

**BUSHFIRE HAZARD
ASSESSMENT

PROPOSED REZONING**

**PART OF LOT 35 DP 1214499,
WAIANBAR AVENUE,
SOUTH WEST ROCKS**

**CLIENTS:
SW ROCKS DEVELOPMENT
PTY LTD**

DECEMBER 2020

This report has been prepared by David Pensini – Building Certification and Environmental Services with all reasonable skill, care and diligence for SW Rocks Development Pty Ltd.

The information contained in this report has SW Rocks Development Pty Ltd a review of the plans provided on behalf of SW Rocks Development Pty Ltd and experience.

No inspection or assessment has been undertaken on other aspects of the proposed development outside the scope of this report.

This report does not imply, nor should it be implied, that the proposed development will comply fully with relevant legislation.

The report shall not be construed as relieving any other party of their responsibilities or obligations.

David Pensini – Building Certification and Environmental Services disclaims any responsibility SW Rocks Development Pty Ltd and others in respect of any matters outside the scope of this report.

The report is confidential, and the writer accepts no responsibility of whatsoever nature, to third parties who use this report, or part thereof is made known. Any such party relies on this report at their own risk.

For and on behalf of David Pensini – Building Certification and Environmental Services.

Prepared by: David Pensini

Signed:



Dated: 18th December 2020



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1.0 INTRODUCTION

Development Consent (T6-17-446) for the residential subdivision of land known as Lot 35 DP 1214499, Waianbar Avenue, South West Rocks has been granted by Kempsey Shire Council. It is however noted that the north-western portion of the lot was not approved for residential subdivision on the basis that this portion of land was zoned as Rural (RU1).

It is now proposed to rezone the north-western portion of Lot 35 DP 1214499, Waianbar Avenue, South West Rocks from its current land use zoning of RU1 (Primary Production) to R1 (General Residential).

This report is based on site assessments carried out on 19th November 2020 and 10th December 2020.

As the proposed rezoning of the subject site seeks to support its future use for residential developments, any future development of land for these purposes would be integrated development and would be subject to the issuing of a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

The purpose of this report is therefore to identify the bushfire hazard management planning principles and requirements which will be applicable to the future development of the subject land for residential development purposes.

This report therefore forms part of an overall planning process which will determine the suitability of the subject land for residential development and identify the bushfire related development principles and planning controls which will be applicable to any future development of the land for residential purposes.

NOTE

The report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from field survey, experience and has been completed in consideration of the following legislation.

- Rural Fires Act 1997.
- Environmental Planning and Assessment Act 1979.
- National Construction Code.
- Council Local Environment Plans and Development Control Plans where applicable.
- NSW Rural Fire Services, Planning for Bushfire Protection, 2019.
- AS 3959 - 2018 Construction of Buildings in Bushfire Prone Areas.

The report recognizes the fact that no property and lives can be guaranteed to survive a bushfire attack. The report examines ways the risk of bushfire attack can be reduced where the site falls within the scope of the legislation.

The report is confidential, and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known. Any such party relies on this report at their own risk.

This report has been based upon the vegetation characteristics observed at the time of site inspection. No responsibility is taken where the vegetation characteristics of the subject site or surrounding areas is changed or modified beyond that which is presented within this report.

1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed rezoning of the land has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire

1.2 Legislative Framework

On 1st August 2002 the Environmental Planning and Assessment Act 1979 and the Rural Fires Act 1997 were both amended to enhance bush fire protection through the development assessment process.

In broad terms, the planning considerations provide two main steps. These involve:

(a) Strategic Planning through;

- the mapping of bush fire prone;
- determining suitable bush fire requirements during the preparation of a Local Environmental Plan and/or Development Control Plan; and
- the identification of the extent to which land is bushfire prone.

(b) Development assessment through;

- obtaining a bush fire safety authority for residential or rural-residential subdivision and special fire protection purpose developments in bushfire prone areas from the Rural Fire Service (RFS);
- seeking advice from the RFS in relation to infill and other developments in bushfire prone areas that cannot comply with the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019; and
- the application of additional requirements of the National Construction Code (NCC) in relation to construction standards for Class 1, 2, 3, 4 and some Class 9 buildings in bushfire prone areas.

It is noted that this report focuses upon the strategic planning processes associated with the proposed rezoning of the land which is identified as the subject site.

1.2.1 Strategic Planning Considerations

When preparing a draft LEP or planning proposal, local councils are required to apply the Environmental Planning and Assessment Act, 1979 - Section 9.1(2).

Direction 4.4 *Planning for Bush Fire Protection* applies to planning proposals that affect, or are in close proximity to, land mapped as Bush Fire Prone Land (BFPL). Under these directions, draft LEPs should follow the below objectives:

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

Under Direction 4.4, a relevant authority must consult with the Commissioner of the NSW Rural Fire Service during the preparation of a draft LEP and take into account any comments made. The draft LEP shall also have regard to NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019.

As part of the consultation process with the NSW RFS, a bush fire assessment is required to be submitted to demonstrate compliance with the Section 9.1(2) Directions and NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019. Where the proposal is of a strategic nature, this should take the form of a Strategic Bush Fire Study.

1.2.2 Planning for Bushfire Protection Guideline 2019

It is noted that NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 provides the current bushfire threat management standards which are applicable in NSW.

NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 provides the development standards for designing and building on BFPL in New South Wales (NSW) as follows;

- strategic land use planning to ensure that new development is not exposed to high bush fire risk;
- specific provisions for creating new residential and rural residential subdivision allotments;
- specific provisions for special fire protection purpose (SFPP) development taking account of occupant vulnerability;
- bush fire protection measures (BPMs) for new buildings;
- guidance in upgrading and maintaining existing development.

The general principles underlying NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 are that:

- BPMs are required to reduce the impact of a bush fire;
- protection measures are governed by the degree of threat posed to a development and the vulnerability of occupants;
- reducing the interface of a development to the hazard reduces the bush fire risk to the development;
- good practice in planning, building and management reduces the risk to developments and their occupants and increases their resilience.

(i) Objectives for Residential Subdivision Developments

The specific objectives for residential subdivision developments as provided for by NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 are to;

- *minimise perimeters of the subdivision exposed to the bush fire hazard (hourglass shapes, which maximise perimeters and create bottlenecks should be avoided);*
- *minimise vegetated corridors that permit the passage of bush fire towards buildings;*
- *provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;*
- *ensure that separation distances (APZs) between a bush fire hazard and future dwellings enable a radiant heat level not to exceed 29kW/m²;*
- *ensure the ongoing maintenance of APZs;*
- *provide adequate access from all properties to the wider road network for residents and emergency services;*
- *provide access to hazard vegetation to facilitate bush fire mitigation works and property protection; and*
- *ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.*

It is noted that the proposed rezoning is considered to be consistent with the above objectives and that the future development of the land can be undertaken so as to be compliant with the relevant acceptable solutions/standards which are applicable to residential subdivision development.

This report will therefore detail the relevant compliance issues associated with NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 and AS 3959 - 2018 *Construction of Buildings in Bushfire Prone Areas* which are relevant to the proposed rezoning of land and the future residential subdivision development of the subject area of land.

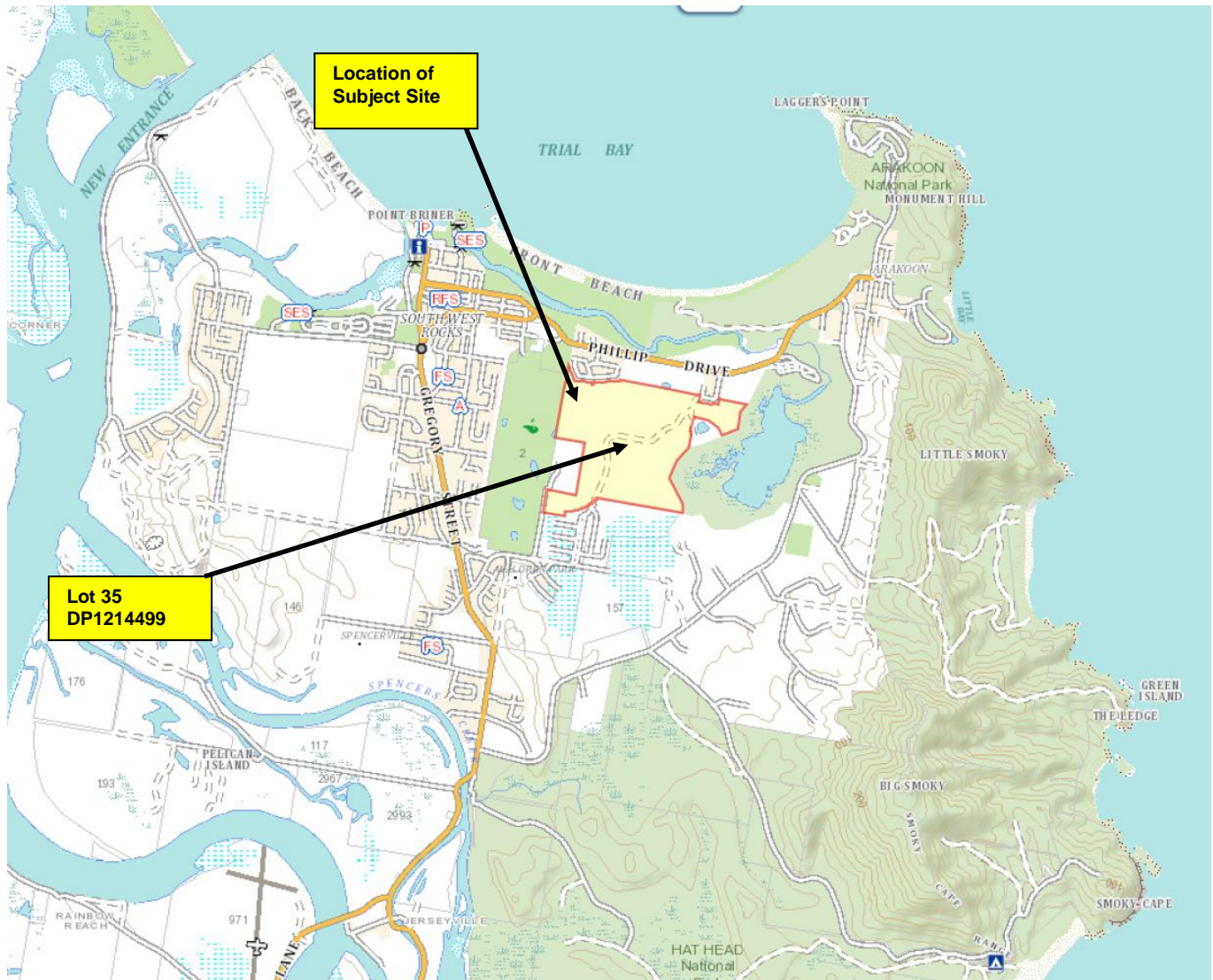
1.3 Location and Site Description

The subject site is located off Waianbar Avenue, South West Rocks which is within the Kempsey local government area, on the mid north coast of New South Wales.

The subject site forms part of a single irregularly shaped Torrens Title lot which is known as Lot 35 in Deposited Plan 1214499. It is noted that the subject site encompasses land in the north-western corner of Lot 35 DP 1214499 which has a current RU1 land use zoning.

Therefore, for the purposes of this report, the subject site comprises that portion of Lot 35 DP 1214499 which has a current RU1 zoning, refer to **Figure 1** below.

Figure 1 - Site Location



The subject site extends to the south from historically developed residential land along Currawong Crescent towards an area of land which forms part of the buffer zone to the South West Rocks Sewerage Treatment Works. It is noted that the buffer zone has an Environmental Conservation (E2) land use zoning. The western boundary of the subject site adjoins the South West Rocks Golf Course whilst areas of Lot 35 DP 1214499, which have been approved for residential subdivision, extend to the east.

Currently the subject site is vacant land with a history of active agricultural use.

Much of the subject site is covered by scrub and heath vegetation with a narrow area of Forested Wetland vegetation located along the far northern portion of the subject site with Heath/Forested Wetland/Forest ecotones present along the western boundary of the subject site and on adjoining land to the south. Scrub and heath regrowth are present on the approved but yet to be developed areas of Lot 35 DP 1214499 to the east of the subject site.

Being located to the south of Front Beach, (Trial Bay), hind dune the topography of the subject site, which has an elevation of only a few metres above sea-level, is generally flat. Geologically, the site consists of undifferentiated Quaternary sediments.

The subject site is mapped as belonging to the Hat Head soil landscape, which is characterised by organic soils with low wet bearing strength, high erodibility, low permeability, strong acidity, low available water holding capacity and low fertility.

The topography of adjoining and adjacent land is similar to the subject site however to the north of the subject site are the southern foot and side slopes of the Font Beach hind dune with gentle to moderate north to south downslopes predominating. To the west of the subject site, slope conditions transition to westerly upslopes in response to changes in landform.

A number of intermittently flowing creeks/drainage depressions are present on the subject site with these features not significantly influencing slope conditions.

The closest Fire Service is located approximately 850m to the west of the subject site, (South West Rocks Fire Brigade), with the closest Fire Control Centre being at Kempsey which is approximately 35 kilometres southwest or 30 minutes by car from South West Rocks.

1.4 Site History

The subject site is irregular in shape and forms the north-western portion of a much larger holding of land known as Lot 35 DP 1214499 Waianbar Avenue, South West Rocks, refer to **Appendix 1**.

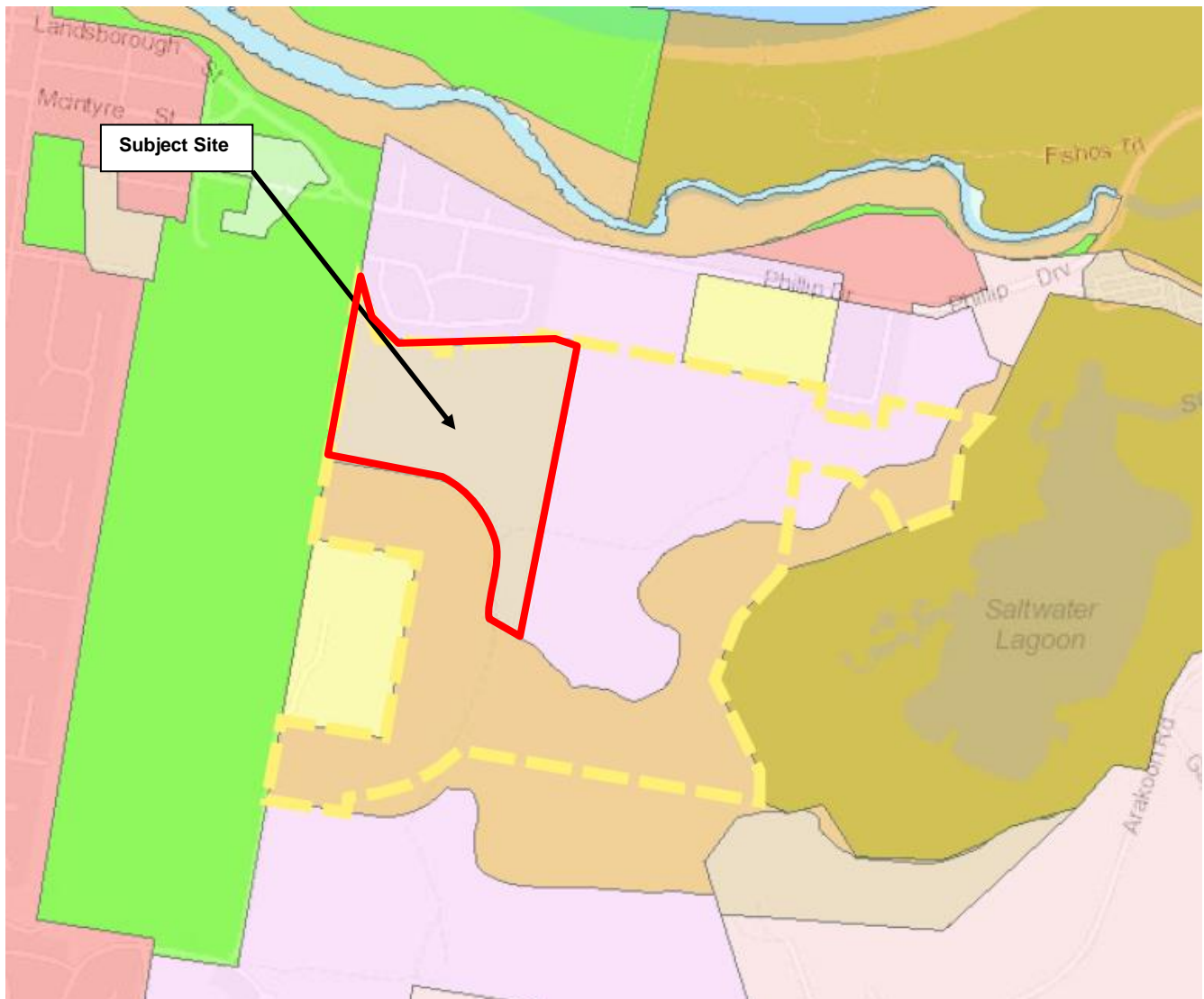
Being on the south-eastern fringes of the developed areas of South West Rocks land uses within the area have until recently been dominated by bushland/rural activities. In this regard it is considered that active rural uses have predominated on the subject site and on adjoining and adjacent land to the south and east for a considerable period of time.

Improvements on the subject site include gravel roads which have been used as part of the historical agricultural activities on the land.

It is noted that Development Approval, (T6-17-446), for the residential subdivision of Lot 35 DP 1214499 Waianbar Avenue, South West Rocks was granted by Kempsey Shire Council, refer to **Appendix 2**. It noted that the site which is the subject of this report is identified in **Appendix 2** as the land with a Rural (RU1) land use zoning which is located to the northwest of the area of land which is approved for residential subdivision.

The subject site has a Rural (RU1) land use zoning with a narrow band of land with an Environmental Conservation (E2) zoning present to the south of the subject site. Residentially zoned land (R1) extends to the north and east of the subject site whilst land to the west of the subject site has a Public Recreation, (RE1), zoning which reflects the presence of the South West Rocks Golf Course. At distance to the south of the subject site the land has Special Purpose (SP1) land use zoning which encompasses the South West Rocks Sewerage Treatment Works, refer to **Figure 2** below.

Figure 2 – Land Use Zoning

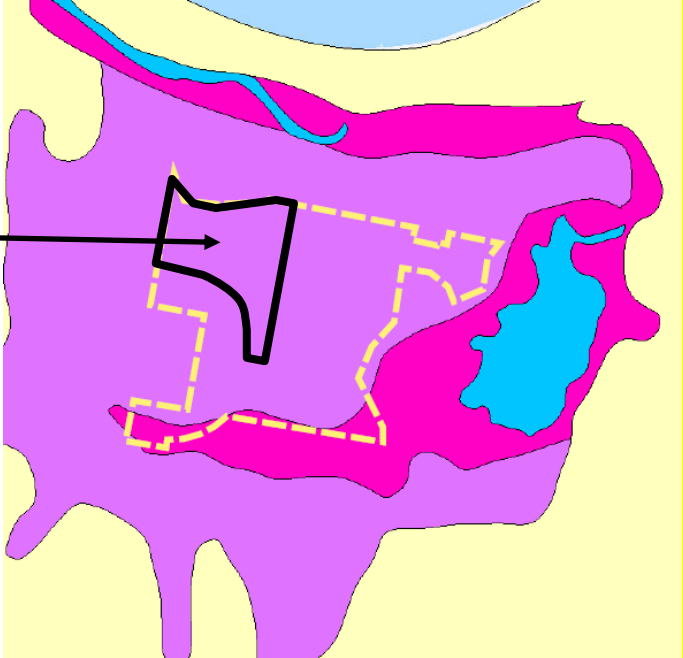


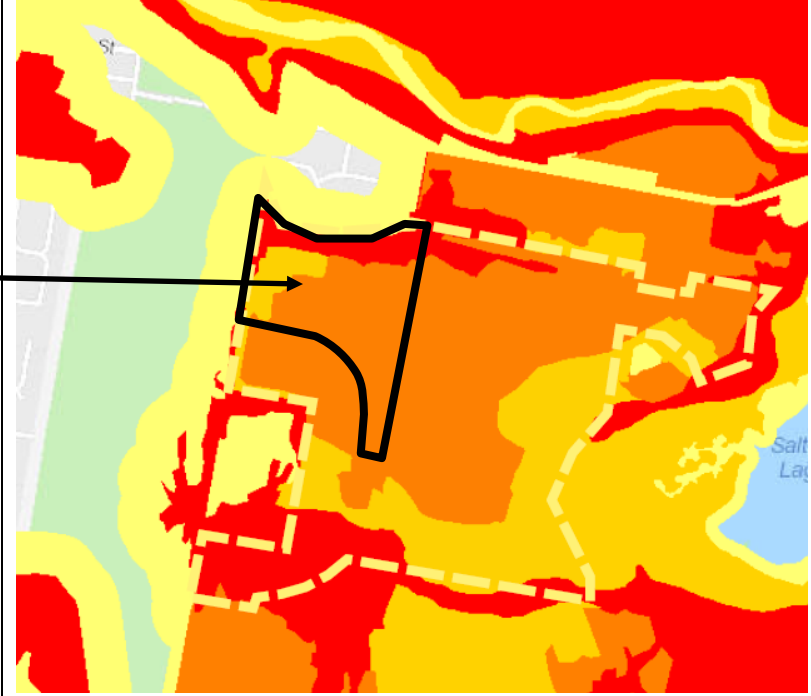
There is no indication of recent fire activity on the subject site or on adjoining and adjacent land.

The environmental and heritage features of the areas of the subject site which forms the basis of this report are summarized as follows;

Table 1 – Environmental and Heritage Features

ENVIRONMENTAL/HERITAGE FEATURE	COMMENT
Riparian Corridors	There are no riparian corridors on the subject site in the area of land which is the subject of this report.
SEPP (Coastal Management) 2018	The subject site is identified as being within the Coastal Wetlands buffer area of the SEPP.
SEPP (Koala Habitat Protection) 2019	The relevance of the provisions of the SEPP are outside the scope of this report and is the subject of separate ecological assessment where vegetation clearing is to be undertaken. It is however noted that the subject site has been predominately cleared of most native vegetation.
Areas of geological interest	Potential acid sulphate soils (Class 4) are indicated as being possibly present to the north of the subject site, refer below.

<p>Subject Site</p> 	<p>Based upon the nature of the proposed future development of the subject site and the various construction and land use management options available it is considered that land contamination issues, (including the disturbance of acid sulphate soils), will not be an impediment to the proposed rezoning of the subject site so as to allow for future residential occupation and use.</p>
<p>Environmental Protection Zones</p>	<p>The subject site is zoned pursuant to Kempsey Shire LEP, (2013) as Rural (RU1), refer to Figure 3 above.</p>
<p>Land slip</p>	<p>Given the generally flat nature of the topography of the subject site and surrounding areas land slip is not considered to be an issue for the subject site.</p>
<p>Bushfire Prone Land</p>	<p>Bushfire Prone Land Risk Mapping provides that areas of Category 1 bushfire hazard vegetation are located in the far northern fringe of the subject site and on adjoining and adjacent land to the northeast and southwest.</p> <p>An area of Category 2 hazard vegetation is identified in the north western portion of the subject site whilst Category 3 hazard vegetation is identified over the majority of the subject site and on adjoining land to the east and south; refer below</p>

<p>Subject Site</p> 	<p>It is noted that no areas of hazard vegetation are present on adjoining land to the north and west.</p>
<p>Flood prone land</p>	<p>The subject site is not identified as being flood prone.</p>
<p>National Park Estate or other Reserves</p>	<p>The subject land does not form part of the National Park Estate or other Reserves.</p> <p>It is however noted that the Hat Head National Park is present at distance to the east of the subject site.</p>
<p>Threatened species, populations, endangered ecological communities and critical habitat</p>	<p>Given the level of disturbance of the subject site no threatened flora or fauna species are expected to be present on the subject site.</p> <p>However, the relevance of this issue is outside the scope of this report and is the subject of separate assessment.</p>
<p>Ecologically Endangered Communities (EEC's)</p>	<p>The relevance of this issue is outside the scope of this report and is the subject of separate assessment.</p>
<p>OEH Key Habitats and Corridors</p>	<p>Given the level of disturbance, the subject site is unlikely to form part of OEH key habitats and corridors.</p> <p>The relevance of this issue is outside the scope of this report and is the subject of separate assessment.</p>
<p>Aboriginal Heritage</p>	<p>Items of aboriginal heritage are unlikely to be present given the active vegetation modification and management which has occurred on the subject site and the level of site disturbance which has occurred.</p>

1.5 Development Proposal

It is noted that Lot 35 DP 1214499 Waianbar Avenue, South West Rocks has the benefit of development approval for residential subdivision however the approval for the subdivision does not encompass the north-western portion of the lot due to this area being zoned for Rural (RU1) and Environmental Conservation (E2) land use purposes.

It is now proposed to rezone that portion of Lot 35 DP 1214499 Waianbar Avenue, South West Rocks which is zoned Rural (RU1) to a Residential (R1) zone.

Being located on the south-eastern fringes of South West Rocks the general area has and will continue to experience significant residential development with the character of the area being consistent with that which would be expected for urban fringe areas. The proposed rezoning is therefore entirely consistent with the already approved development concept for the area with the proposed rezoning reflecting a desire to provide for the logical development of suitable land which adjoins existing residential areas.

In support of the proposed rezoning of the subject site, a preliminary development concept has been prepared, refer to **Appendix 3**.

It is noted that the development concept for the subject site provides for typically sized residential lots which are serviced by a network of public roads which provide for vehicle movement to and from the east and north using a 'loop road' configuration. It is noted that the development concept provides for larger sized lots along the northern perimeter of the subject site.

Given that the nature and extent of any future development of the subject site is variable this report will focus upon detailing the strategic bushfire issues and constraints for the subject site and the identification of the bushfire threat management requirements which will be applicable to any future development of the land in order to allow for an assessment of the subject site's suitability for rezoning.

1.6 Fauna and Flora Issues

A fauna and flora evaluation has not been undertaken in conjunction with this bushfire hazard assessment and as such issues pertaining to fauna and flora are outside the scope of this report.

2.0 STRATEGIC BUSHFIRE STUDY

It is noted that NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 provides that for strategic development proposals in bush fire prone areas a Strategic Bush Fire Study is to be prepared.

The level of information required within such a study is dependent upon the nature of the LEP amendment, scale of the proposal, the bush fire risk and its potential impact upon the wider infrastructure network. The Strategic Bush Fire Study provides the opportunity to assess whether new development is appropriate in the bush fire hazard context. It also provides the ability to assess the strategic implications of future development for bush fire mitigation and management.

In accordance with Table 4.2.1 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 the following Strategic Bushfire Study is provided;

2.1 Landscape Assessment

2.1.1 Assessment Methodology

In order to determine the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape the following methodology was taken.

(i) Stage 1 - Desktop Survey.

The identification and assessment of existing and historic information pertaining to the subject site in relation to;

- Weather
- Vegetation.
- Topographic features.

(ii) Stage 2 - Field Survey.

Detailed inspections of the subject site were undertaken by David Pensini - Building Certification and Environmental Services on 19th November 2020 and 10th December 2020 in order to identify relevant bushfire hazard factors and characteristics such as;

- Topographic conditions.
- Vegetation characteristics.
- Weather
- Fire Danger

The assessment of slope and vegetation characteristics has been carried out in accordance with Appendix 1 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

Each of the above factors need to be considered in determining the bushfire hazard for the subject site and proposed rezoning. These factors must be reviewed in determining the bushfire protection measures which are applicable to the subject site and the proposed rezoning of the subject site.

2.1.2 Topography

Topography is a major factor to consider when assessing the bushfire risk of any development which is subject to compliance with the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019. Therefore, the slope of the subject site and surrounding area, (to a distance of 100m), was measured using a Suunto PM-5/360 PC Clinometer.

Being located to the south of the Front Beach, (Trial Bay), hind dune the topography of the subject site, which has an elevation of only a few metres above sea-level is flat. Geologically, the subject site consists of undifferentiated Quaternary sediments.

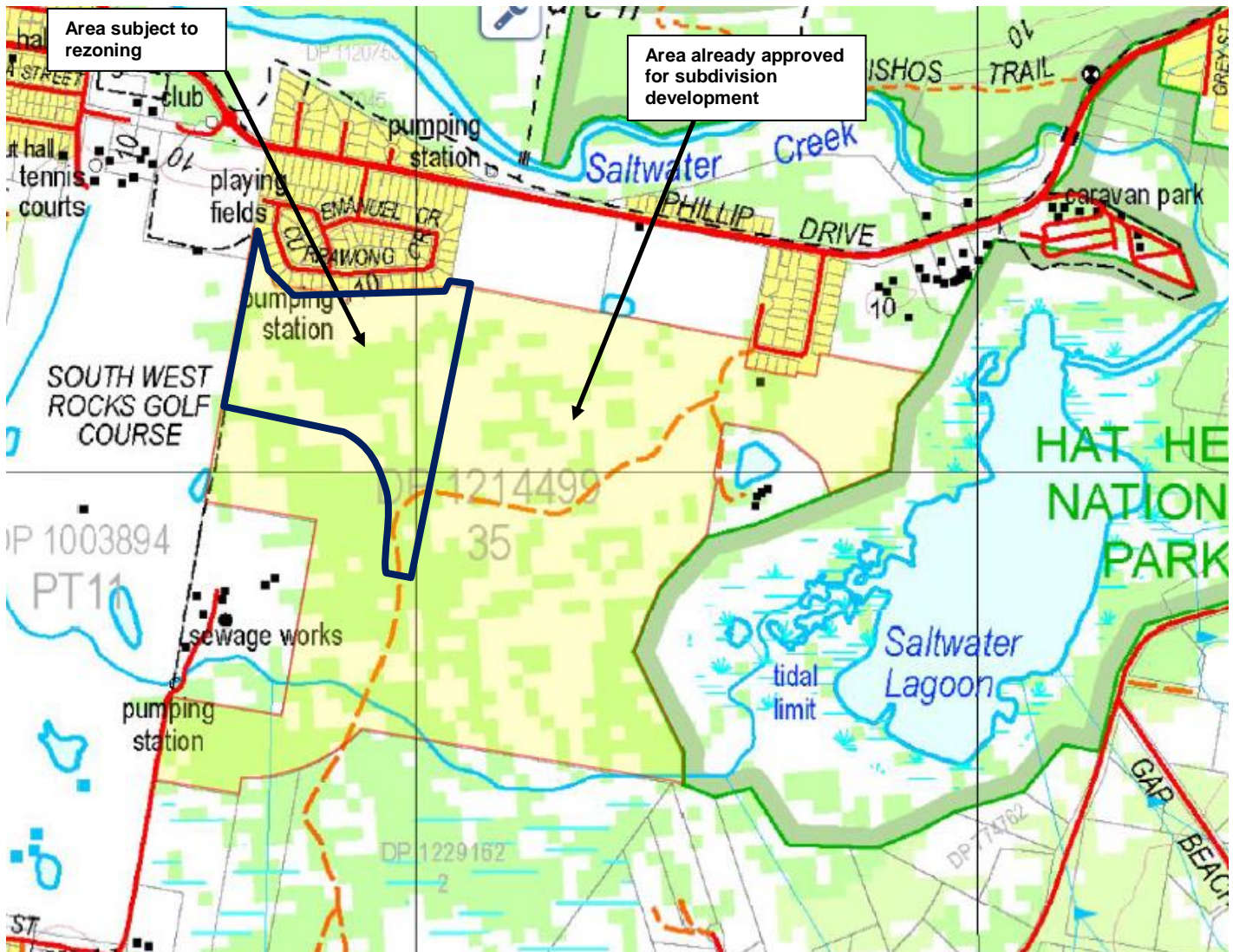
The site is mapped as belonging to the Hat Head soil landscape, which is characterised by organic soils with low wet bearing strength, high erodibility, low permeability, strong acidity, low available water holding capacity and low fertility.

The topography of adjoining and adjacent land is similar to that of the subject site however to the north of the subject site are the southern foot and side slopes of the Front Beach hind dune with gentle to moderate north to south downslopes predominating. To the west of the subject site slope conditions transition to westerly upslopes in response to changes in landform.

Several intermittently flowing creeks/drainage depressions are present on the subject site with these features not significantly influencing slope conditions.

Slope conditions over the subject site and on adjoining and adjacent land can be seen in **Figure 3** below;

Figure 3 – Topographic Conditions



The following table indicates the slopes measured within the vegetation affecting the site of the proposed rezoning.

Table 2 - Slope Assessment Results

DIRECTION OF HAZARD	SLOPE (degrees)	UPSLOPE/DOWN SLOPE
North	0°	Flat
South	0°	Flat
East	0°	Flat

The above slopes were considered when assessing the required defensible spaces and indicative Bushfire Attack Levels, (BAL's), for any future development/s within the area nominated for rezoning.

2.1.3 Vegetation Assessment

The vegetation on and surrounding the area of the subject site which is proposed to be rezoned was assessed over a distance of 140m from the proposed development.

The vegetation formations were classified using the system adopted as per Keith (2004) and in accordance with Appendix 1 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

The following information is provided in relation to the floristic characteristics of the subject site and adjoining and adjacent land in the area which is the subject of the rezoning proposal.

In adopting a conservative approach to bushfire hazard assessment, worst case vegetation characteristics have been identified.

(i) Vegetation within Development Site

Much of the subject site is covered by mixed heath and scrub regrowth vegetation with a narrow band of Forested Wetland vegetation located along the far northern portion of the subject site.



Forested Wetland vegetation along the northern portion of the subject site – looking from the south



Forested Wetland vegetation along the northern portion of the subject site – looking from the north



**Heath and scrub
regrowth on the
subject site**

A Heath/Forested Wetland/Forest ecotone is also present adjacent to the western boundary of the subject site.



**Heath/Forested
Wetland and
Forest ecotone
along the western
portion of the
subject site**

It is noted that the proposed development concept for the subject site provides for the removal of most of the hazard vegetation from the subject site except for the Forested Wetland vegetation along the far northern portion of the subject site. In this regard the Forested Wetland vegetation along the far northern portion of the subject site is > 20m in width albeit that the extent of the vegetation is disconnected via the managed vegetation on adjoining land to the west of the subject site and development of residential lots and supporting infrastructure to the east of the subject site. As the retained vegetation is >1 hectare in area and is not riparian in context and width a Specification similar to Forested Wetland has been adopted for this area of vegetation.

This report has also been prepared on the basis that all hazard vegetation located along the western portion of the subject site will be removed with residential lots having a direct relationship with the managed vegetation within the South West Rocks Golf Course.

(ii) Vegetation on Adjoining and Adjacent Land to Development Area

Immediately to the north of the subject site are developed residential lots which extend for >140m in this aspect. Given the presence of managed vegetation within the developed residential lots no areas of hazard vegetation were identified in this aspect.



Developed
residential lots to
the north of the
subject site



Recently
constructed
residential lots to
the northeast of
the subject site

Based upon the development concept for the subject site there will be no areas of hazard vegetation to the west of the subject site with this area supporting the managed vegetation within the South West Rocks Golf Course and sporting fields.



**Managed
vegetation within
sporting fields to
the northwest of
the subject site**



**Managed
vegetation within
the golf course to
the west of the
subject site**

Areas of highly disturbed and modified Forested Wetland, Coastal Heath and scrub regrowth vegetation is present within the yet to be developed areas of Lot 35 DP 1214499 to the east of the subject site. It is however noted that the Forested Wetland vegetation to the east is confined to an easterly continuation of the narrow band of vegetation which fringes the northern portion of the subject site. At distance to the east the Forested Wetland vegetation transitions into Coastal Heath. In adopting a conservative approach to bushfire hazard assessment, a specification similar to Tall Coastal Heath has been adopted for the eastern aspect in acknowledgement of the unknown ongoing vegetation management practices and residential development of land in this aspect.



**Forested
Wetlands and
heath vegetation
to the northeast of
the subject site**



**Heath and scrub
regrowth
vegetation to the
east of the subject
site**

It is also noted that the development concept also provides for landscape treatment within adjoining and adjacent road reserves and open space areas within the approved residential subdivision to the east of the subject site. This report has been prepared on the basis that the landscaping and

associated vegetation plantings comply with the standards which are applicable to Asset Protection Zones.

Immediately to the south of the subject site is an area of short coastal heath regrowth before a transition to Tall Heath/Forested Wetland/Forest ecotone which is present within land zoned for Environmental Conservation (E2) purposes. In adopting a conservative approach to bushfire hazard assessment, a specification similar to Dry Sclerophyll Forest has been adopted for the southern aspect in acknowledgement of the unknown ongoing vegetation management practices of land in this aspect and the potential for continued regeneration of vegetation.



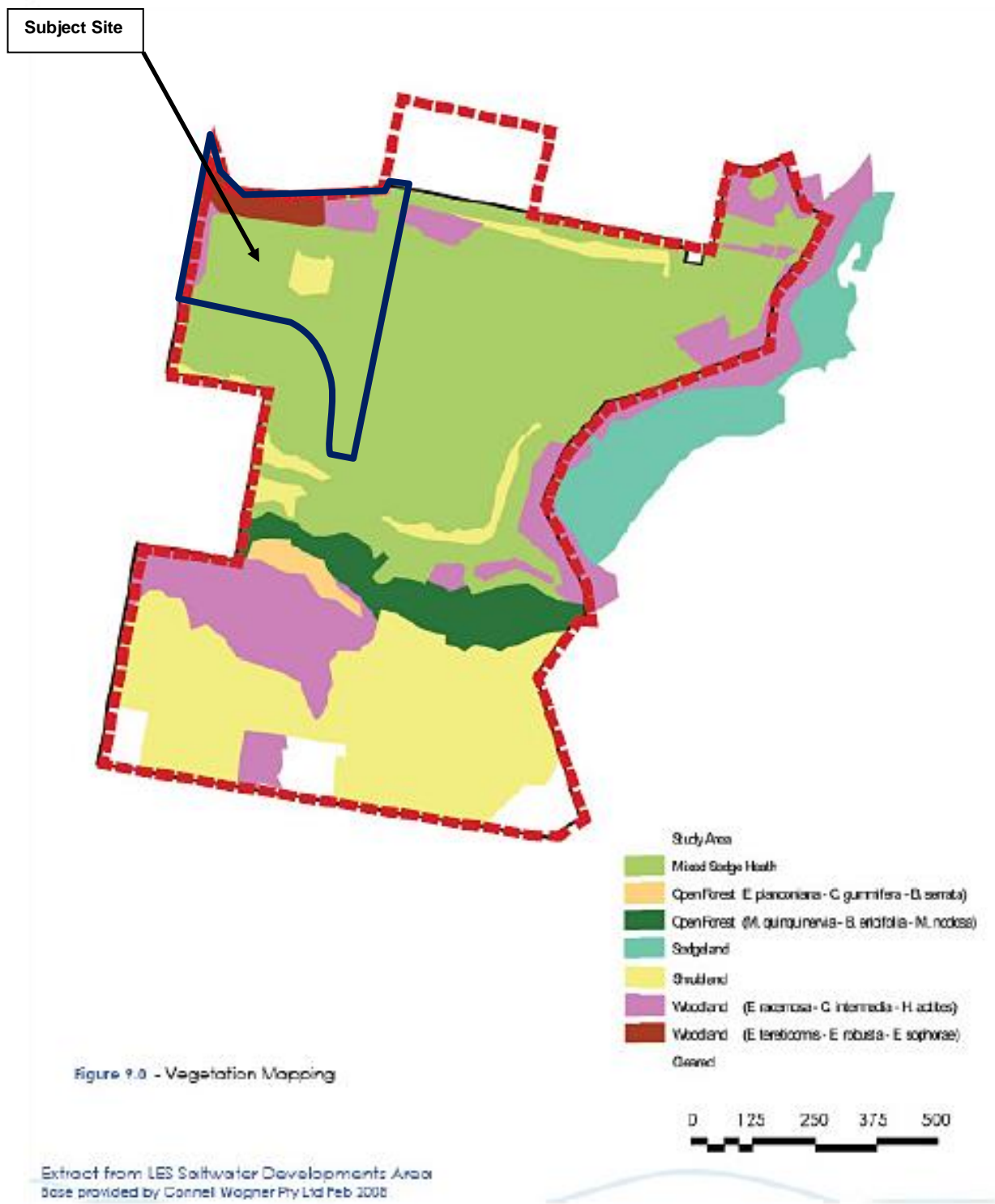
**Heath and Forest
vegetation to the
south of the
subject site**



**Heath and Forest
vegetation to the
south of the
subject site**

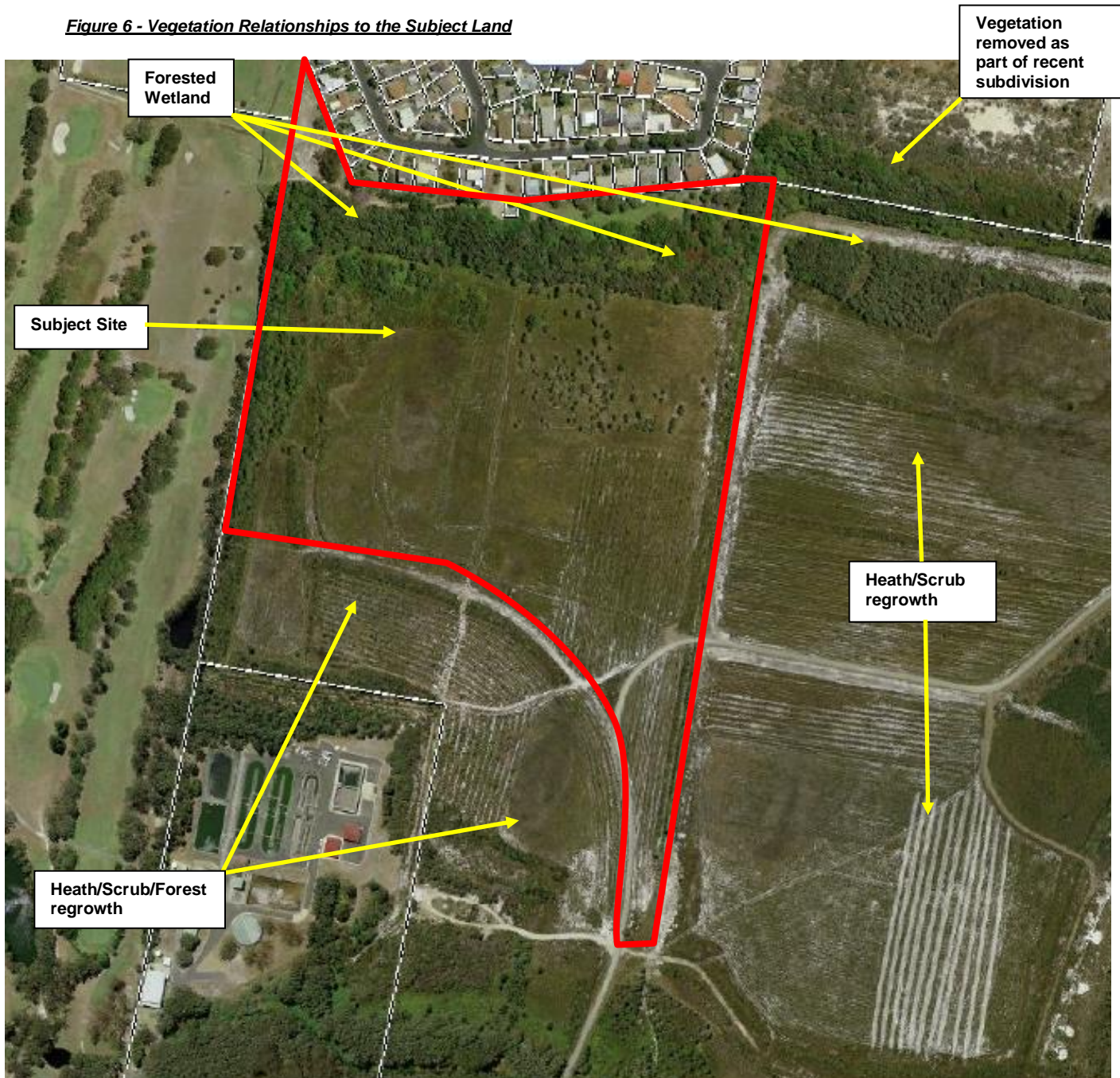
Historic vegetation mapping of the subject site is shown as follows. It is however noted that the nature and extent of vegetation along the western portion of the subject site and on adjoining and adjacent land to the south is significantly increased from that shown in the following mapping.

Figure 5 – Historic Vegetation Mapping of Area



An indication of the relationship of the vegetation of bushfire significance to the area of the proposed rezoning is presented in **Figure 5** below.

Figure 6 - Vegetation Relationships to the Subject Land



The following table summarizes the various vegetation structures which are of bushfire significance to the areas of land which are the subject of the proposed rezoning.

Table 3 – Summary of Vegetation Characteristics

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)
North	Forested Wetland vegetation along the northern boundary of the subject site	Similar in specification to Forested Wetland
South	Heath/Forested Wetland/Forest ecotone which is present within land zoned for Environmental Conservation (E2)	Similar in Specification to Forest
East	Highly disturbed and modified Coastal Heath vegetation on adjoining lot	Similar in Specification to Tall Coastal Heath

2.1.4 Climate/Weather

The typical/average climate of the South West Rocks area is a humid subtropical climate characterised by warm humid summers and mild winters. The average daily maximum temperature is around 21.5°C, while the average daily minimum temperature is around 10°C - 11°C.

Long-term average annual rainfall is around 1,500mm whilst annual pan evaporation is estimated to be approximately 1,400mm.

Based on long-term, (1910–2011), observations, temperatures have been increasing in the North Coast Region since about 1970, with higher temperatures experienced in recent decades. This warming trend is expected to continue, with anticipated considerable rainfall variability across seasons and from year to year. These projected changes include increasing maximum and minimum temperatures, increasing number of hot days, decreasing number of cold nights together with winter rainfall and increasing autumn and spring rainfall. Average fire weather and severe fire weather days are projected to increase in summer and spring.

The bush fire season for the area generally runs from July to November, however, can extend into December or January with low rainfalls. Strong northwest to southwest winds often prevail within that time of year. Longer bush fire seasons occur when summer rainfall is lower than normal, with the bush fire season extending through summer to early autumn. Serious fires have occurred late in the season under dry summer conditions.

Prevailing weather conditions associated with the bush fire season are characterised by dry north-westerly winds, usually associated with high pressure systems and the passage of cold fronts. Extended periods of low rainfall, and the resultant fuel moisture deficiencies, combined with summer temperatures and hot dry westerly winds form the circumstances for high intensity fires to develop. Although summer rains generally bring an end to the fire season, short dry spells can create extensive wildfires in the area as late as April. Generally, these fires have proved to be less damaging than those occurring in spring/early summer. The climate projections indicate that there is a likelihood of more frequent and higher intensity bushfires occurring when low seasonal rainfall occurs.

Based upon the above it is considered that climatic conditions are at times conducive to supporting bushfire with the subject land being located adjacent to areas of vegetation which provide for fuel loads sufficient to support and promote bushfires. In this regard the most likely bushfire risk scenario would be a fire moving from the south within the Heath/Forest vegetation contained within the undeveloped areas of land to the south of the subject site. This risk is however tempered by the generally flat topography within the hazard vegetation and the presence of approved residential development at distance to the south of the subject site.

Additionally, the presence of vegetation within the Hat Head National Park which is located at distance to the east of the subject site does provide for conditions which would support bushfire with the possibility of bushfires moving from adjoining and adjacent land to the east towards the west under the influence of easterly wind conditions. This risk is however tempered by the presence of Saltwater Lagoon and the reduced fuel loads associated with the central and eastern areas of Lot 35 DP 1214499 Waianbar Avenue, South West Rocks which have been approved for residential subdivision development.

The presence of Forested Wetland vegetation along the far northern portion of the subject site would support bushfire however the risk of this is reduced via the disconnection of this area of vegetation from other larger areas of bushfire prone vegetation due to presence of the South West Rocks Golf Course to the west, historic residential development to the north and future residential development to the east.

In accordance with NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019, NSW Rural Fire Service, **NSW Local Government Areas FDI**, May 2017 and Table 2.1 of AS 3959 - 2018, the fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

2.2 Land Use Assessment

Being located on the south-eastern fringes of the urbanized area of South West Rocks, the land within this area has and will continue to experience significant urban expansion with a transitional land use setting and context prevailing.

It is noted that the land which is the subject of rezoning is bounded by historic and more recent residential subdivision development to the north with the developed infrastructure within the South West Rocks Golf Course located immediately to the west of the subject site. Additionally, land which has been approved for residential subdivision extends to the east.

The area of land which is proposed to be rezoned has a direct context and relationship with existing developed residential areas with the area of land which is proposed to be rezoned being a logical extension to existing residential patterns within the area. The presence of large areas of historic and recently approved residential development adjacent to the subject areas of land reinforces the orderly and progressive development of land within the locality. It is also important to note that the proposed rezoning needs to be considered not only in the context of existing development but also having regard to the future development of land which adjoins the subject areas of land. In this regard the Masterplan provided as **Appendix 3** of this report identifies adjoining land to the south as being developed as playing fields.

Importantly the Masterplan provided as **Appendix 3** does not indicate the recently developed residential subdivision of land immediately to the northeast of the subject site.

It is however acknowledged that the subject site does and will continue to have an interface with areas of land containing bushfire hazard vegetation. In this regard the ongoing presence of the narrow area of vegetation adjacent to the northern boundary of the subject site together with hazard vegetation on adjoining and adjacent land to the south needs to be taken into consideration in the identification of bushfire threat management responses which are relevant to the future residential development of the area of land which is the subject of this report.

Notwithstanding the above, the generally cleared nature of the land which is the subject of this report and the absence of major constraints in terms of landform and topography to the residential development of the subject land suggests that the proposed rezoning of the land is consistent with sound town planning outcomes.

It is noted that the proposed rezoning is proposed to facilitate the development of the subject areas of land for residential dwelling development via separate Torrens Title lots. In this regard it would be expected that the density of future development and the characteristics of occupants would be entirely consistent with that expected within urban residential areas.

The typical permitted land uses under a Residential (R1) land use zoning would be;

2 Permitted without consent

Environmental protection works; Home-based child care; Home occupations

3 Permitted with consent

Attached dwellings; Boarding houses; Centre-based child care facilities; Community facilities; Dwelling houses; Group homes; Home industries; Hostels; Multi dwelling housing; Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Residential flat buildings; Respite day care centres; Roads; Semi-detached dwellings; Seniors housing; Shop top housing; Tank-based aquaculture; Any other development not specified in item 2 or 4

Whilst the permitted land uses could support higher densities of development and involve occupants with characteristics which may reduce their abilities to respond in an emergency the form of future development, refer to **Appendix 3**, would not support these forms of development. Notwithstanding this future development proposals which contemplate Special Fire Protection Purpose development would need to be assessed on their own merits in terms of responding to bushfire threat and management.

Based upon the above information and the development concept provided as **Appendix 3** there would appear to be no major land use planning constraints to the proposed rezoning of the land and its future development as residential lots.

2.3 Access and Egress

The development concept for the area of land which is the subject of this report provides for the construction of new public road infrastructure which will connect with existing and proposed public road networks.

Access and egress from the subject site involve the movement of vehicles to and from the public road system which will service the development of the approved residential subdivision of land to the east of the subject site. In this regard the future public road infrastructure will connect with Waianbar Avenue together with a recently constructed public road which services recently constructed residential lots on land to the northeast of the subject site. Both Waianbar Avenue and the recently constructed public road provide for connection with Phillip Drive which is a major connecting road in the locality.

Connection of the existing and proposed new public road infrastructure to Phillip Drive will provide for movement to and from the subject site from areas which have been historically developed for residential occupation and use. Movement to and from the proposed development will therefore be from the north from areas protected from the impacts of bushfire.

It is understood that all new roads within the future subdivision of the subject site will be two-way and will be constructed to normal residential street standards.

It is further noted that the concept design provides for a loop through road configuration which provides for multiple alternative access and egress opportunities towards the east and north and engages movement away from areas of bushfire hazard vegetation to areas which would be protected from the impacts of bushfire.

The already approved development of land to the northeast and east of the subject site provides for the movement of vehicles away from areas of bushfire hazard. This approach provides for movement to and from the subject site from areas which would be sheltered from the impacts of bushfire.

It is also noted that the design of the already approved subdivision of land to the east of the subject site provides for connection with future development of land to the south of the subject site on land zoned for residential subdivision in this aspect.

Importantly the integration of access and egress infrastructure with other proposed development areas not only provides access and egress options for the subject areas of land but also supports and improves access and egress opportunities for existing and proposed development in other areas.

2.4 Emergency Services

The proposed rezoning of the land does not significantly increase the demand for emergency services on the basis that the proposed rezoning of land does not significantly increase the interface between residential development and areas of bushfire hazard vegetation when considered in the context of the nature and extent of existing and approved but yet to be constructed development in the locality.

In this regard existing residential development to the north of the subject site was approved and constructed without reference to documented bushfire threat management standards and as such existing subdivision development in the area does not reflect best practice bushfire threat management strategies including the minimization of bushland interfaces and the use of perimeter roads. In this regard the rezoning of the subject site, in conjunction with the future development of land to the east of the subject site provides an opportunity to reduce the existing extent of hazard vegetation interfaces and significantly improve access and asset protection outcomes for existing development in the area whilst providing for new development which reflects best practice from a bushfire threat management perspective.

Accordingly, any increase in demand for emergency services associated with the proposed rezoning of land, (and its subsequent development), needs to be balanced against the improved bushfire threat management outcomes which can be achieved for existing and future residential development in the locality.

It is however noted that the nature of urban expansion which is associated with the rezoning and development of land for residential purposes is such that increases in demand for emergency services is inevitable as emergency services are required for a range of population safety and health protection issues associated with population growth. For example, in an urban context firefighting resources are required not only to respond to bushfire incidents but also in relation to responding to a range of building fire scenarios and causes.

It is noted that South West Rocks is already serviced by a NSW Fire and rescue Brigade together with a Rural Fire Service Brigade, Ambulance Service, Police Service and Sate Emergency Service.

2.5 Infrastructure

Given that the proposed rezoning and future subdivision of land provides for residential allotments, all future lots will have access to the reticulated water supply, the extension of which will be required by Kempsey Shire Council to service future subdivisions. It is however noted that the determination of a guaranteed water supply is to be made by the water supply authority where mains water supply is available.

It is however noted that there are no apparent water servicing issues which would preclude the proposed rezoning of land and subsequent development of land particularly when considered in the context of the already approved residential development to the east of the subject site.

Electricity supply and communications infrastructure is available in the locality and will be accessible for extension to the future development of the subject areas of land.

Reticulated gas services are not available in the locality and are therefore not available to the subject areas of land.

It is noted that the rezoning and subdivision approval processes incorporate consideration of relevant servicing requirements and capabilities by relevant service providers/authorities with the relevant approval processes able to accommodate any issues which maybe relevant to any future development which is proposed.

2.6 Adjoining Land

It is noted that the rezoning of land will not change or alter the ability of adjoining and adjacent land to carry bushfire nor will the proposed rezoning of the subject land place increased pressure on adjoining landowners to introduce or implement Bushfire Management Plans as a result of the proposed rezoning.

The rezoning of the subject site will provide for existing residential development to be present to the north whilst future residential development will be present on adjoining and adjacent land to the east. The managed infrastructure within the South West Rocks Golf Club will adjoin to the west whilst bushland areas will adjoin to the south.

It is noted that the rezoning of the subject site and its subsequent development as residential lots will not change or alter the ability of adjoining land to carry a bushfire as vegetation characteristics will remain relatively unchanged from the existing assessed level of bushfire threat. Importantly the rezoning and future development of the subject site will provide for improved bushfire threat management outcomes for adjoining land to the north, south and east via the removal of a significant area of bushfire hazard vegetation and the removal/reduction of interfaces between residential lots and other infrastructure with areas of bushfire hazard vegetation.

In this regard the proposed rezoning and future development of the subject site will impose no additional bushfire threat management obligations or responsibilities on adjoining land managers from that which currently exists and will reduce the pressures on adjoining landowners to introduce or implement Bushfire Management Plans.

3.0 BUSHFIRE THREAT REDUCTION MEASURES

3.1 NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019

The following issues and constraints have been identified through considering the requirements of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019 as they apply to the proposed rezoning of the subject areas of land and their future subdivision and development.

It is noted that for the purposes of this report it has been assumed that future development concepts of the proposed lots do not contain uses which are Special Fire Protection Purpose development in accordance with NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019.

3.1.1 Defendable Space/Asset Protection Zone

To ensure that the aims and objectives of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019 are achieved for the proposed rezoning and future subdivision of the subject areas of land, an Asset Protection Zone (APZ) between the asset and the hazard should be provided.

An APZ provides for; minimal separation for safe firefighting, reduced radiant heat, reduced influence of convection driven winds, reduced ember viability and dispersal of smoke. The APZ consists of an Inner Protection Area (IPA) and Outer Protection Area (OPA). The IPA is an area closest to the buildings that incorporates defendable space and is used for managing heat intensities at the building surface. The OPA is positioned adjacent to the hazard and the purpose of the OPA is to reduce the potential length of flame by slowing the rate of spread, filtering embers and suppressing the crown fire.

NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019 provides that a defendable space is;

An area adjoining an asset that is managed to reduce combustible elements and is free from constructed impediments. It is a safe working environment in which active firefighting can be undertaken to defend the structure, before and after the passage of a bush fire.



The following assessment of APZ requirements which are relevant to the proposed rezoning and future subdivision of the subject site is provided as follows;


(i) Residential Subdivision Development

It is noted that the future residential subdivision of the subject areas of land will need to provide for APZ's in accordance with the residential subdivision requirements of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019. APZ's in residential situations must be such that radiant heat levels of greater than 29kW/m² will not be experienced at a residential building on a proposed residential allotment.

The following table indicates the minimum 'Deemed to Satisfy' Asset Protection Zones required from the identified areas of bushfire hazard vegetation to future residential buildings on future residential lots within the area which is proposed to be rezoned. The table is based upon the vegetation type, slopes, and fire weather (FDI) which is applicable to this assessment

Table 4 – APZ Requirements for Residential Subdivision Developments (29kW/m²)

DIRECTION OF HAZARD	VEGETATION TYPE	SLOPE	IPA	OPA	TOTAL REQUIRED APZ	MINIMUM APZ ACHIEVABLE (to future dwellings within Lots)	COMPLIANCE (with Minimum APZ Requirements)
North	Similar in Specification to Forested Wetland	0° Flat	10m	10m	20m	Minimum 20m	
South	Similar in	0°	10m	10m	20m	Minimum 20m	





	Specification to Forest	Flat					
East	Similar in Specification to Tall Coastal Heath	0° Flat	16m	-	16m	Minimum 16m	

Having regard to the above it is possible to locate future residential dwellings on future proposed residential lots and comply with the relevant APZ performance requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 albeit that the final design and spatial relationships of future residential lots and buildings will need to be confirmed.

In this regard the size of the allotments of land along the northern perimeter of the subject site will need to be such so as to provide for the retention of the Forested Wetland vegetation together with a minimum 20m APZ with sufficient room remaining in which to construct a dwelling.

The APZ performance criteria and acceptable solution provisions which would apply to any future residential subdivision development on the area of land which is proposed to be rezoned are detailed in the following table:

Table 5 – Residential Subdivision Development APZ Performance Requirements 2019

Intent of measures: to provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at the buildings does not exceed 29kW/m².		
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
<ul style="list-style-type: none"> potential building footprints will not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot 	<ul style="list-style-type: none"> APZs are provided in accordance with Tables A1.12.2 and A1.12.4 based on the FDI 	 To be complied with in relation to the design of future development.
<ul style="list-style-type: none"> APZs are managed and maintained to prevent the spread of a fire towards the building. 	<ul style="list-style-type: none"> APZs are managed in accordance with the requirements of 'Appendix 4 	 To be complied with in relation to the design of future development
<ul style="list-style-type: none"> the APZ is provided in perpetuity 	<ul style="list-style-type: none"> the APZ is wholly within the boundaries of the development site. 	 To be complied with in relation to the design of future development All APZ's can be provided in accordance with PfBP Guideline requirements
<ul style="list-style-type: none"> APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised 	<ul style="list-style-type: none"> APZ's is located on lands with a slope less than 18 degrees. 	 To be complied with in relation to the design of future development All APZ's can be provided on lands with a slope less than 18 degrees.

Whilst the required APZ's may not be achieved within the boundaries of future proposed residential lots, it is considered that suitable APZ's can be available having regard to the opportunities to utilize managed infrastructure on adjoining and adjacent land as part of meeting the minimum required APZ's for future residential development.

Having regard to the above it will be necessary to ensure that the future design of any residential subdivision provides for compliance with the minimum APZ requirements specified in **Table 4** above. In this regard indicative concept plans for the provision of APZ's to the subject site is included as **Appendix 4**.

It is further noted that the future subdivision of the subject areas may require the preparation and implementation of property/vegetation management plans for those areas which are nominated as open space and public reserve or where staging of already approved development requires temporary APZ's. The property/vegetation management plans are to provide for the ongoing management of any areas which form part of the minimum required APZ's with the ongoing implementation of the property/vegetation management plans to be imposed upon the landowners via positive covenants pursuant to section 88B of the Conveyancing Act, 1919.

Notwithstanding the above, based upon the size and shape of the subject area of land, which is to be rezoned for residential purposes it is considered that the intent of the requirement for the provision of Asset Protection Zones as required by NSW Rural Fire Services, *Planning for Bushfire Protection, 2019* can be satisfied for the future development for residential subdivision purposes albeit that the location, nature and form of construction of future development must reflect the performance objectives of NSW Rural Fire Services, *Planning for Bushfire Protection, 2019*.

3.1.2 Defendable Space/Asset Protection Zone Management

Areas identified as forming part of future APZ's and defendable spaces for any future residential and business/commercial subdivision developments must be managed so as to comply with the standards which are applicable to Asset Protection Zones as follows;

(i) Inner Protection Area (IPA)

An IPA should provide a tree canopy cover of less than 15% and should be located greater than 2 metres from any part of the roofline of a building.

Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10m from an exposed window or door.

Trees should have lower limbs removed up to a height of 2 metres above the ground

(ii) Outer Protection Area (OPA)

An OPA should provide a tree canopy cover of less than 30% and should have the understorey managed (mowed) to treat all shrubs and grasses on an annual basis in advance of the fire season (usually September).

Based upon the size and shape of the subject areas of land, compliance with the minimum APZ requirements is achievable for the future residential subdivision development of the proposed rezoning areas having regard to their size and the characteristics of the hazard vegetation which are relevant to any future residential developments

3.1.3 Operational Access and Egress

Access and egress from the subject site involve the movement of vehicles to and from the public road system which will service the development of the approved residential subdivision of land to the east of the subject site. In this regard the future public road infrastructure will connect with Waianbar Avenue together with a recently constructed public road which services recently constructed residential lots on land to the northeast of the subject site. Both Waianbar Avenue and the recently constructed public road provide for connection with Phillip Drive which is a major connecting road in the locality.

Connection of the existing and proposed new public road infrastructure to Phillip Drive will provide for movement to and from the subject site from areas which have been historically developed for residential occupation and use. Movement to and from the proposed development will therefore be from the north and east from areas protected from the impacts of bushfire.

It is understood that all new roads within the future subdivision of the subject site will be two-way and will be constructed to normal residential street standards.

It is also noted that the design of the already approved subdivision of land to the east of the subject site provides for connection with future development of land to the south of the subject site on land zoned for residential subdivision in this aspect.

The already approved development of land to the northeast and east of the subject site provides for the movement of vehicles away from areas of bushfire hazard. This approach provides for movement to and from the subject site from areas which would be sheltered from the impacts of bushfire.

Having regards to the above, the access and egress strategy for the future development of the subject site takes advantage of existing public road infrastructure which in the main provides for access to and egress via areas which would be protected from the impacts of bushfire.


It is further noted that the concept design provides for a 'loop through road' configuration which provides for multiple alternative access and egress opportunities towards the east and north and engages movement away from areas of bushfire hazard vegetation to areas which would be protected from the impacts of bushfire.




Importantly the integration of access and egress infrastructure with other proposed development areas not only provides access and egress options for the subject areas of land but also supports and improves access and egress opportunities for existing and proposed development in other areas.


In the context of the location of the subject site and its relationship with existing and approved urban development it is considered that access and egress to and from any future development of the subject site can be provided in compliance with the relevant requirements of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019.

It will be necessary to construct all new public roads within the future residential subdivision development of the subject site so as to comply with Section 5.3.2 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019. The relevant public road provisions which are applicable to the proposed residential subdivision development of the subject site are summarized as follows;

Table 6 - Public Road Requirements (PfBP 2019)

Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
(i) General Requirements		
<ul style="list-style-type: none"> • firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation 	<ul style="list-style-type: none"> • property access roads are two-wheel drive, all-weather roads; and • perimeter roads are provided for residential subdivisions of three or more allotments; and • subdivisions of three or more allotments have more than one access in and out of the development; and • traffic management devices are constructed to not prohibit access by emergency services vehicles; and • maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 	 Future design of road infrastructure to comply

	<p>degrees or other gradient specified by road design standards, whichever is the lesser gradient; and</p> <ul style="list-style-type: none"> all roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; and where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; and where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system. 	
<ul style="list-style-type: none"> the capacity of access roads is adequate for firefighting vehicles 	<ul style="list-style-type: none"> the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating. 	 Future design of road infrastructure to comply
<ul style="list-style-type: none"> there is appropriate access to water supply 	<ul style="list-style-type: none"> hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; hydrants are provided in accordance with AS 2419.1:2005; there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available. 	 Future design of road infrastructure to comply
(ii) Perimeter Roads		
<ul style="list-style-type: none"> access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the 	<ul style="list-style-type: none"> perimeter roads are two-way sealed roads; and 8m carriageway width kerb to kerb; and parking is provided outside of the carriageway width; and hydrants are located clear of parking areas; and there are through roads, and these are linked to the internal road system at an interval of no greater than 500m; and curves of roads have a minimum inner radius of 6m; and the maximum grade road is 15° and average grade is 10°; and the road crossfall does not exceed 	 Future design of road infrastructure to comply

interface	3°; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	
(iii) Non-Perimeter Roads		
<ul style="list-style-type: none"> • access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while residents are evacuating 	<ul style="list-style-type: none"> • minimum 5.5m width kerb to kerb; and • parking is provided outside of the carriageway width; and • hydrants are located clear of parking areas; and roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; and curves of roads have a minimum inner radius of 6m; and • the road crossfall does not exceed 3°; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. 	 Future design of road infrastructure to comply

Subject to compliance with the requirements of **Table 6** above in relation to the design and construction of new public roads, it is considered that the proposed access and egress arrangements will be acceptable for any future subdivision development of the area of land which is proposed to be rezoned given the nature, construction and extent of the existing public road infrastructure which is present in the locality and the future public road systems which will be required to be provided to serve any future development of the subject site.

3.1.4 Services - Water, Gas and Electricity

As set out in Section 5.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019, developments in bushfire prone areas must maintain a water supply reserve dedicated to firefighting purposes.







Given that the proposed rezoning and future subdivision of the land provides for residential allotments, all proposed lots will have access to the reticulated water supply, the extension of which will be required by Kempsey Shire Council to service the proposed subdivision. It is however noted that in accordance with NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 the determination of a guaranteed water supply is to be made by the water supply authority where mains water supply is available.

Electricity supply is available and will be accessible to the residential and business/commercial development of the land.

Reticulated gas services are not available in the locality and are therefore not available to the subject site.

The incorporation into the future residential subdivision development of subject site of the relevant provisions of the following acceptable solutions as provided for by Section 5.3.4 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 will ensure compliance with the intent for the provision of services to the future lots which will result as a consequence of the proposed rezoning.

Table 7 – Service Provision Requirements (PfBP 2019)

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.		
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
Water Supply <ul style="list-style-type: none"> a water supply is provided for firefighting purposes 	<ul style="list-style-type: none"> reticulated water is to be provided to the development, where available; a static water supply is provided where no reticulated water is available. 	 To comply
<ul style="list-style-type: none"> water supplies are located at regular intervals the water supply is accessible and reliable for firefighting operations 	<ul style="list-style-type: none"> fire hydrant spacing, design and sizing comply with the Australian Standard AS 2419.1:2005; hydrants are not located within any road carriageway; reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads. 	 To comply
<ul style="list-style-type: none"> flows and pressure are appropriate 	<ul style="list-style-type: none"> fire hydrant flows and pressures comply with AS 2419.1:2005. 	 To comply
<ul style="list-style-type: none"> the integrity of the water supply is maintained 	<ul style="list-style-type: none"> all above-ground water service pipes are metal, including and up to any taps. 	 To comply
Electricity Services <ul style="list-style-type: none"> location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings 	<ul style="list-style-type: none"> where practicable, electrical transmission lines are underground; where overhead, electrical transmission lines are proposed as follows: <ul style="list-style-type: none"> lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines. 	 To comply
Gas services <ul style="list-style-type: none"> location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings. 	<ul style="list-style-type: none"> 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; all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; connections to and from gas cylinders are metal; polymer-sheathed flexible gas supply lines are not used; above-ground gas service pipes are metal, including and up to any outlets 	 To comply (where applicable)

It is considered that the intent of the requirement for the provision of services as required by NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 can be satisfied for the future residential subdivision of the areas of the subject site which are proposed to be rezoned.

3.1.5 Landscaping

Landscaping is a major cause of fire spreading to buildings, and therefore any landscaping proposed in conjunction with the future development of the subject areas will need consideration when planning, to produce gardens that do not contribute to the spread of a bushfire.

When planning any future landscaping surrounding any future development on the subject areas, consideration should be given to the following:

- The choice of vegetation – consideration should be given to the flammability of the plant and the relation of their location to their flammability and ongoing maintenance to remove flammable fuels.
- Trees as windbreaks/firebreaks – Trees in the landscaping can be used as windbreaks and also firebreaks by trapping embers and flying debris.
- Vegetation management – Maintain a garden that does not contribute to the spread of bushfire.
- Maintenance of property – Maintenance of the property is an important factor in the prevention of losses from bushfire.

Appendix 4 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 contain the standards that are applicable to the provision and maintenance of landscaping.

Any landscaping proposed to be undertaken in conjunction with any future development of the areas which are the subject of this report is to comply with the principles contained in Appendix 4 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019.

Compliance with Appendix 4 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 will satisfy the intent of the bush fire protection measures that are applicable to the provision of landscaping as part of the future subdivision of the areas of the subject site which are proposed to be rezoned.

3.2 Construction of Buildings in Bushfire Prone Areas

3.2.1 General

The 'Deemed-to-Satisfy' provisions for construction requirements are detailed in AS 3959-2018 however in NSW the relevant Bushfire Attack Level and construction requirements must be determined in accordance with Appendix 1 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 (in particular Table A1.12.6), rather than in accordance with Section 2 of AS 3959 - 2018.

However, given that the proposed rezoning proposal which is the subject of this report does not involve the erection of any buildings, the determination of Bushfire Attack Levels (BAL's) that would be applicable to future buildings on the future residential lots is not relevant at this time.

It is however noted that compliance with the minimum Asset Protection Zone requirements for the future lots, as nominated in **Table 4** of this report, will provide for opportunities for future dwellings to be constructed upon each of the proposed allotments in compliance with the requirements provided for in AS 3959 – 2018 (as modified by NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019).

The information presented in Section 3.1.1 of this report indicates that where the minimum required APZ's are provide in accordance with **Table 4** of this report, future buildings erected within each future lot would be subjected to a worst-case Bushfire Attack Level of BAL 29. This is consistent with the acceptable solution requirements of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019.

4.0 SUMMARY OF FINDINGS

The following recommendations are provided in response to the proposed rezoning and associated residential subdivision concept layout for the subject site as provided in **Appendix 3** of this report;

- (i) Asset Protection Zones are to be provided to future residential lots in accordance with Section 3.1.1 of this report.
- (ii) A minimum 20 wide APZ is to be provided between any released stages of the subdivision and any areas of unmanaged vegetation within approved development areas of the subject site. This APZ will be required to be established and maintained to the standards applicable to Inner Protection Areas (IPA's) until such times as adjoining/adjacent land has been subdivided for development. The creation and maintenance of the required APZ will be via a 'restriction as to user' pursuant to Section 88B of the Conveyancing Act, 1919 which requires the establishment and maintenance of a minimum 20m APZ on adjoining/adjacent land to the released residential lots.
- (iii) The size of the allotments of land along the northern perimeter of the subject site will need to be such so as to provide for the retention of the Forested Wetland vegetation together with a minimum 20m APZ with sufficient room remaining in which to construct a dwelling.
- (iv) Vegetation Management Plans (VMP's) are to be prepared for areas nominated as open space and public reserve within or adjoining the subject site. The VMP's are to provide for the ongoing management of any areas which form part of the minimum required APZ's. The ongoing implementation of VMP's is to be imposed upon the landowners via a positive covenant pursuant to section 88B of the Conveyancing Act, 1919.
- (v) The design and construction of all public roads within the future residential subdivision of the subject site are to comply with the acceptable solutions provided for in Section 5.3.2 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019.
- (vi) Where development staging is proposed, temporary turning heads are to be provided to the proposed public roads until such times as the development of adjoining stages occurs. The design and construction of the temporary turning heads is to be consistent with the relevant requirements of **Table 6** of this report.
- (vii) Water and other services are to be provided to the future development lots in accordance with the requirements detailed in Section 3.1.4 of this report.
- (viii) Adopt Landscaping principals in accordance with Section 3.1.5 of this report.
- (ix) The determination of the Bushfire Attack level (BAL) and corresponding construction standards for future residential lots should be the subject of an individual bushfire hazard assessment conducted in conjunction with the development on each of the lots created as a result of the proposed rezoning.

5.0 CONCLUSION

It is considered that the proposed rezoning of the nominated area of land known as Lot 35 DP 1214499, Wainbar Avenue, South West Rocks is at risk of bushfire attack; however, it is in our opinion that with the implementation of the bushfire threat reduction measures and consideration of the recommendations in this report, the bushfire risk is manageable for the proposed rezoning albeit that the design and construction of any future development within the rezoning area will need to demonstrate compliance with the relevant requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

With the implementation of the recommendations, it is considered that it will be possible for the future development of the areas which is proposed to be rezoned to meet the applicable performance objectives and acceptable solutions as provided for in NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

This report is however contingent upon the following assumptions and limitations.

Assumptions

- (i) For a satisfactory level of bushfire safety to be achieved regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.
- (ii) There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
- (iii) It is assumed that the building works will comply with the DTS provisions of the NCC including the relevant requirements of Australian Standard 3959.
- (iv) Any future developments are constructed and maintained in accordance with the risk reduction strategy in this report.
- (v) The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.
- (vi) This report has been prepared on the basis that the Forested Wetland vegetation along the far northern portion of the subject site is to be reduced to a maximum 20m width with the extent of the vegetation disconnected via the managed vegetation on adjoining land to the west of the subject site and development of residential lots and supporting infrastructure to the east of the subject site.
- (vii) This report has been prepared on the basis that all hazard vegetation located along the western portion of the subject site will be removed with residential lots having a direct relationship with the managed vegetation within the South West Rocks Golf Course.
- (viii) The information contained in this report is based upon the information provided for review, refer to **Appendices 2 and 3** inclusive.

No responsibility is accepted for the accuracy of the information contained within the above plans.

Limitations

- (i) The data, methodologies, calculations and conclusions documented within this report specifically relate to the building and must not be used for any other purpose.
- (ii) A reassessment will be required to verify consistency with this assessment if there is building alterations and/or additions, change in use, or changes to the risk reduction strategy contained in this report.

6.0 REFERENCES

NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019

AS 3959-2009, **Construction of Buildings in Bushfire Prone Areas**

AS 3959-2018, **Construction of Buildings in Bushfire Prone Areas**

Keith David 2004, Ocean **Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT**, Department of Environment and Conservation

NSW State Government, **Rural Fires Act**, 1997

Port Macquarie-Hastings Councils, **Bushfire Prone Land Mapping**

NSW Rural Fire Service, **Guideline for Bushfire Prone Land Mapping**, 2002

Australian Building Codes Board, **National Construction Code**, 2019

NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2002*

NSW Rural Fire Service, **NSW Local Government Areas FDI**, May 2017

Disclaimer

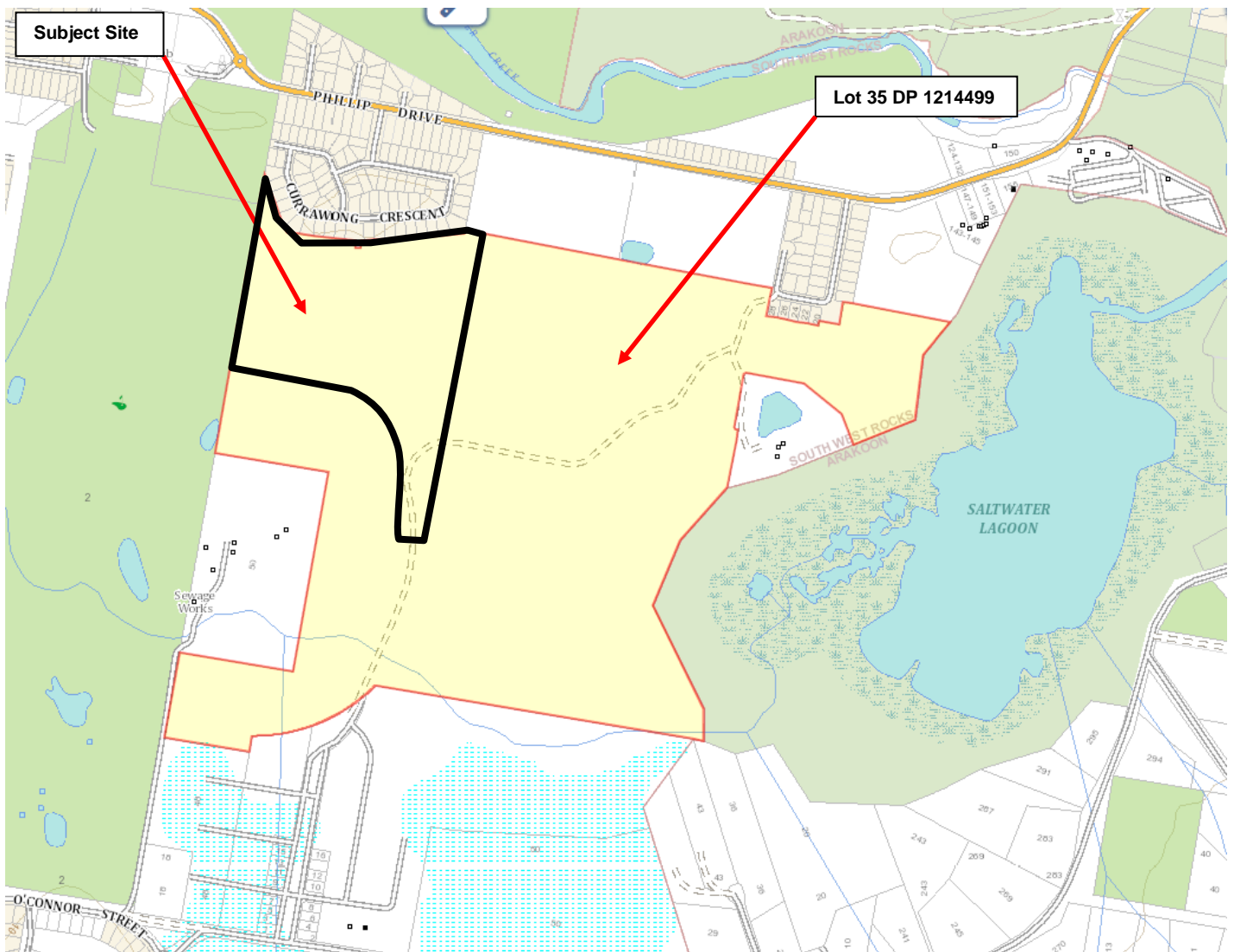
The findings referred to in this report are those which, in the opinion of the author, are required to meet the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019. It should be noted that the Local Authority having jurisdiction for the area in which the property is located may, within their statutory powers, require different, additional or alternative works/requirements to be carried out other than those referred to in this report.

This report has been prepared partially on information provided by the client. Information provided by the client in respect of details of construction.

The author denies any legal liability for action taken as a consequence of the following:

- The Local Authority requiring alternative or additional requirements to those proposed or recommended in this report.
- Incorrect information, or mis-information, provided by the client with regard the proposed development which is in good faith included in the strategies proposed in this report and later found to be false.

APPENDIX 1 Subject Site



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APPENDIX 3 Development Concept Plan



APPENDIX 4

APZ Compliance Concept



INDICATIVE ONLY

NOT TO SCALE