

**BOLGERS PIT**  
809 OAKY CREEK ROAD, PIALLOWAY  
LOT 139 DP 751012



# BUSH FIRE ASSESSMENT REPORT

DATE: 24 FEBURARY 2023

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Gunnedah Shire Council

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This Bushfire Assessment Report has been prepared by our office to accompany a council application. To the best of our knowledge, the content of this statement is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

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## **LIST OF ABBREVIATIONS**

Abbreviation	Meaning
APZ	ASSET PROTECTION ZONE
AS3959:2018	CONSTRUCTION OF BUILDINGS IN BUSHFIRE PRONE AREAS
BAL	BUSHFIRE ATTACK LEVEL
EP&A ACT	ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1997
EIS	ENVIRONMENTAL IMPACT STATEMENT/ASSESSMENT
FFDI	FIRE DANGER INDEX
GUIDELINE	<i>NSW RURAL FIRE SERVICE, NOVEMBER 2019, PLANNING FOR BUSH FIRE PROTECTION: A GUIDE FOR COUNCIL, PLANNERS, FIRE AUTHORITIES AND DEVELOPERS, NSW RURAL FIRE SERVICE.</i>
IPA	INNER PROTECTION AREA
LGA	LOCAL GOVERNMENT AREA
NCC	NATIONAL CONSTRUCTION CODE
RF ACT	RURAL FIRE ACT
SFPP	SPECIAL FIRE PROTECTION PURPOSE DEVELOPMENT

## 1. INTRODUCTION

---

This report has been prepared by Stewart Surveys for the Gunnedah Shire Council. The site which is referred to as the Bolgers Pit is located at 809 Oakey Creek Road, Piallaway, Lot 139 DP 751012.

The objectives of the report are to:

- Detail the assessment of the site in relation to bushfire hazard and attack;
- Address the relevant requirements of Planning for Bushfire Protection (Rural Fire Service, 2019);
- Identify if the development complies with the aims and objectives of Planning for Bushfire Protection (RFS, 2019);
- Prepare a report that supplies the relevant information for the Rural Fire Service and Council prior to granting a development consent.

The subject site has been identified as Bushfire Prone Land in the Gunnedah LGA.

The purpose of this report is to assess the bushfire risk to the proposed development and to determine the appropriate bushfire protection measures for the development, while having regard to the development potential, site characteristics and protection of the environment. This report draws on the requirements of the NSW Rural Fire Service outlined in the following publication:

*NSW Rural Fire Service, November 2019, Planning for bush fire protection: A guide for Council, Planners, Fire Authorities and Developers, NSW Rural Fire Service.*

This document is hereby referred to in this report as **the guideline**. There are no specific requirements for Pit development under the planning for bushfire protection guidelines, 2019.

### 1.1 PROPERTY DESCRIPTION AND TYPE OF DEVELOPMENT

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<b>Application Name:</b>	Gunnedah Shire Council
<b>Property Address:</b>	809 Oakey Creek Road, Piallaway
<b>Local Government Area:</b>	Gunnedah
<b>Title Description:</b>	Lot 139 DP 751012
<b>Zoning:</b>	RU1 Primary Production
<b>Type of Development:</b>	Extractive Industry

Plans attached to this report describe the proposed development.

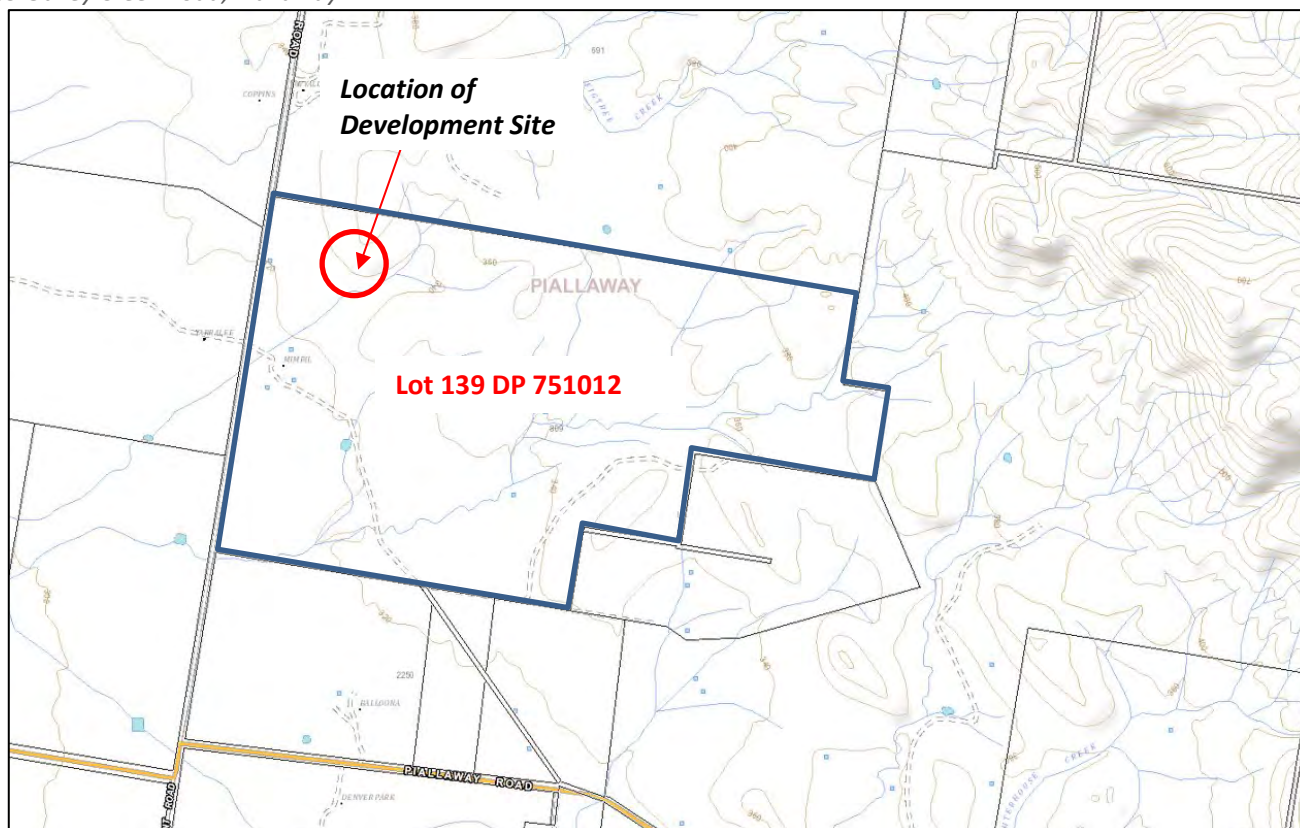
### 1.2 SUBJECT SITE:

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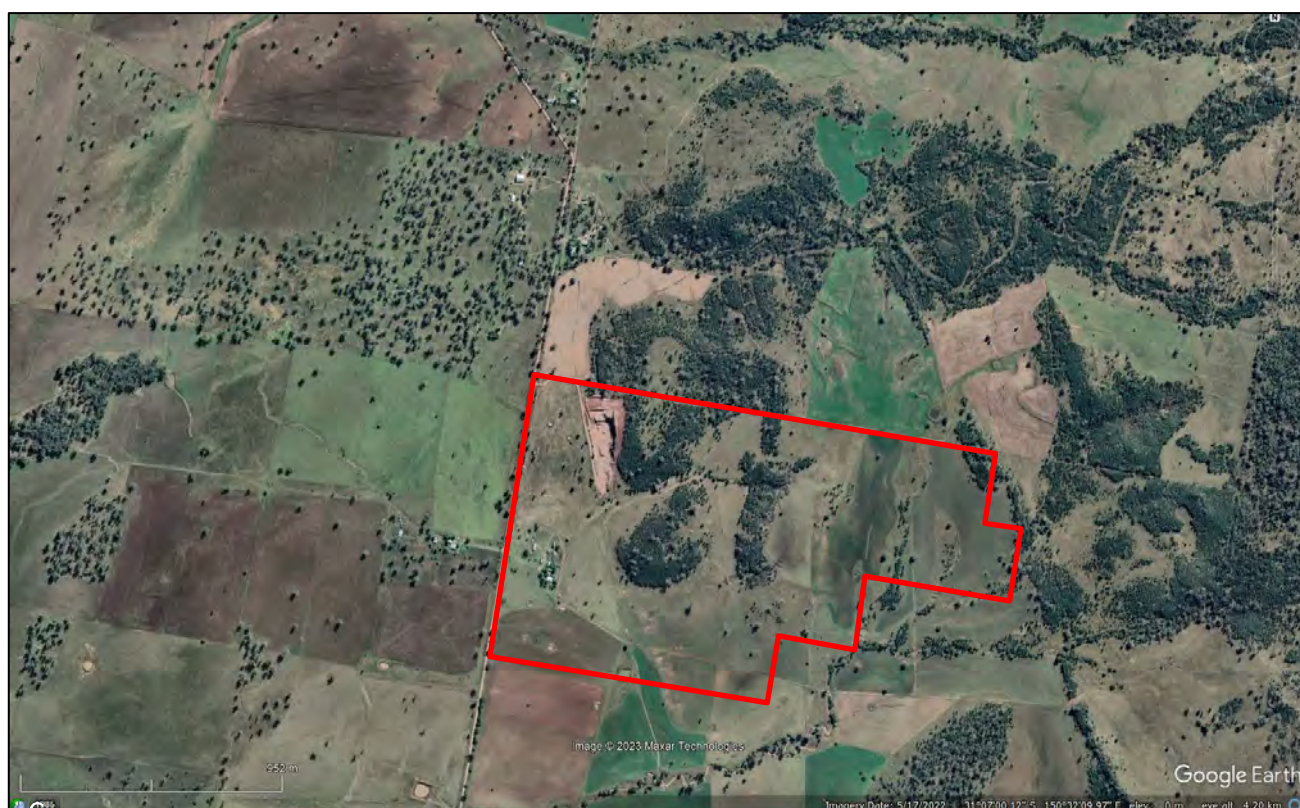
The property is located at 809 Oakey Creek Road, Piallaway, approximately 32km to the south-east of the Gunnedah township. The existing disturbed Pit has an area of 3.4 hectares.

**Figure 1** shows the Pit location in relation to the property boundary on the Topographic map and **Figure 2** shows the site on the aerial photograph in context with the surrounding area.





**Figure 1: Property Context on Aerial Photo**



**Figure 2: Aerial Photo of the site (Google Earth)**

Bolger's Pit is one of Gunnedah Shire Council's largest 'borrow pits' and is utilised for making material for the ongoing maintenance and upgrading of the extensive road network throughout Gunnedah.



The nearest residential locality to the site is located at Breeza, which is 18km away to the south west of the Project Site. The Pit is surrounded by cleared open woodland used for cropping and grazing to the north, west and to the south. Immediately to the east are timbered undulating to rolling hills flanking the spine of the Melville Ranges. (Outline Planning Consultants, 2023).

There are four (4) rural dwellings located within 1km of the Pit . The Pit is reasonably removed from nearby rural dwellings not associated with the Pit. The land which is proposed for expansion is already cleared land and is a lateral expansion to the east.

The “Mimbil” residence is on the subject site and considered project related. However, does not form part of this application as the landowner leases the Pit to Gunnedah Shire Council.

The aerial photos in **Figure 2** show the character of the property and vegetation. Access to the property is via Oakey Creek Road, a local road. Oakey Creek Road joins to the regional link Clifton Road which connects localities of Breeza to the south to Carroll to the North. There is no change to the existing access arrangements as part of this development. The site photos in **Figure 3** show the Pit character.



**Figure 3: Site Photos of Bolgers Pit and Proposed Expansion**



## 2. LEGAL FRAMEWORK

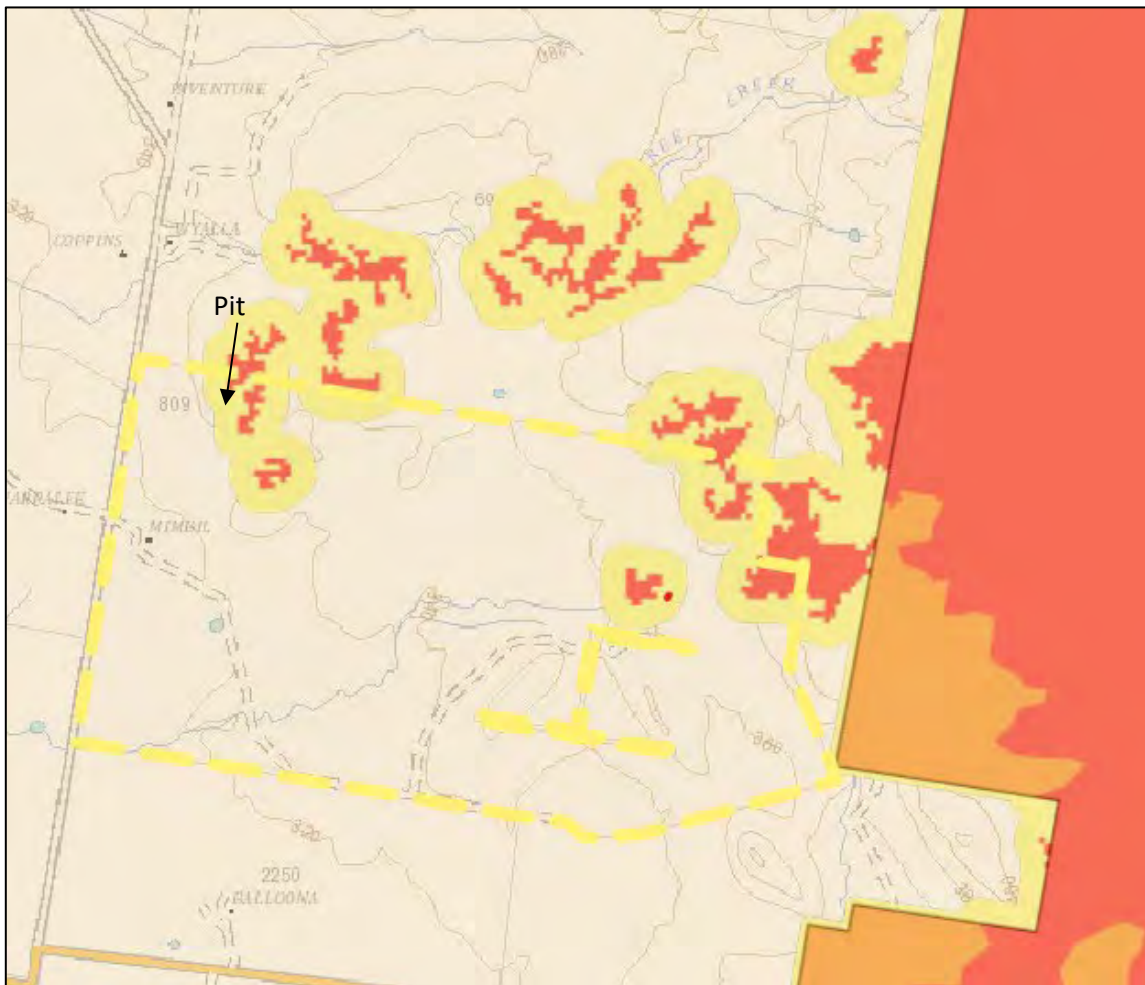
The proposed development site has been mapped a bushfire prone land in Gunnedah Shire. Figure 4: Bushfire Prone Land Mapping (EPlanning) **Figure 4** and **Figure 5** shows the proposed development areas on the bushfire prone land map.

The Environmental Planning and Assessment Act 1997 (EP&A Act) and the Rural Fires Act 1997 (RF Act) provides the legal framework for development assessments on bushfire prone land in NSW. Under the RF Act clause 100B only development applications for subdivision, special fire protection purpose development or residential development require referral to the RFS. The proposed development is an extractive industry and does not fit one of these categories. Therefore, we do not believe the development requires referral to the RFS.

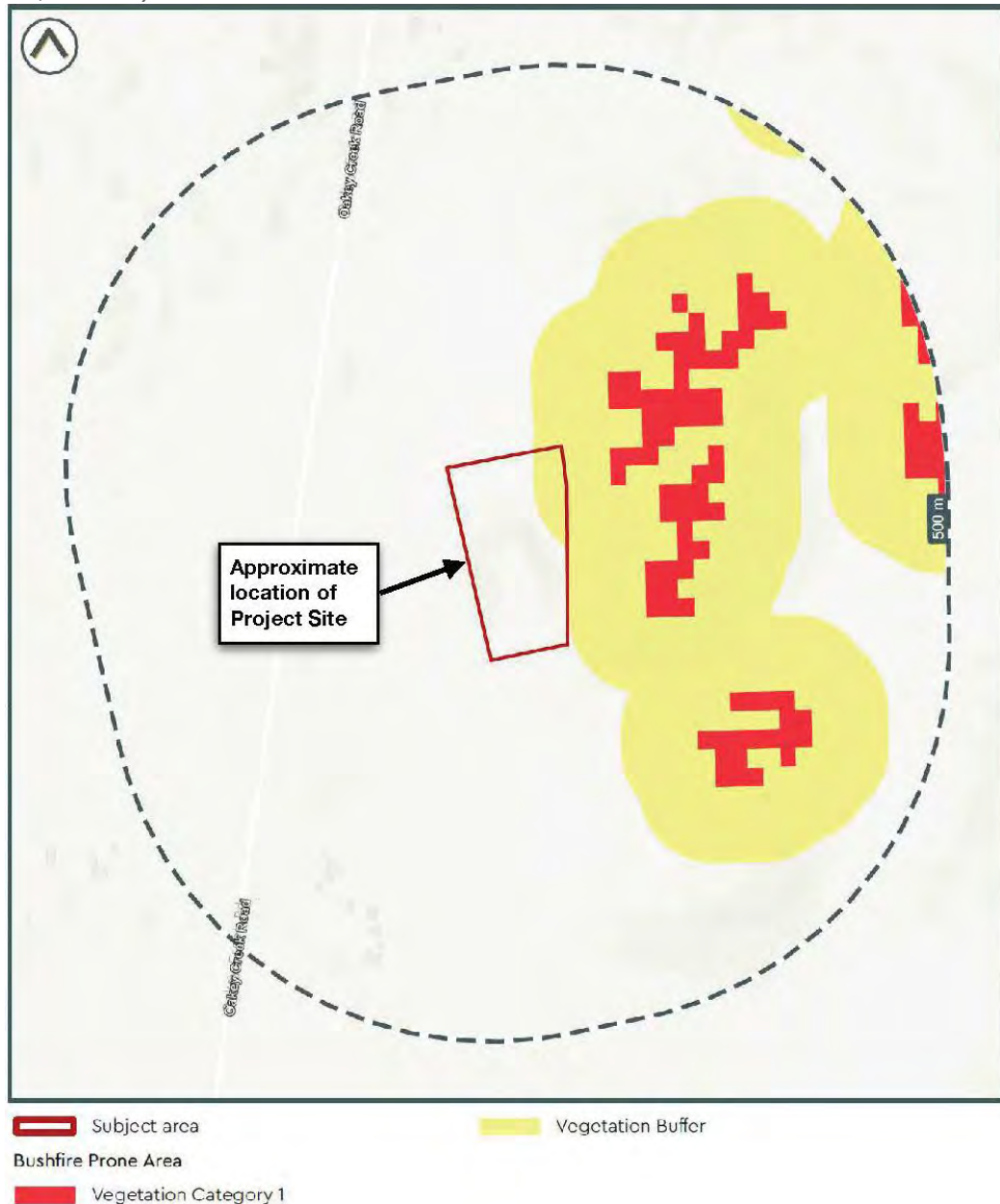
It is recommended that this development be forwarded to the RFS for review and comment.

In recognition of the fire risk at the site we have assessed the project against the planning for bushfire protection guideline, which provide the foundation for the application of bush fire protection measures which are appropriate to the bush fire hazard at a site.

There are no existing buildings associated with this development and no proposed buildings as part of this application. In the future, if buildings are proposed they must comply with the National Construction Code (NCC) and *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas, or the National Association of Steel framed housing (2014) Steel framed construction in Bushfire Prone Areas.*



**Figure 4: Bushfire Prone Land Mapping (EPlanning)**



**Figure 5: Bushfire Prone Land in relation to Pit footprint (Ballpark Environmental)**

### 3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development will enable a source of road base for Gunnedah Shire Council Road works, and the proposed development seeks approval for the following:

- A continuation of pitting the resource from the project site.
- A lateral expansion of the existing Pit footprint, enabling a continuation of the extraction and production of a range of road construction materials for the Pit.
- The project site, including the land proposed for lateral extension, will have an area of approximately 2.71 hectares.
- Rate of extraction limited to 40,000 tonnes per annum.

The proposed development is fully described in the Outline Planning Consultants EIS.



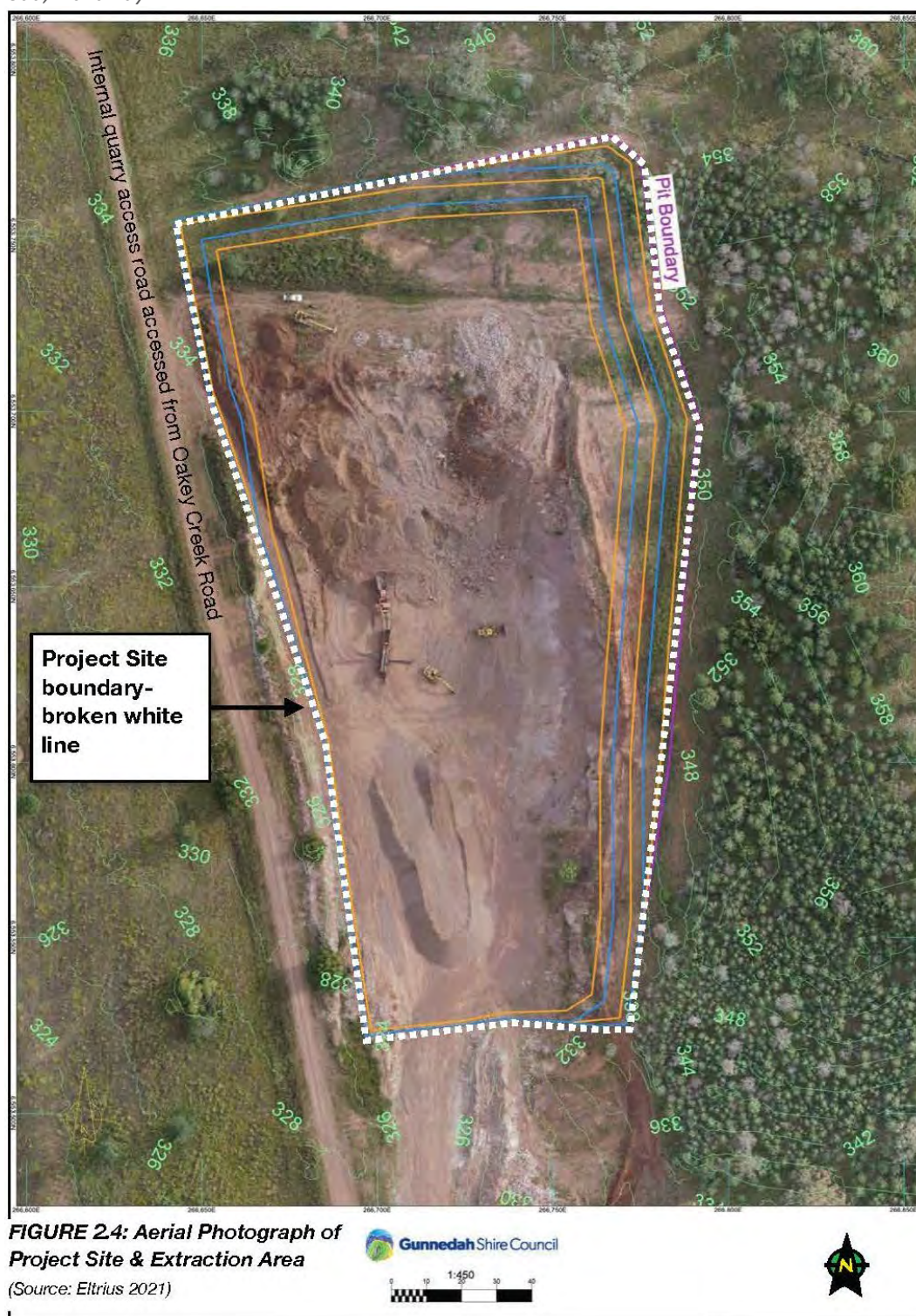


Figure 6: Aerial Photo of Project site and extraction area (Eltrius 2021)

### 3.1 THREATENED SPECIES

There is no clearing associated with this development, and therefore no critical habitat or threatened species impacts.

### 3.2 ABORIGINAL OBJECTS OR PLACES

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Niche Environmental and Heritage have conducted an Aboriginal Due Diligence Survey as part of the EIS for this development. They have not identified any Aboriginal objects or places within the development footprint.

## 4. BUSFIRE THREAT ASSESSMENT

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This assessment applies to the proposed development outlined in section 3 of this report and surrounding land might contribute to a potential bushfire risk at the site.

The assessment includes review of the slope of the site and existing vegetation cover around the infrastructure areas to calculate the required asset protection zone.

All of the project site is cleared of vegetation. There is forest or woodland vegetation along the project boundary to the east and north of the Pit. There is grassland vegetation to the south and west of the Pit. Beyond the immediate project area, the property contains areas of forest, woodland and open grassland vegetation. Not all part of the property are identified as bushfire prone as shown in **Figure 4**.

The document planning for Bush Fire Protection, 2019 defines bush fire prone area as:

*“an area of land that can support bush fire or is likely to be subject to bush fire attack, as designated on a bushfire prone land map.”*

The forest vegetation joining the eastern boundary of the project area warrants bush fire attack consideration.

In accordance with the guidelines this report aims to provide recommendations to minimise impacts on property from the threat of bush fire, while having due regard to development potential, onsite amenity and protection of the environment.

The report places emphasis on the following:

- Provision of safe operational access to the property so occupants leaving, and fire fighters/rescuers accessing the property can do so in relative safety.
- The provision of adequate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.
- Provide defensible spaces around buildings to afford occupants adequate protection from exposure to bush fire;
- Recommend ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zones (APZ) and
- Ensure utility services are adequate to meet the needs of fire fighters.

The guidelines require an assessment of the slope of the land over a distance of at least 100 metres in all directions from the building line, in this case the Pit and the class of vegetation within the site. These aspects are outlined in section 4.1 to 4.4 of this report.

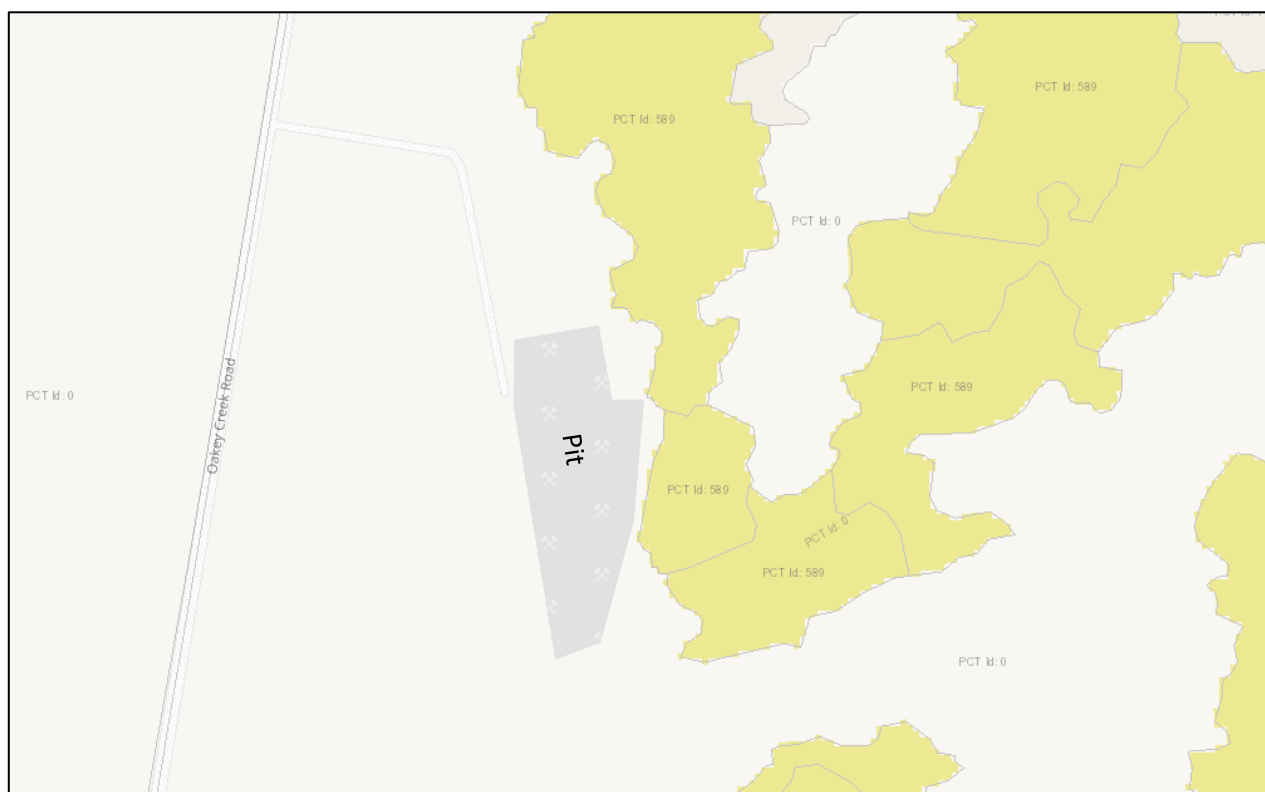
## 4.1 VEGETATION ASSESSMENT

The timbered vegetation on the site is White Box - White Cypress Pine - Silver-leaved Ironbark grassy woodland on mainly clay loam soils on hills mainly in the Nandewar Bioregion.

A site assessment was carried out by Kathryn Stewart, Registered Landscape Architect with a Masters in Environmental Management on 22<sup>nd</sup> February 2023. This assessment covered the development site and an area 140 metres outside the development site. The vegetation has been assessed both on the ground and by utilising desktop analysis of SEED Plant Community Type (PCT) mapping. We have determined the site vegetation meets the plant community types outlined in **Table 1** and distribution shown in **Figure 7**.

**Table 1: Vegetation Site Assessment**

Regional Vegetation Community	Keith Vegetation Class	Vegetation cover percentage
PCT White Box - White Cypress Pine - Silver-leaved Ironbark grassy woodland on mainly clay loam soils on hills mainly in the Nandewar Bioregion	Western Slopes Grassy Woodland	Areas up to 80% along eastern boundary of the site



**Figure 7: Plant Community Type (PCT) Mapping**

The vegetation classification for an area of 140 metres from each development is described in **Table 2** and **Figure 8** to **Figure 10** show typical photos of the vegetation in each development area.

**Table 2: Vegetation Classification**

Development Name	Vegetation Classification 140m from development
Bolgers Pit Expansion	
East	<i>Forest</i>
West	<i>Grasslands</i>
North	<i>Grassy Woodlands</i>
South	<i>Grasslands</i>





**Figure 8: Forest Vegetation East of Pit (Stewart Surveys)**



**Figure 9: Woodland Vegetation North of the Pit (Stewart Surveys)**





**Figure 10: Grassland Vegetation West and South of the Pit (Stewart Surveys)**

## 4.2 SLOPE ASSESSMENT

A slope analysis has been undertaken and determined in review of site data gathered using site survey and topographical map Piallaway (9035-4s) 1:25,000 2017 edition GeoPDF.

The topography surrounding the Pit can be described as evenly sloping from the hill landscape behind the Pit to Oakey Creek Road. The level at the rear of the Pit is approximately 350 metres AHD. The level at Oakey Creek Road is approximately 318 metres AHD providing a height range of around 32 metres with land falling to the west into an unnamed tributary. **Table 3** shows the slope calculations for an area of 100 metres around each development site and **Figure 11** is the topography of the site showing the slope of the land.

The topography within the Pit is undulating to moderate with slopes steep slopes on the highwall to the east. The Pit floor slopes in a southerly direction from about RL340m to RL325m. The topography of the site in the Pit location is comply modified influenced by past Pit activities.

**Figure 11** is the topographic map and **Figure 12** shows our slope analysis on the site survey.

**Table 3: Slope Analysis**

Direction from Pit	Adopted slope 100m from development
East	Upslope
West	Downslope >5° – 10°

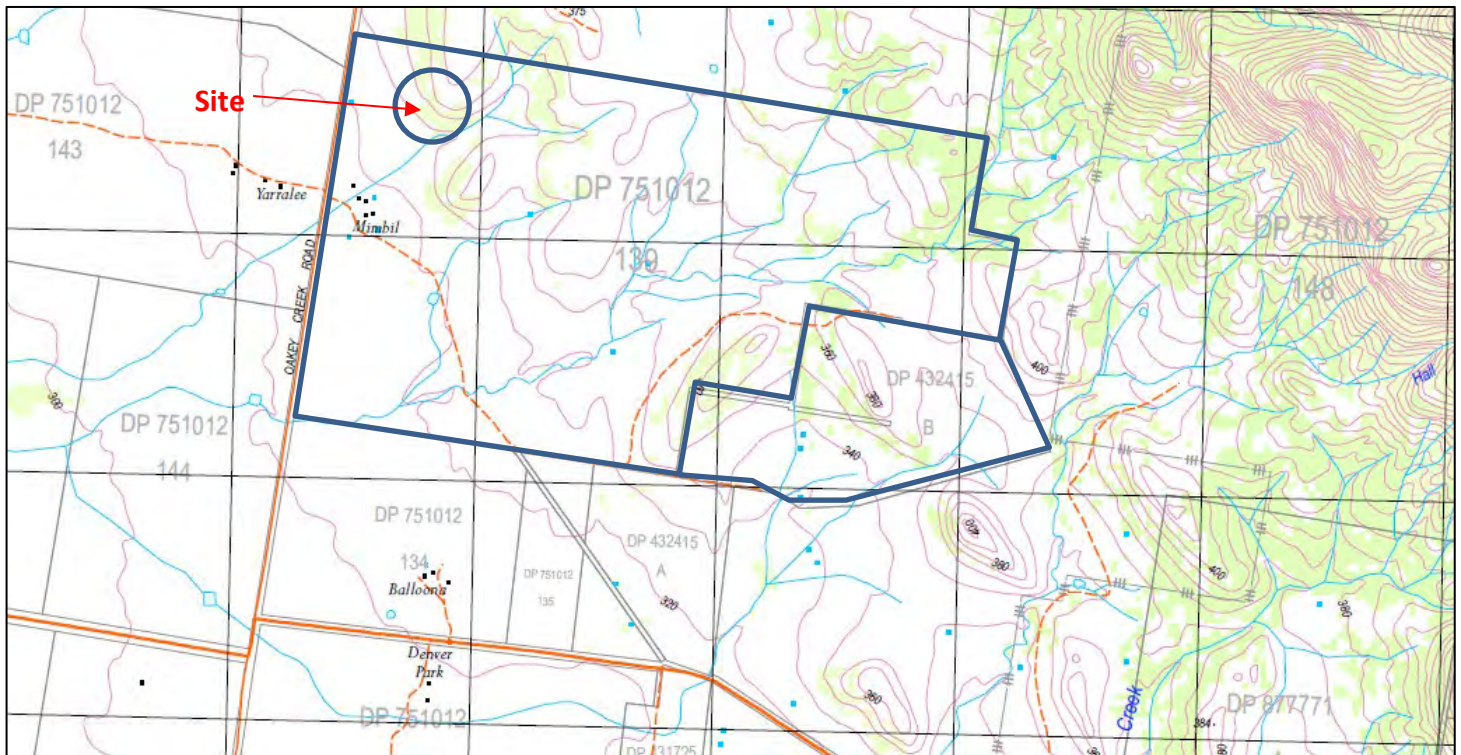


Figure 11: Site on Piallaway (9035-4S) Topographic Maps





Figure 12: Slope Analysis on Survey (Stewart Surveys)



### 4.3 FIRE DANGER INDEX

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The subject site is located in the Gunnedah Shire Council local government area. The guideline specifies a relevant fire danger index (FDI) based on Local Government areas and the relevant index for Gunnedah Shire is 80.

### 4.4 ASSET PROTECTION ZONE DETERMINATIONS

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The Asset Protection Zone (APZ) is the buffer zone between the bushfire hazard and the development, usually buildings but in this case the Pit highwall and western edge. The APZ is designed to minimise the presence of fuels potential radiant heat, flame, smoke and ember attack, which could become involved in a fire. The APZ is calculated using the vegetation type, slope and nature of the development. APZ distances are for residential buildings and should be used as a guide. As outlined previously the development does not require approval of an APZ but it is recommended for best practice given the bushfire threat at the subject site.

The APZ calculations for the site are outlined in **Table 4**.

**Table 4: Bolgers Pit APZ**

Direction from Bolgers Pit	Vegetation Type	Upslope APZ	Downslope APZ
East	Forest	20m	
West	Grasslands		12m (based on 5°)

## 5. BUSHFIRE PROTECTION MEASURES FOR BOLGER PIT

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The proposed development responds to the objectives of the guideline in the following ways:

- The development will not result in any greater number of buildings exposed to bushfire hazard
- There are no proposed vegetation corridors
- The APZs will be actively managed by the Pit operators and land owners. The APZ is completely within the property and the development will not result in any increased bush fire management and maintenance responsibilities of adjoining land holder.
- The property is accessible from Oakey Creek Road and internal property tracks. Internal access tracks will be maintained in accordance with the guideline.
- The property is service by onsite water storage tanks at the residence. Additional water storage and fire fighting equipment is recommended at the Pit.

The following section outlines the access, services and bushfire management and emergency evacuation plan details at Bolger's Pit.

### 5.1 ASSET PROTECTION ZONE

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The existing Pit provides a cleared area at the rear of the high wall (eastern side) of 37 metres in the northern section of the Pit and 10 metres in the southern section. This driveable section is cleared of vegetation and provides an asset protection zone. It is recommended that this zone be increased to 20 metres wide and extended to the east as the Pit operations progress east to maintain an asset protection zone distance of 20 metres.

**Figure 13** shows the existing character of this area.



**Figure 13: Site Photograph of existing APZ along eastern boundary of Pit**

Along the western boundary of the Pit there is a topsoil storage bund and formed access road. The overall width of this zone is between 15 and 25 metres from the Pit wall. This zone provided the recommended asset protection zone.

**Table 8** outlines the suggested maintenance requirements within the Asset protection zone.

**Table 5: Maintenance of APZ**

Maintenance requirements	
<b>TREES</b>	<ul style="list-style-type: none"> <li>• tree canopy cover should be less than 15% at maturity;</li> <li>• trees at maturity should not touch or overhang the building;</li> <li>• lower limbs should be removed up to a height of 2m above the ground;</li> <li>• tree canopies should be separated by 2 to 5m; and</li> <li>• preference should be given to smooth barked and evergreen trees.</li> </ul>
<b>SHRUBS</b>	<ul style="list-style-type: none"> <li>• create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings;</li> <li>• shrubs should not be located under trees;</li> <li>• shrubs should not form more than 10% ground cover; and</li> <li>• clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.</li> </ul>



GRASS

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

## 5.2 ACCESS

Access roads are to be provided to enable safe access and egress for both operators attempting to leave the area and emergency service personnel arriving at the site to undertake firefighting operations.

The subject site is accessed from Oakey Creek Road, with egress availability to the south to Breeza or the north to Carroll. Oakey Creek Road is a gravel road with a speed limit of 100 kilometres an hour across the site frontage. This road is a local road providing access to properties in this locality. It has good sight lines in both directions. The property entry is signposted for easy identification. **Figure 14** shows site photographs of the access driveway.



**Figure 14: Property access from Oakey Creek Road**

There are no bridge or drainage structures on Oakey Creek Road which would prevent the load of fire engine access to the site.

The internal property access is of gravel construction. The access road is in good condition and would provide all weather access to the site. Generally, this road is formed to a width of 4 metres. However, unobstructed vehicle movement is available up to a width of 8 metres along the Pit access road. There is a looped route through the Pit and at the end of the access road is a car parking area, which provides space for truck turning. **Figure 15** is site photographs showing the character of the internal access road.



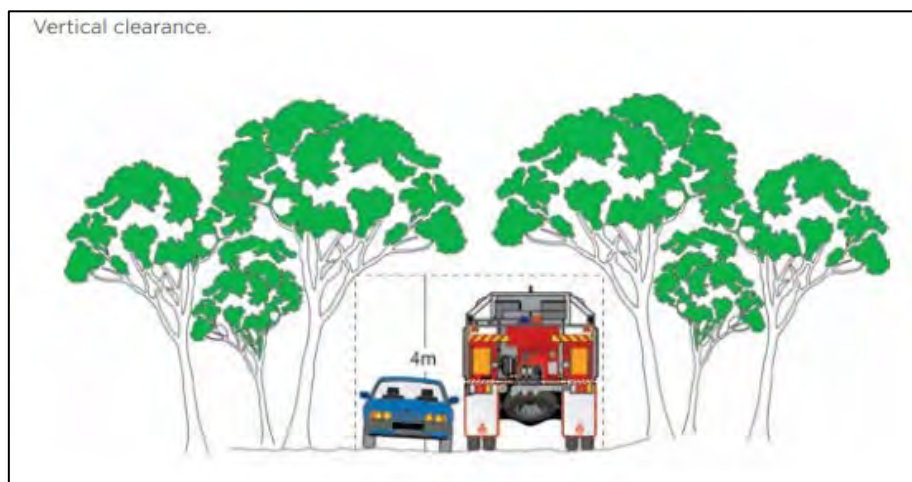
**Figure 15: Internal Access Road**

There is currently vehicle access around the whole Pit, however as the Pit expands, access across the eastern boundary will be consumed in the development footprint. The Pit is 200 metres from Oakey Creek Road and the existing access and internal roads are considered to meet Appendix 3 of the guideline outlines the requirements for emergency services vehicle access to the property.

Throughout the life of the development the access should be maintained to provide vehicle clearance and turning as outlined in the guideline.

#### Vertical Clearance

The guideline requires a vertical clearance to an unobstructed height of 4 metres above all access ways including clearance from vegetation, archways, gateways and overhanging structures. **Figure 16** shows the minimum vertical clearance requirements.



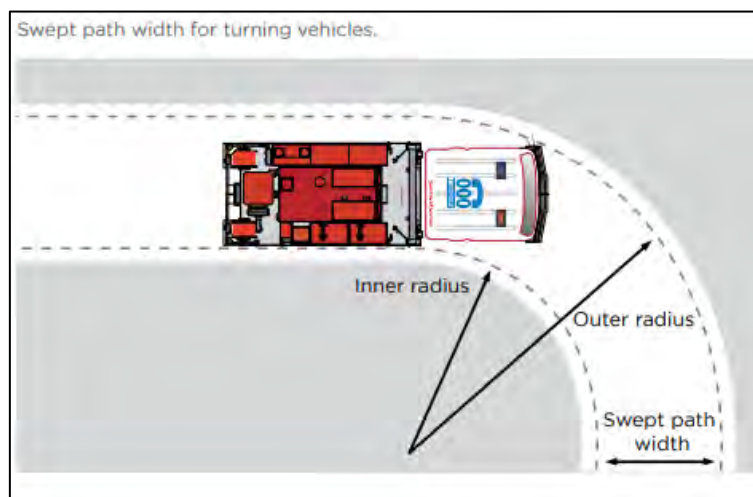
**Figure 16: Vertical Clearance (RFS PBP, 2019)**

#### Vehicle turning requirements

**Table 6** outlines the minimum curve radius for turning vehicles. Carriageways should be constructed using these minimum swept paths and as demonstrated in **Figure 17**.

**Table 6: Minimum Swept Path (RFS PBP, 2019)**

Curve Radius (inside edge in metres)	Swept Path (metres width)
<40	4.0
40-69	3.0
70-100	2.7
>100	2.5

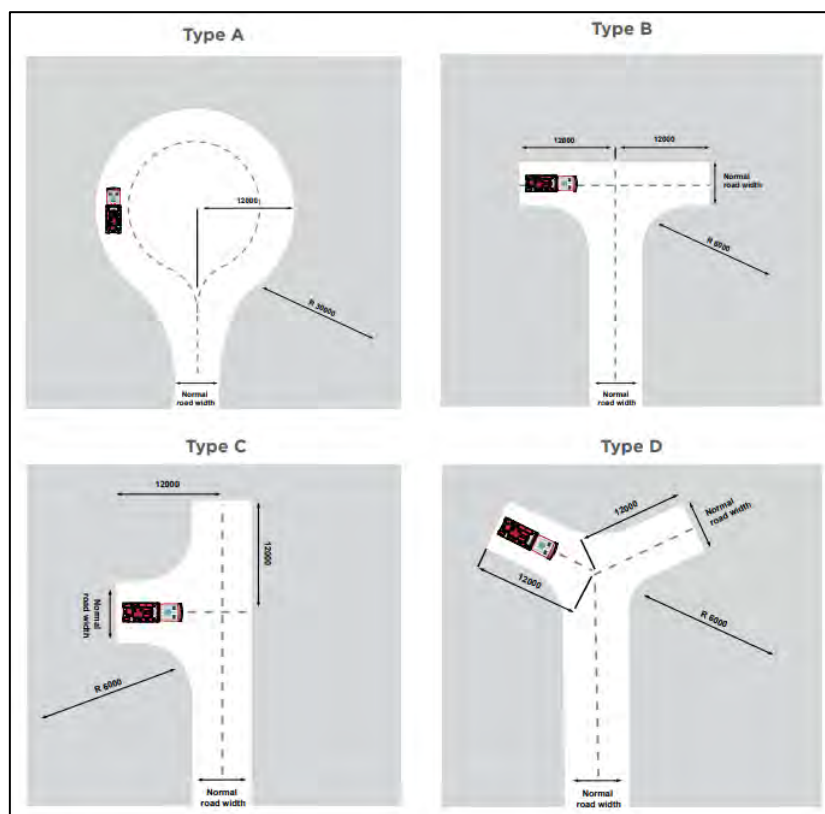


**Figure 17: Swept Path Width for turning vehicles (RFS PBP, 2019)**

#### Vehicle Turning Head Requirements

Dead ends that are longer than 200 metres must be provided with a turning head area that avoids multipoint turns. The turning head is to be maintained as a 'No Parking' areas. The minimum turning radius shall be in accordance with the minimum swept path outlines in

The multi-turning options which the NSW RFS will consider are shown in **Figure 18**.



**Figure 18: Multi-point turning options (RFS PBP, 2019)**



The existing site provisions provide adequate access to the property in accordance with the Guidelines.

### 5.3 SERVICES – WATER, GAS & ELECTRICITY

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This section of the report outlines the provision of adequate services at the development site. An adequate supply of water is essential for fire fighting purposes and the location of gas and electricity needs to be considered and located so as not to contribute to the risk of fire or impeded firefighting efforts.

The subject site is not located in a reticulated water service area. The guideline requires a minimum of 20,000 litres of water storage for bushfire fighting purposes at residential dwellings, which are bushfire prone in a non-reticulated water area. The “Mimbil” residence on the subject site does contain these water storage facilities as shown in **Figure 19**. These tanks are approximately 330 metres south of the Pit. There is currently no water storage at the Pit site.



**Figure 19: Water Storage Tanks at the “Mimbil” residence**

Given the development does increase the risk of fire developing at the site from engine fires and there are fuels stored at the site, we recommend that the following measures are undertaken:

- All equipment be fitted with a portable fire extinguisher
- A portable diesel power pump with 19mm fire hose reel and trailer mounted water storage of 2000 liters minimum be kept at the Pit for fire fighting purposes at all times.
- The 20,000L of water storage in tanks at the “Mimbil” Residence be maintained at all times.

There is no gas storage or use at the pit site.

There is no electricity connection at the Pit site. There is an existing overhead electricity line on the property close to Oakey Creek Road. This is located outside the lease area.

With the water storage and fire fighting equipment mentioned above we believe this development adequately mitigates the increased risk of fire generated by the development and provides some means to protect plant in the case of a bush fire.

## 5.4 EMERGENCY MANAGEMENT PLANNING

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Given that the site is visited by a number of plant operators, which can change over time and may result in personnel who are not familiar with the site facilities or location context, it is recommended that a Bushfire Emergency Management and Evacuation Plan be prepared for the site and that this document forms part of the site inductions and tool box talks.

This document should be prepared in accordance with the NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*.

We have prepared a template in accordance with this guideline for the Bolger Pit, for customisation by Gunnedah Shire Council.

A copy of the Bolger Pit Bushfire Emergency Management and Evacuation Plan should be provided to both the Breeza and Carroll Local Emergency Management Committees and reviewed and updated on an annual basis.

## 6. CONCLUSION

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This report is provided at the development application stage for Bolger's Pit. Referral to the NSW Rural Fire Service is not a legislated requirements for this type of development but it is recommended that the report be referred to the RFS for review and comment. Given the site is mapped as bushfire prone land and the activities proposed to be undertaken can increase the risk of bushfire at the locality, we have assessed the site against the Planning for Bushfire Protection guidelines and outlined provisions for development and maintenance of asset protection zones, provision and maintenance of access and provision of adequate water supply for firefighting purposes. The application of these criteria can be implemented with effectiveness and minimal disturbance to the existing environment.

The proposed development is considered to meet the acceptable solutions outlined in the Planning for Bushfire Protection, 2019 Guideline.

The guidelines note that '*no development in a bushfire prone area can be guaranteed to be entirely safe from bushfire*' and therefore the adoption of these recommendations does not guarantee the protection of life and assets in intense bushfire situations. The recommendations are made to provide an acceptable level of protection from bushfires.



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