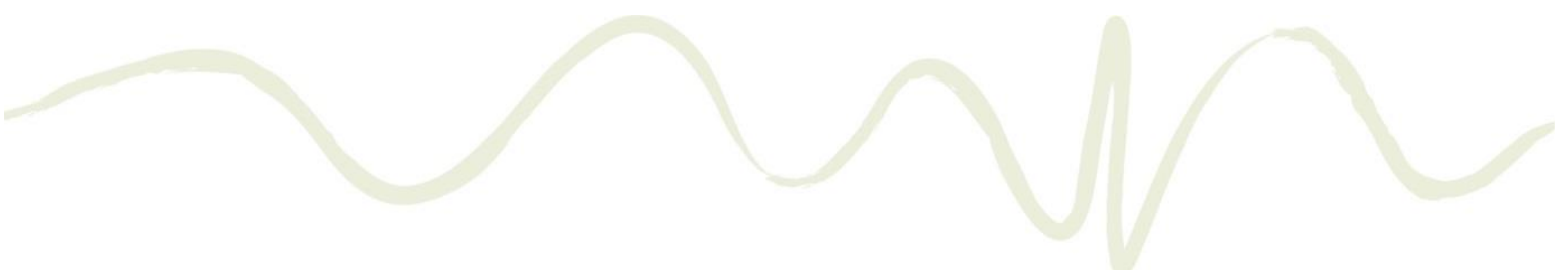
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Appendix A

Proposed Plans



REVISION		DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	 ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.  SCALE 1:400@A1	PROJECT	DRAWING TITLE	JOB NUMBER	
1		ISSUED FOR INFORMATION	JL		BB	15.05.20	 THE PINES WOOLGOOLGA	 NORTHROP Newcastle Level 1, 215 Pacific Hwy, Charlestown NSW 2280 Ph (02) 4943 1777 Email newcastle@northrop.com.au ABN 81 094 433 100		THE PINES 8 HEARNES LAKE ROAD WOOLGOOLGA, NSW 2456	CIVIL ENGINEERING PACKAGE	NL080035	
A		ISSUED FOR TENDER	JL	AB	BB	28.08.20							
							DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD			SITE AND SETOUT PLAN	DRAWING NUMBER C04.00	REVISION A
											DRAWING SHEET SIZE = A1		



NOT FOR CONSTRUCTION

NOTE: THE ENTIRE PLUMBING INSTALLATION IS TO COMPLY WITH THE FULL REQUIREMENTS OF THE LOCAL REGULATORY AUTHORITY, A.S.3500 AND THE PLUMBING AND THE BUILDING CODES OF AUSTRALIA.

NOTE: THE CONTRACTOR IS TO ENSURE TO ALL EXISTING PIPEWORK TO REMAIN STAYS OPERATIONAL.

EXISTING WATER AND FIRE SERVICE LEVELS TO BE ADJUSTED TO SUIT THE NEW FSL. LOCATE, EXCAVATE AND VERIFY THE SUITABILITY FOR REUSE OR REPLACE PIPEWORK AS NECESSARY. COORDINATE ON SITE WITH SUPERINTENDENT AND TO COMPLY WITH AS 3500.1

APPROXIMATE LOCATION OF THE EXISTING POTABLE WATER SERVICE. INVESTIGATE, LOCATE AND VERIFY THE PIPE SIZE AND MATERIAL. MAKE CONNECTION AND EXTEND PIPELINE AS NECESSARY TO SERVICE FIRE HOSE REELS AND NEW LOTS. COORDINATE WITH THE SITE SUPERINTENDENT TO DETERMINE POINT OF CONNECTION.

APPROXIMATE LOCATION OF EXISTING FIRE SERVICE. LOCATE, EXCAVATE AND MAKE CONNECTION TO EXISTING FIRE SERVICE PIPE. EXTEND PIPELINE AS NECESSARY TO SERVICE NEW AND EXISTING FIRE HYDRANTS. COORDINATE WITH SITE SUPERINTENDENT TO DETERMINE PIPE POINT OF CONNECTION.

IN-GROUND PIPELINES ARE TO BE INSTALLED IN ROAD VERGE. COORDINATE EXACT LOCATION WITH SITE SUPERINTENDENT. (TYPICAL)

SUPPLY AND INSTALL A DOUBLE PILLAR HYDRANT TO AS 2419. REFER TO THE INSTALLATION DETAIL ON H-04.

SUPPLY AND INSTALL GALVANISED STEEL, CONCRETE FILLED PROTECTION BOLLARDS AT THE FRONT OF THE DOUBLE PILLAR HYDRANT. LOCATION OF BOLLARDS IS NOT TO IMPEDE THE OPERATION OF THE DUAL HYDRANT. (TYPICAL)

SUPPLY INSTALL ISOLATION VALVES. ISOLATION VALVES, INSTALLATION TO COMPLY WITH AS 2419 AND AS 3500.1. TO BE INSTALLED IN A CAST IRON BOX WITH HINGED LID AT SURFACE LEVEL. (TYPICAL)

IN-GROUND WATER SUPPLY PIPELINES ARE TO BE INSTALLED WITH A MINIMUM OF 450mm COVER AND ENCASED IN CLEAN FILL SAND WITH DETECTABLE MARKER TAPE LAID OVER. (TYPICAL)

SUPPLY AND INSTALL 20mm SUPPLY PIPES TO INDIVIDUAL LOTS. EACH LOT MUST BE PROVIDED WITH A 20mm SUB-METER AT THE JUNCTION OF EACH LOTS FRONT OR SIDE BOUNDARIES. EXACT LOCATION TO BE CONFIRMED BY SITE SUPERINTENDENT. (TYPICAL)

SUPPLY AND INSTALL A 36m FIRE HOSE REEL TO AS 2441 AND AS 1221. REFER TO THE INSTALLATION DETAIL ON H-04. (TYPICAL)

IN-GROUND WATER AND FIRE HYDRANT PIPELINES ARE TO BE INSTALLED WITH A MINIMUM OF 600mm COVER AND ENCASED IN CLEAN FILL SAND WITH DETECTABLE MARKER TAPE LAID OVER. (TYPICAL)

APPROXIMATE LOCATION OF THE EXISTING FIRE HOSE REEL TO REMAIN IN SERVICE.

IN-GROUND PIPELINES ARE TO BE INSTALLED IN ROAD VERGE. COORDINATE THE EXACT LOCATION WITH SITE SUPERINTENDENT. (TYPICAL)

INSTALL THE FIRE SERVICE AND THE POTABLE WATER PIPELINE IN A SHARED TRENCH IN THE ROAD VERGE.

EXISTING DOUBLE PILLAR HYDRANT TO REMAIN IN SERVICE TO BE CONNECTED TO NEW FIRE SERVICE.

EXISTING FIRE SERVICE TO BE MADE REDUNDANT AND REMOVED. COORDINATE THE REMOVAL OF SERVICES WITH SITE SUPERINTENDENT.

25MM WATER SUPPLY PIPE FOR DUAL PROPERTY CONNECTIONS. (TYPICAL).

EXISTING DOUBLE PILLAR HYDRANT TO REMAIN IN SERVICE TO BE CONNECTED TO NEW FIRE SERVICE.

SUPPLY AND INSTALL 100mm CAPPED POINT FOR POTENTIAL FUTURE CONNECTION.

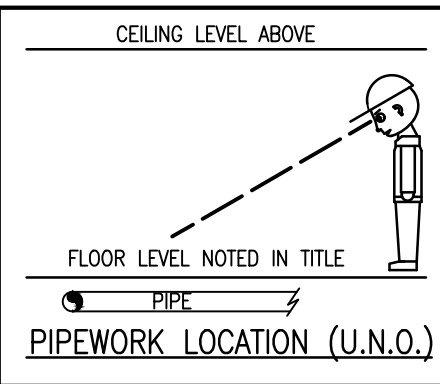
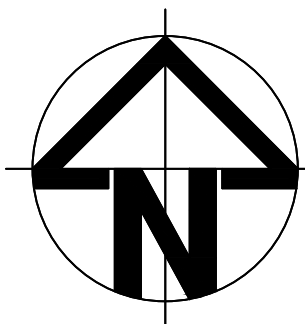
SUPPLY AND INSTALL 20mm VANDAL RESISTANT HOSE TAP 600mm OVER THE OVERFLOW GULLY. REFER TO THE INSTALLATION DETAIL ON H-04.

SUPPLY AND INSTALL 20mm WATER SUPPLY PIPE FOR WET WELL WASHER INCORPORATING A REDUCED PRESSURE ZONE DEVICE.

1:500 @A1
0M 25M 50M 75M

GENERAL NOTES:
1. THE DRAWING ISSUED IS DIAGRAMMATIC. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY. REFER TO ARCHITECTURAL DRAWINGS WHERE APPROPRIATE FOR EXACT LOCATION OF FIXTURES, DUCTS AND THE LIKE. THE DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DOCUMENTS FORMING THE PROJECT DOCUMENTATION PACKAGE.
2. CONFIRM ALL LEVELS AND DIMENSIONS AS ACCURATE ON SITE PRIOR TO INSTALLATION. REPORT ALL DISCREPANCIES TO THE SUPERINTENDENT IMMEDIATELY.
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3	01/07/20	REVISED PRELIMINARY
2	05/06/20	REVISED PRELIMINARY
1	13/05/20	PRELIMINARY



McCALLUM PFCA
PLUMBING & FIRE CONSULTANTS AUSTRALIA

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5/35 Smith Street Charlestown
ACN 098 124 620 ACN 58 098 124 620



ARCHITECT:

CLIENT: HOME TOWN AUSTRALIA

PROJECT: THE PINES WOOLGOOLGA
SITE - HYDRAULIC SERVICES

Drawn

M.PRIETO

Design

T.HUGGINS

Approved

R.McCALLUM

FOR APPROVAL

Scale

1:500

Job No.

4084-1219F

DRG. No.

H-02

Size

A1

No. in Set

4

Revision

4