

**STRATEGIC
BUSHFIRE STUDY

PROPOSED REZONING**

**LOT 3 DP 1231274,
476 MACLEAY VALLEY
WAY,
SOUTH KEMPSEY**

**CLIENT:

GRIFFIN
SUPERANNUATION
FUND

JANUARY 2025**

This report has been prepared by David Pensini – Building Certification and Environmental Services with all reasonable skill, care and diligence for Griffin Superannuation Fund.

The information contained in this report has been gathered from discussions with representatives of Griffin Superannuation Fund, a review of the plans provided on behalf of Griffin Superannuation Fund 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 Griffin Superannuation Fund 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: 23rd January 2025



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1.0 INTRODUCTION

The area of land which is the subject of this report is known as Lot 3 DP 1231274, 476 Macleay Valley Way, South Kempsey.

The eastern portion of the subject site is zoned for General Industrial (E4) land uses whilst the western portion of the subject site is zoned Rural Landscape (RU2). An existing machinery sales and servicing business currently occupies the subject site.

It is proposed to rezone the western and northern central portions of the subject site from the current Rural Landscape (RU2) zoning to General Industrial (E4) which will enable the future subdivision of the subject site for industrial development purposes. Access is proposed to be provided via the existing frontage to Macleay Valley Way and new road infrastructure which will connect future allotments with Macleay Valley Way.

This report is based on site assessments carried out on 16th August 2024.

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

As the proposed rezoning of the subject land would support its future use for industrial developments, any future development of the subject areas of land for these purposes would not be integrated development and would not be subject to the issuing of a Bush Fire Safety Authority (BFSA) under Section 100B of the *Rural Fires Act 1997*.

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

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 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 near, 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 consider any comments made. The draft LEP shall also have regard to PBP. 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 Commercial and Industrial Developments

Chapter 8 of NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 provides for the relevant bushfire threat management requirements for other forms of development not involving residential and special fire protection purpose developments. In this regard Chapter 8 provides the specific bushfire threat management requirements for buildings with a National Construction Code (NCC) classification of 5 – 8 and Class 10 buildings and structures.

Under the building classification system within the National Construction Code (NCC), Class 5 to 8 buildings include offices, shops, factories, warehouses, public car parks and other commercial and industrial facilities. Class 10 includes non-habitable buildings and structures such as garages, carports, swimming pools and fences.

Whilst Chapter 8 of NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 does not provide for any specific acceptable solutions in relation to bushfire threat management measures the following objectives are applied to proposed developments in relation to access, water and services, and emergency and evacuation planning:

- *to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.*
- *to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.*
- *to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development; and*
- *consideration of storage of hazardous materials away from the hazard wherever possible.*

Similarly, the NCC does not provide for any bush fire specific performance requirements for these classes of building. As such AS 3959 and the NASH Standard are not considered as a set of 'deemed to satisfy' provisions, however compliance with AS 3959 and NASH should be considered when meeting the aims and objectives of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019.

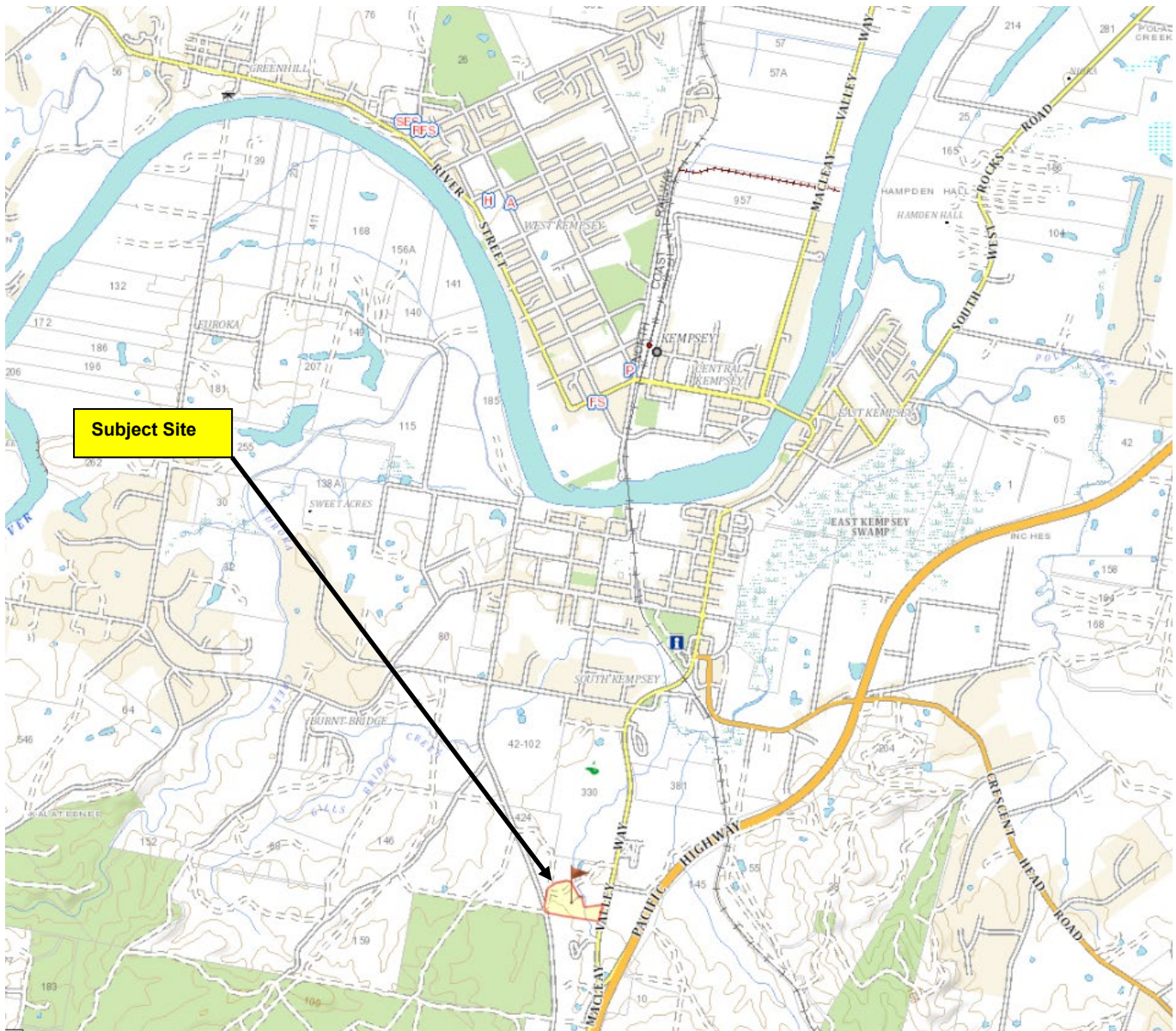
The general fire safety construction provisions of the NCC are taken as acceptable solutions for commercial and industrial developments however construction requirements for bush fire protection should be considered on a case-by-case basis.

1.3 Location and Site Description

The subject site is comprised of a single irregularly shaped Torrens Title lot known as Lot 3 DP 1231274, 476 Macleay Valley Way, South Kempsey which is located within the Kempsey Shire local government area, on the mid north coast of New South Wales.

The subject site is located approximately 3.5km south of the Kempsey Commercial Business District (CBD) within an urban fringe location.

Figure 1 - Site Location



Forming part of the southern entry to the township of Kempsey the area of the subject site contains a mixture of land uses including industrial, residential, indoor recreation, motel, caravan park, church, golf course, museum and bushland open space. The character of the area is that of an urban fringe location.

It is noted that the subject site has been approved for industrial use with a machinery sales and repair business operating from the subject site. In this regard a large industrial building and

associated operational infrastructure is present in the eastern portion of the subject site. A number of smaller buildings are also located in the eastern central portion of the subject site. Formal and informal storage areas are located in the western portion of the subject site. The western portion of the subject site also contains open air storage areas which are used in conjunction with the existing machinery sales and repair business.



Existing buildings in the eastern portion of the subject site – fronting Macleay Valley Way



Existing buildings in the eastern central portion of the subject site



Open air storage areas in the western portion of the subject site

Access to the subject site is gained via Macleay Valley Way which adjoins the subject site to the east with a property access road system connecting the subject site to Macleay Valley Way. It is also noted that the far southern portion of the western boundary of the subject site adjoins the West End Road reserve.

The subject site has been cleared of most native vegetation as part of the active industrial use of the land. Some narrow bands of scrub regrowth are present adjacent to the northern, southern and western boundaries of the subject site whilst some reeds and scrub regrowth are present in conjunction with a stormwater detention basin which is located in the northern portion of the subject site.

Areas of Wet Sclerophyll Forest are present on adjoining and adjacent land to the northwest, south and west whilst managed vegetation associated with existing industrial activities are present to the north/northeast of the subject site. Vegetation to the east of the subject site comprises highly modified and managed forest vegetation which has been integrated into a variety of land uses in this aspect. The absence of shrub layer, the management understorey and the selective removal of trees has significantly modified the floristic characteristics of the vegetation in the eastern aspect.

The landform of the subject site is influenced by an intermittently flowing creek/gully which bisects, (north to south), the subject site with higher elevated land present to the east and west of the subject site. Accordingly slope conditions on the subject site provide for gentle easterly and westerly down slope conditions towards the meander of the creek/gully. The presence of another intermittently flowing creek/gully immediately to the north of the western portion of the subject site also provides for gentle northerly down slope conditions in the northwestern portion of the subject site. It is however noted that the topography of the western portion of the subject site has been significantly modified through the industrial use of the land with benching of the site evident. Similar slope conditions are present on adjoining and adjacent land with the meanders of the intermittently flowing creeks/gullies in the locality generally defining transitions in slope conditions. Notwithstanding this upslope gentle conditions are present to the northeastern, eastern and southeastern aspects with gentle to moderate downslopes to the northern, northwest, western and southeastern aspects.

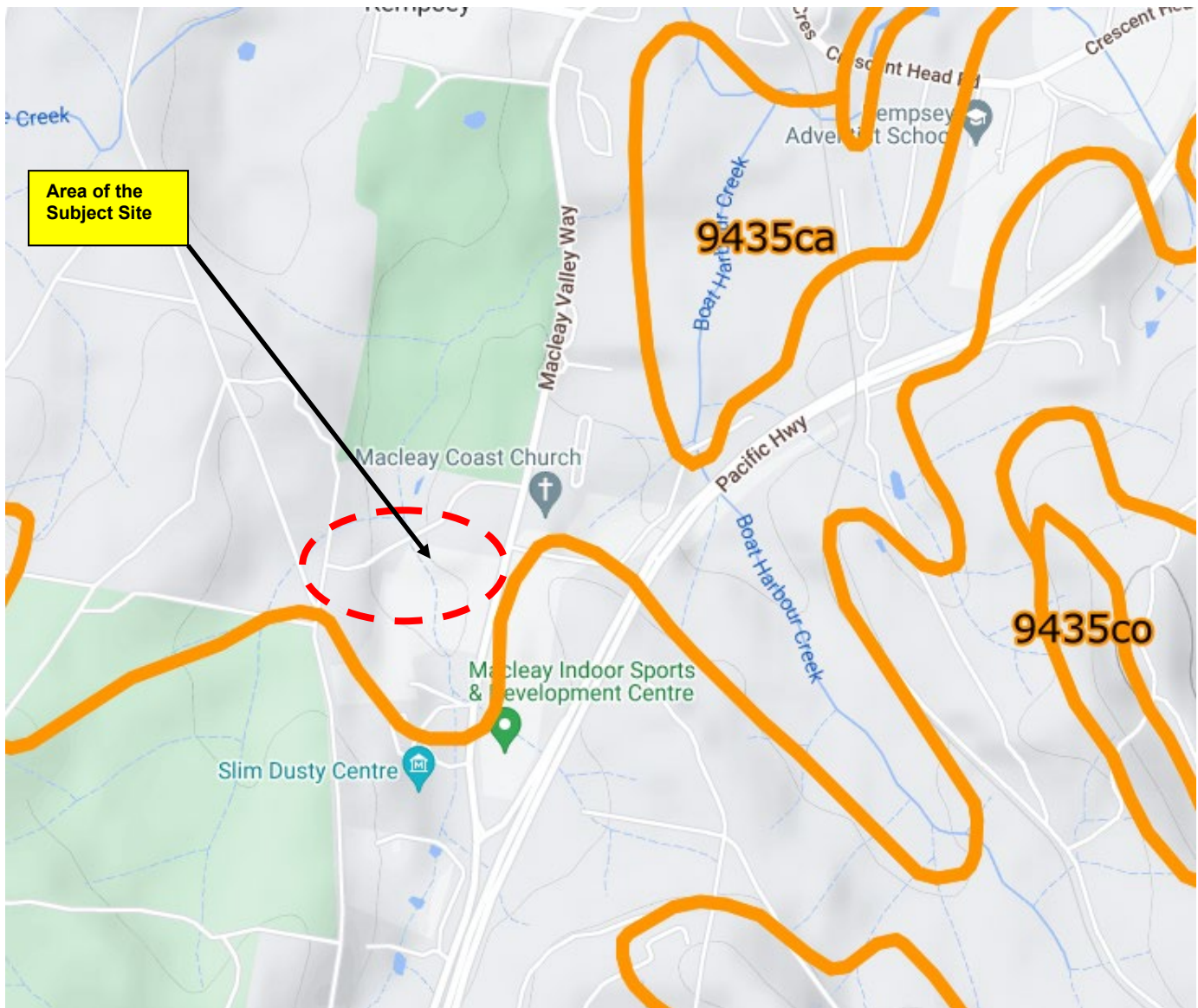
The subject site contains soils of the Kundabung soil landscape which is described as follows:

- Kundabung (9435kg) – Remainder of the higher elevation portions of the site. Undulating rises with broad crests, extensive foot slopes and drainage plains on Permian mudstones of the Kempsey (Pek) and Beechwood Beds (Peb). Slopes range from 3 - 10% (often <5%);

elevation and relief 5 - 30 m. poorly drained hardsetting Soloths, Grey- brown, Yellow and Red Podzolic Soils.

The above soil landscape can be seen in **Figure 2** below:

Figure 2 – Soil Landscapes of the Area

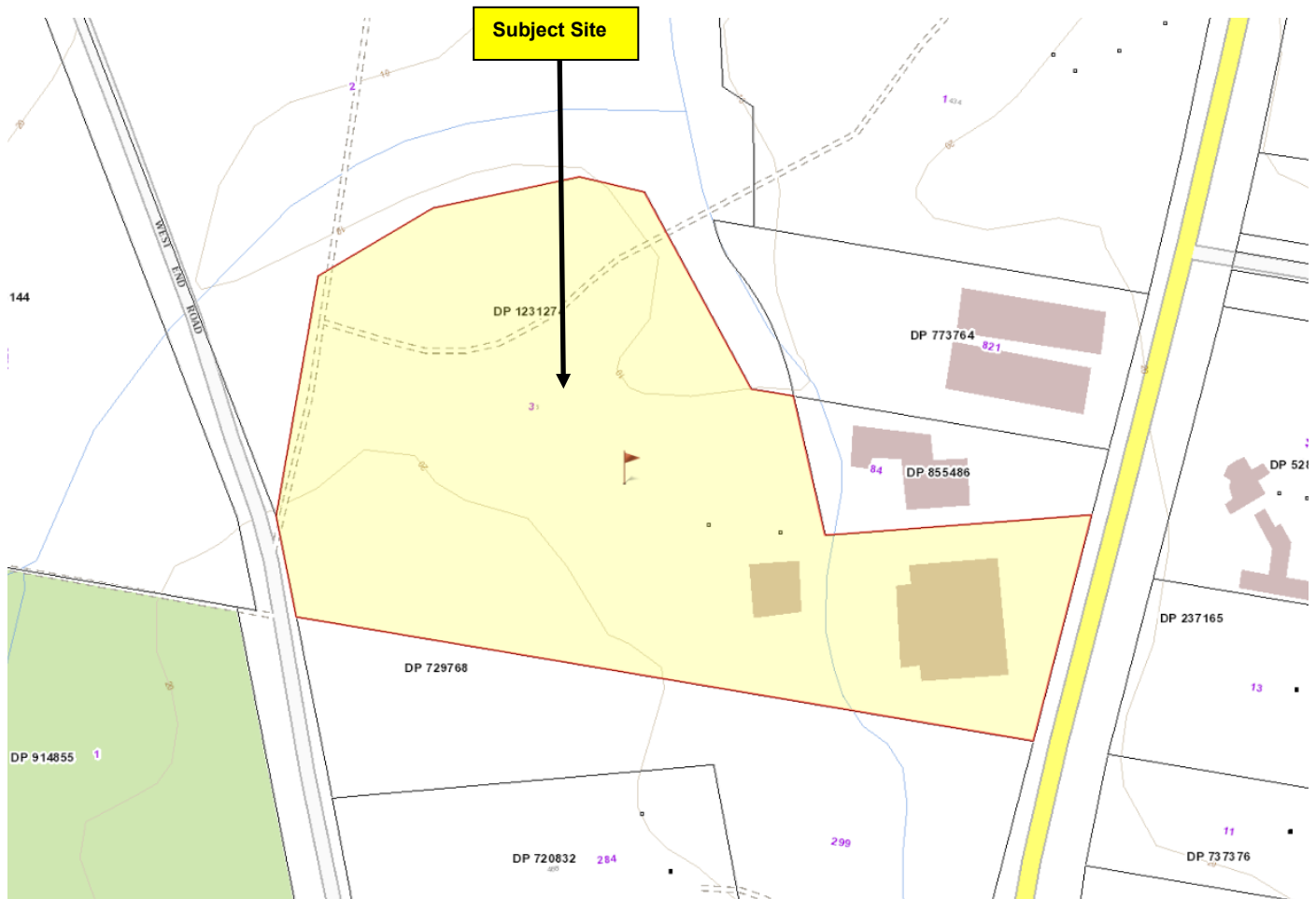


The closest Fire Service is located approximately 3.7km to the north of the subject site, (Kempsey Fire and Rescue Brigade), with the closest Fire Control Centre being at Kempsey.

1.4 Site History

The subject site is irregular in shape and has a total area of some 7.48 hectares and currently supports the operation of a machinery sales and service centre, refer to **Figure 3**.

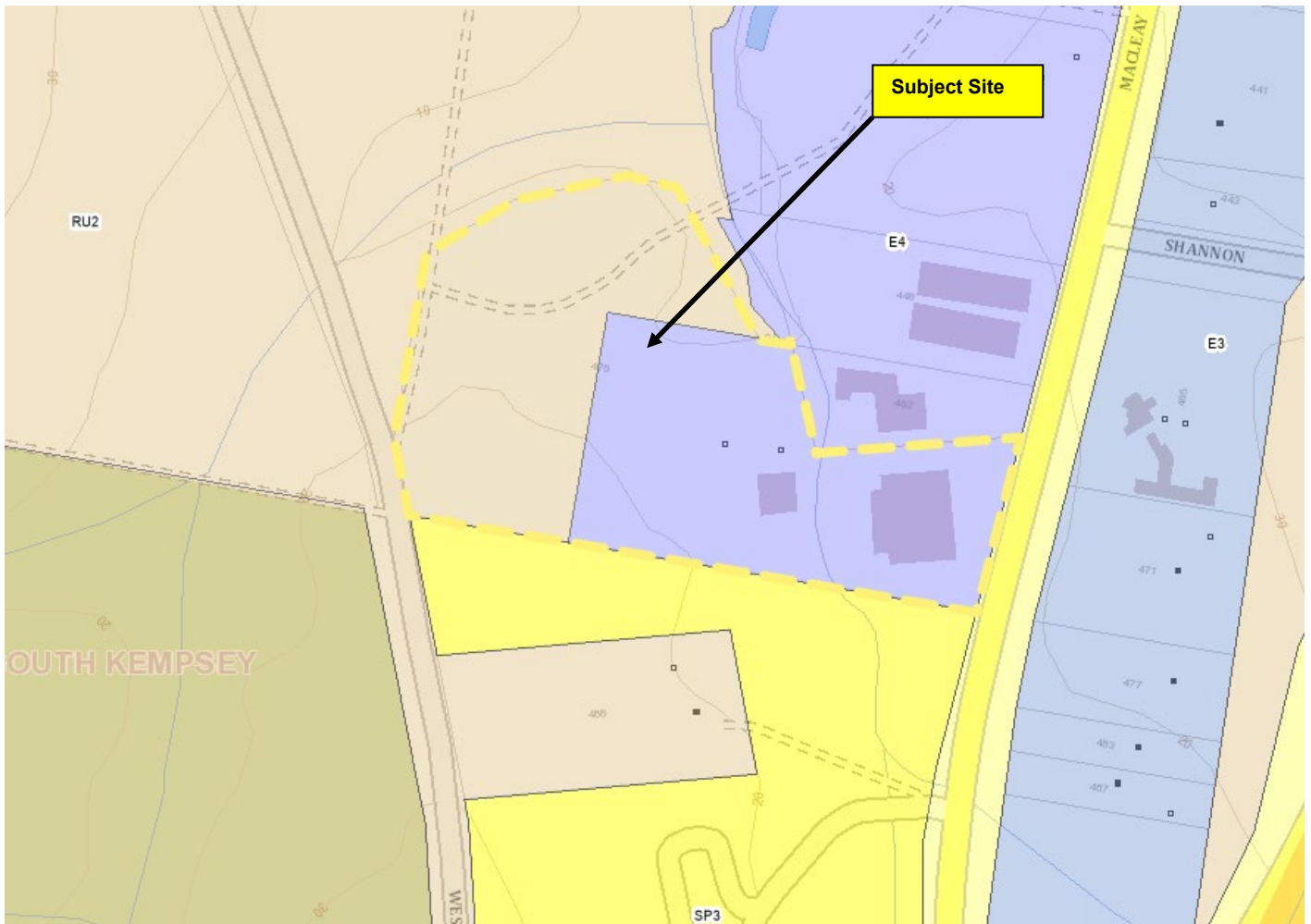
Figure 3 – Subject Site



The character of the locality is that of an urban fringe area with a mixture of land use including industrial, residential, indoor recreation, motel, caravan park, church, golf course, museum and bushland open space areas. In this regard to the southwest of the subject site are large areas of bushland within the Kalateenee State Forest.

The eastern and central portions of the subject site are zoned General Industrial (E4) pursuant to Kempsey Local Environment Plan, 2013 with the western and northwestern portions of the subject site zoned Rural Landscape (RU2). Industrially zoned land (E4) extends to the north/northeast of the subject site whilst adjoining land to the northwest and west is zoned Rural Landscape (RU2). Special Purpose (SP2 and SP3) zonings apply to adjoining land east and south respectively whilst a Forestry (RU3) zoning applies to adjacent land to the southwest. Land beyond Macleay Valley Way to the east is zoned for Productivity Support (E3) purposes, refer to **Figure 4** below.

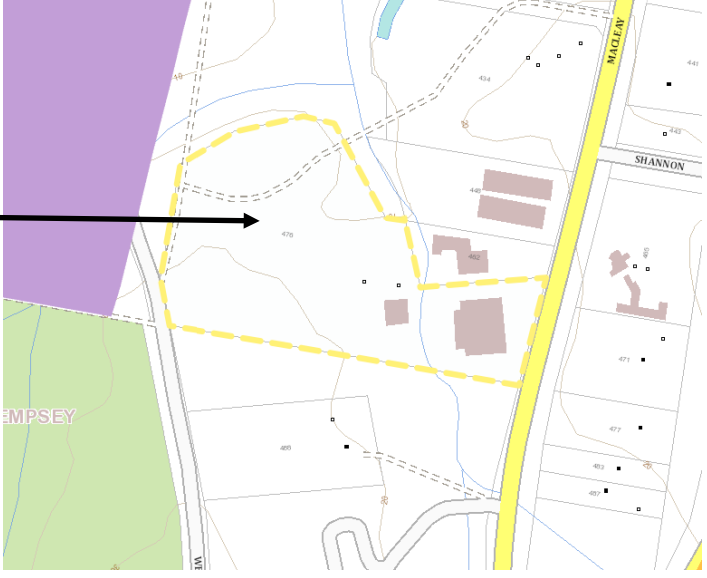
Figure 4 – Existing Land Use Zoning

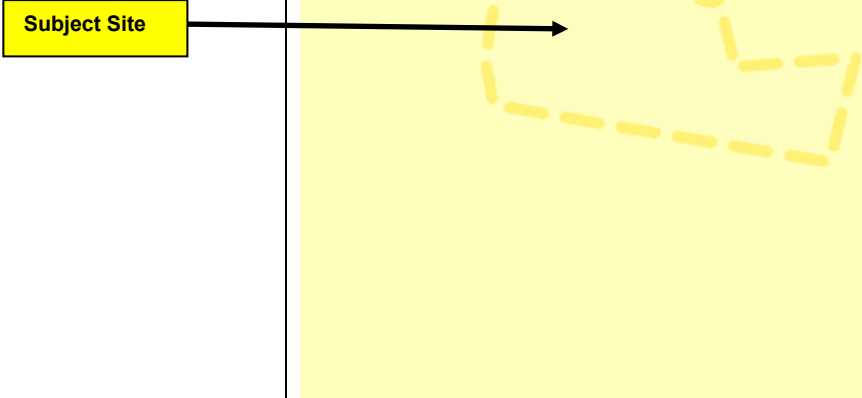


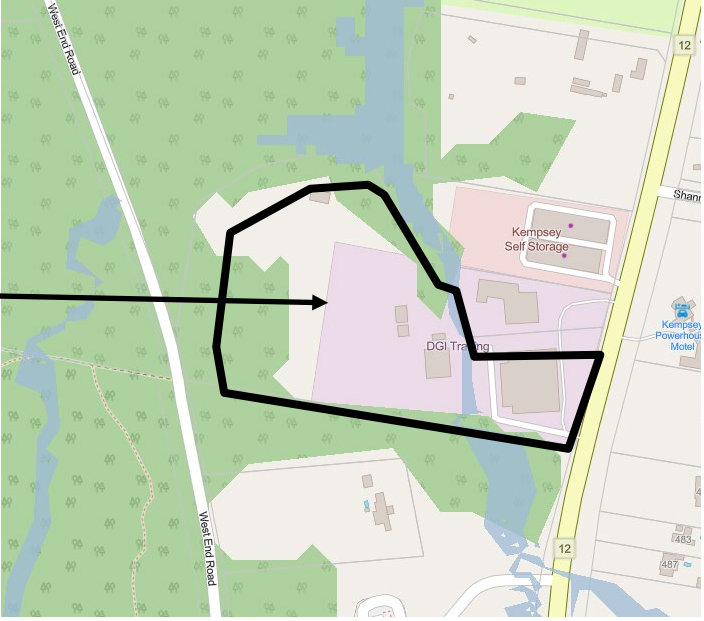
The environmental and heritage features of the subject site are summarized as follows.

Table 1 – Environmental and Heritage Features

ENVIRONMENTAL/HERITAGE FEATURE	COMMENT
Ecological Values	The subject site is not mapped as having specific ecological values.

<p>Subject Site</p>  <p>Ecological Values Mapping</p>	
<p>Riparian Corridors</p>	<p>A narrow band of vegetation which has a riparian context and function bisects the eastern portion of the subject site. This vegetation is associated with an intermittently flowing creek which bisects the subject site.</p>
<p>SEPP (Resilience and Hazards) 2021</p>	<p>The subject site is not identified as being subject to the provisions of the SEPP.</p> <p>The subject site is not identified as being within the Coastal Wetlands, Littoral Rainforest, Coastal Vulnerability, Coastal Use and Coastal Environment Areas of the SEPP.</p> <p>Given the historical use of the subject site, land contamination issues would not be expected to be relevant.</p>
<p>SEPP (Biodiversity and Conservation) 2021</p>	<p>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.</p>
<p>Areas of geological interest</p>	<p>Potential acid sulphate soils, (Class 5), are indicated as being present within the subject site and on adjoining and adjacent land, refer below.</p>

	<p>Acid Sulphate Soils Mapping</p> <p>Based upon the nature of the proposed development and the various construction and land use management options which are available it is considered that land contamination issues, (including the disturbance of acid sulphate soils), will not be an impediment to the future development of the subject site for industrial use purposes.</p>
<p>Environmental Protection Zones</p>	<p>The eastern and central portions of the subject site are zoned General Industrial (E4) pursuant to Kempsey Local Environment Plan, 2013 with the western and northwestern portions of the subject site zoned Rural Landscape (RU2)., refer to Figure 4 above.</p> <p>Accordingly, there are no environmental protection zones identified on the subject site.</p>
<p>Land slip</p>	<p>Given the undulating nature of the topography of the subject site and surrounding areas land slip is not considered to be an issue for the subject site and its future development.</p>
<p>Flood prone land</p>	<p>A narrow central portion of the subject site is shown to be flood prone land and as such is subject to the flood planning provisions of Kempsey LEP, 2013.</p>

<p>Subject Site</p>	 <p>Flood Prone Land Mapping</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>Threatened species, populations, endangered ecological communities and critical habitat</p>	<p>Threatened species, populations, endangered ecological communities, and critical habitat are unlikely to be present as the vegetation on the subject site has been the subject of significant modification and removal over time.</p> <p>This issue is however to be considered via separate ecological 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>This issue is however to be considered via separate ecological assessment.</p>
<p>Aboriginal Heritage</p>	<p>Items of aboriginal heritage are unlikely to be present given the level of historic disturbance which has occurred on the subject site.</p> <p>This issue is however to be considered via separate heritage assessment.</p>

1.5 Development Proposal

It is proposed to rezone the western and far northern central portions of the subject site from Rural Landscape (RU2) to General Industrial (E4) which provides that the entire area of subject site will be zoned General Industrial (E4), refer to **Appendix 1**.

The proposed rezoning will provide for the future subdivision of the subject site for industrial development purposes. In this regard an indicative industrial subdivision concept is also shown in **Appendix 1**.

The proposed industrial subdivision concept plan provides for the existing improvements to be located within an eastern lot, (proposed Lot 1), with the northwestern and western areas of the subject site forming part of three (3) separate industrial lots.

Indicative lot sizes being:

- Proposed Lot 1 – 3.558 hectares
- Proposed Lot 2 – 1.023 hectares
- Proposed Lot 3 – 1.177 hectares
- Proposed Lot 4 – 1.181 hectares

Access to the proposed lots is to be provided via the existing frontage to Macleay Valley Way with a 'right of carriageway' which is to be located within the far southern portion of proposed Lot 4 providing for vehicular access to all proposed lots. In this regard it is the configuration of proposed Lot 4 which provides for an access handle to Macleay Valley Way.

The far eastern portions of proposed Lots 3 and 4 will also be burdened by a 'right of carriageway' which will contain the access road infrastructure necessary to service the allotments which are proposed for the western portion of the subject site. Each of the proposed industrial lots shown in **Appendix 1** will have direct road access to Macleay Valley Way.

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.

A detailed inspection of the subject site was undertaken by representative of David Pensini - Building Certification and Environmental Services on 16th August 2024 in order to identify relevant bushfire hazard factors and characteristics such as.

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

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 areas of land which are the subject of this report.

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.

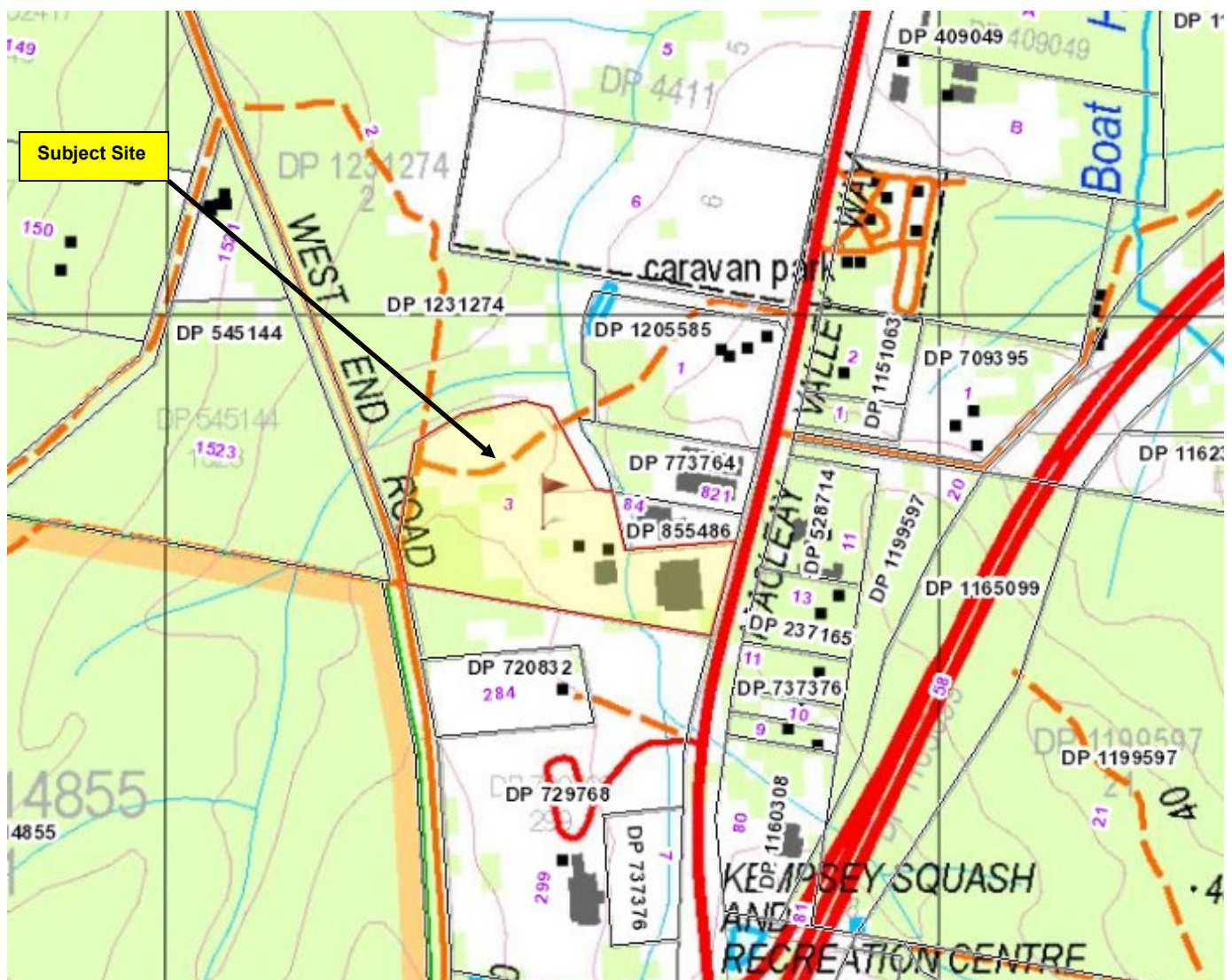
2.1.2 Topography

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.

The landform of the subject site is influenced by an intermittently flowing creek/gully which bisects, (north to south), the subject site with higher elevated land present to the east and west of the subject site. Accordingly slope conditions on the subject site provide for gentle easterly and westerly down slope conditions towards the meander of the creek/gully. The presence of another intermittently flowing creek/gully immediately to the north of the western portion of the subject site also provides for gentle northerly down slope conditions in the northwestern portion of the subject site. It is however noted that the topography of the western portion of the subject site has been significantly modified through the industrial use of the land with benching of the site evident. Similar slope conditions are present on adjoining and adjacent land with the meanders of the intermittently flowing creeks/gullies in the locality generally defining transitions in slope conditions. Notwithstanding this upslope gentle conditions are present to the northeastern, eastern and southeastern aspects with gentle to moderate downslopes to the northern, northwest, western and southeastern aspects.

The topographic features of the subject site and adjoining and adjacent land can be seen in **Figure 5** below.

Figure 5 – Topographic Features of Locality



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

Table 2 –Slope Assessment Results

HAZARD	SLOPE RANGE	UPSLOPE/DOWNSLOPE
Within the subject site	0° - 1°**	Downslope
North/Northwest	2° - 4°	Downslope
South	2° - 5°	Downslope
East	3° - 4° (0°)	Upslope
West	4° - 5°	Downslope

*****Note: Whilst short steep slopes are present immediately adjacent to the bed of the intermittently flowing creek/gully which bisects, (north to south), the subject site these slopes conditions would not influence bushfire behaviour. In this regard the slope conditions relevant to a fire moving from the north to the south along the creek/gully bed have been adopted for the purposes of this report.***

Having regards to the above the topography of the subject site and surrounds does not represent any major constraints in terms of bushfire behaviour.

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 as relevant to bushfire hazard assessment.

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

(i) Vegetation within Development Site

The subject site has been cleared of most native vegetation as part of the active industrial use of the land. Some narrow bands of scrub regrowth are present adjacent to the northern, southern and western boundaries of the subject site whilst some reeds and scrub regrowth are present in conjunction with a stormwater detention basin which is located in the northern portion of the subject site.



Generally cleared western portion of the subject site



Reeds and scrub regrowth adjacent to stormwater detention basin – northern portion of the subject site

It is however noted that a narrow band of highly modified Forest vegetation has been retained in the central portion of the subject site with this vegetation being retained in conjunction with the intermittently flowing creek/gully which bisects, (north to south), the subject site. Given the narrow width and riparian context and function of this area of a vegetation a specification similar to Rainforest was assessed as being relevant.



Riparian corridor
in the central
portion of the
subject site



Riparian corridor
in the central
portion of the
subject site

It is noted that the continuity of the riparian corridor is fragmented by the presence of property road infrastructure which connects the eastern and western areas of the subject site.

(ii) Vegetation on Adjoining and Adjacent Land to the Subject Site

The following vegetation characteristics were identified as being relevant to the proposed rezoning of the subject site having regard to the vegetation characteristics of adjoining and adjacent land.

(i) North

Areas of Wet Sclerophyll Forest are present on adjoining and adjacent land to the north/northwest whilst managed vegetation associated with existing industrial activities are present to the northeast of the subject site. Some swamp forest vegetation was noted as being present on lower lying areas of adjoining land to the north of the subject site.

At distance to the northeast of the subject site is an area of Wet Sclerophyll Forest.



**Predominately
Wet Sclerophyll
Forest
vegetation to the
north/northwest
of the subject
site**



**Area of Wet
Sclerophyll
Forest
vegetation at
distance to the
northeast of the
subject site**

At distance to the north is a transition to managed vegetation within the Kempsey Golf Course.



**Managed
vegetation within
the Kempsey
Golf Course**

(ii) South

Vegetation to the south of the subject site comprises areas of Wet Sclerophyll Forest albeit that the continuity of the forest vegetation in the southern aspect is disrupted by areas of grasslands and managed vegetation within an adjacent residentially occupied allotment. As within the northern aspect some swamp forest vegetation was noted as being present on lower lying areas of adjoining land to the south of the subject site.



**Predominately
Wet Sclerophyll
Forest
vegetation
adjacent to the
eastern portion
of the south
boundary of the
subject site**



**Wet Sclerophyll
Forest
vegetation
adjacent to the
western portion
of the south
boundary of the
subject site**

(iii) East

Vegetation to the east of the subject site comprises highly modified and managed forest vegetation which has been integrated into a variety of historic land uses in this aspect. The absence of shrub layer, the management understorey and the selective removal of trees has significantly modified the floristic characteristics of the vegetation in the eastern aspect.

In adopting a conservative approach to bushfire hazard assessment, a Woodland specification has been adopted for the eastern aspect albeit that the vegetation which is present is likely to be consistent with the standards which apply to Asset Protection Zones.



**Highly modified
forest vegetation
to the east of the
subject site**

(iv) West

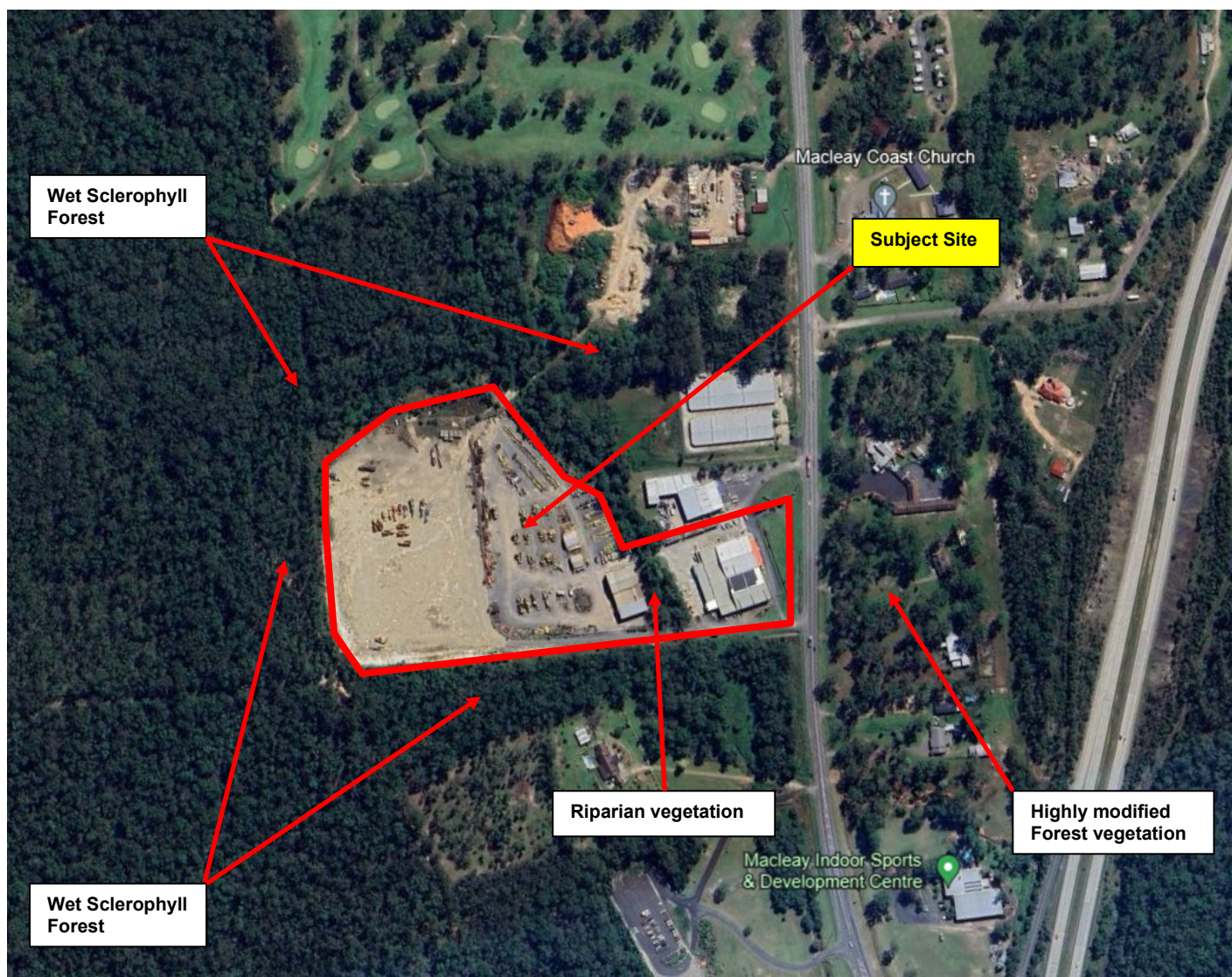
Vegetation to the west of the subject site comprises extensive areas of Wet Sclerophyll Forest.



**Wet Sclerophyll
Forest
vegetation to the
west of the
subject site**

The relationship of the areas of hazard vegetation which were assessed as being relevant to the subject site can be seen in the following figure.

Figure 6 – Bushfire Hazard Vegetation Relationships



The following table summarizes the worst-case vegetation structures which are of bushfire significance to the proposed rezoning and consequential development of future industrial lots.

Table 3 – Bushfire Hazard Vegetation Summary

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)
Within the subject site	Narrow band of modified forest vegetation with a riparian context and function.	Similar in specification to Rainforest
North	Wet Sclerophyll Forest on adjoining and adjacent land to the north of the subject site.	Wet Sclerophyll Forest
South	Wet Sclerophyll Forest on adjoining land to the south of the subject site.	Wet Sclerophyll Forest
East	Highly modified and fragmented forest vegetation within developed and occupied land to the east of Macleay Valley Way.	Similar in specification to Woodland

West	Wet Sclerophyll Forest on adjoining land to the west of the subject site.	Wet Sclerophyll Forest
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It is noted that the identification of areas of bushfire hazard vegetation within the subject site and on adjoining and adjacent land is not consistent with the bushfire risk mapping for the area, refer to **Figure 7**.

Figure 7 - Bushfire Prone Land Mapping



It is noted that the above mapping does not reflect the vegetation removal and modification which has occurred in the western portion of the subject site with only very narrow bands scrub regrowth remaining adjacent to the boundaries of the subject site with all Category 1 hazard vegetation now removed from the western portion of the subject site.

It is also noted that significant areas of Category 1 hazard vegetation have been modified within the adjacent and to the east of the subject site with the resulting vegetation formations being more typical of areas of Category 2 or 3 vegetation. Arguably the vegetation to the east of Macleay Valley drive would be consistent with the standards which apply to managed vegetation.

2.1.4 Climate/Weather

The typical/average climate of the Kempsey area is a humid subtropical climate characterised by warm humid summers and mild winters. The average daily maximum temperature is around 23°C, while the average daily minimum temperature is around 11°C - 12°C.

Long-term average annual rainfall is around 1,050mm 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 Kempsey 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.

Notwithstanding the above, it is noted bushfires do not always conform to widely accepted characteristics. Other fire weather conditions must also be contemplated such as preceding weather conditions, (such as low rainfall or drought), air temperature and relative humidity. If the area has been subject to drought or low rainfall for a period of time, vegetation health tends to deteriorate with increased leaf drop, curing and drying. This contributes to increased ground fuel loads and general ignition susceptibility. Prolonged dry periods also reduce soil moisture content.

Air temperatures of above 30 degrees Celsius are typically conducive to more severe fire weather, as are extended periods of higher-than-average air temperatures. In conjunction, low relative humidity, (i.e., low air moisture content), is also a contributing factor to increased fire weather.

In concert, all the above factors can impact on the ability for fire to propagate, and alter behaviour and intensity characteristics and as such, fire weather is a significant component of bushfire hazard. Whilst an assessment of vegetation types, fuel loads, effective slope and other factors can be readily undertaken, fire weather can fluctuate across days, weeks and seasons and can have a significant impact on the potential for bushfire threat as well as influence bushfire behaviour and intensity.

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 subject site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

Based upon the above it is considered that climatic conditions are at times conducive to supporting bushfire, with the subject site containing and being located adjacent to areas of vegetation which provide for fuel loads sufficient to support and promote bushfires.

2.2 Bushfire Risk Assessment

2.2.1 Overview of Bushfire Attack Mechanisms

Bushfires have long remained a fundamental characteristic of the Australian bush landscape, and likewise Australians have long retained a strong affinity with bush environments.

There remain a number of common factors which are associated with bushfire hazard and events, and these include the incidence of fire weather, availability of fuel along with its type, structure and continuity or fragmentation, and the context of development at the urban / bushland interface.

Bushfire attack refers to the various methods in which bushfire may impact upon life and property and principally encompass the following modes of attack:

(i) Direct flame contact

Direct flame attack refers to flame contact from the main fire front, where the flame which engulfs burning vegetation is one and the same as that which assumes contact with the building. It is estimated that only 10 to 20 per cent of buildings lost to bushfire occur as a direct result of flame attack.

(ii) Ember and firebrand attack

The convective forces of bushfire raise burning embers into the atmosphere on prevailing winds and deposit them to the ground ahead of the fire front.

Typically, ember attack occurs approximately 30 minutes prior to the arrival of the fire front and continues during the impact of the fire front and for several hours afterwards, thus it is the longest lasting impact of bushfire attack. Firebrands occur in a very similar manner but relate to larger items of debris that may still be carried by the wind when alight, such as candle and ribbon barks. In essence, building loss via ember attack relates largely to the vulnerabilities and peculiarities of each building, its distance from hazardous vegetation and whether an occupant (or the like) is present to actively defend it. It is estimated by the CSIRO that approximately 80 to 90 per cent of buildings lost by bushfire are lost as a result of ember attack either in isolation or in combination with radiant heat impact.

(iii) Radiant heat flux

Exposure to radiant heat remains one of the leading causes of fatalities associated with bushfire events. Measured in kilowatts per m², radiant heat is the heat energy released from the fire front which radiates to the surrounding environment, deteriorating rapidly over distance. In terms of impact on buildings, radiant heat can pre-heat materials making them more susceptible to ignition or can cause non-piloted ignition of certain materials if the energy transmitted reaches a threshold level. Radiant heat can also damage building materials such as window glazing, allowing openings into a building through which embers may enter. Radiant heat impact is an especially important factor in building-to-building ignition.

In terms of radiant heat exposure for humans, it can cause pain to unprotected skin in milder situations or life threatening and fatal injury in higher exposure thresholds.

(iv) Fire-driven wind

The convective forces of bushfire typically result in strong to gale force fire-driven winds which in itself, can lead to building damage. The typical effects of fire driven wind include the conveyance of embers, damage from branches and debris hitting the building, as well as direct damage to vulnerable building components such as lifting roofs or roof materials and the damage / breakage of windows.

(v) Smoke

Smoke emission remains a secondary effect of bushfire and is one which is typically not addressed by bushfire assessments. Irrespective, it is important to note the potentially severe impact of smoke

emission on the human respiratory system. It can lead to difficulties in breathing, severe coughing, blurred or otherwise compromised vision, and can prove fatal. It is also important to note that toxic smoke can occur during bushfire, particularly where buildings or materials are ignited. With regard to evacuation, it can reduce visibility and create difficulties for particularly vulnerable persons.

In the progression of a bushfire event, the above five methods interact either exclusively or in concert. It is estimated that approximately 80 to 90 per cent of buildings lost to bushfire are located within 100m of the bushland interface, hence the relevance of statutory provisions and recommendations implemented across Australia which respond to various types of buildings within 100m of adjacent classifiable vegetation.

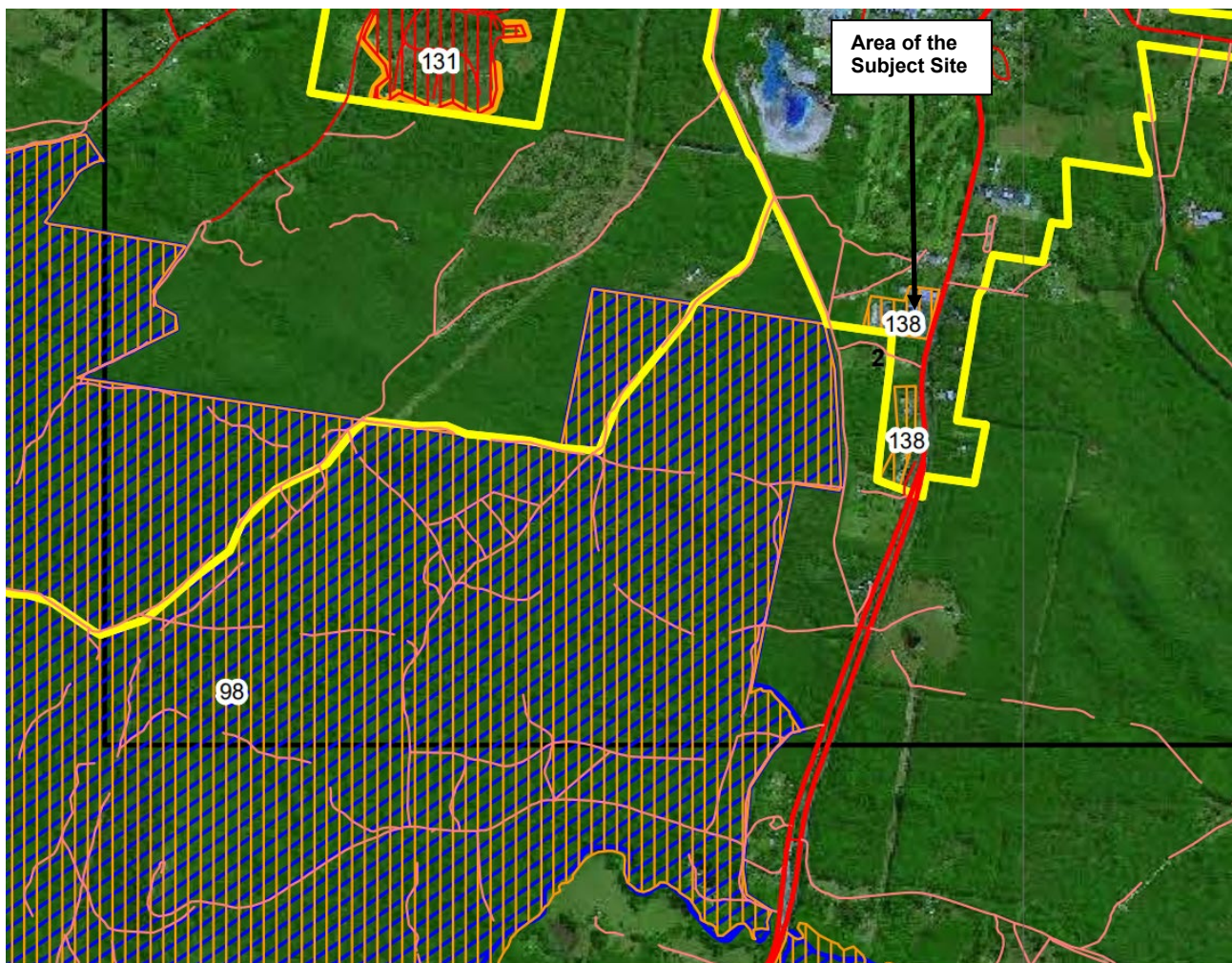
2.2.2 Bushfire Activity History

The Lower North Coast area, (which includes the subject site), has on average 300 bushfires per year, of which one (1) percent on average can be classified as significant fires.

Fire records for the period 2011 – 2016 indicate that most wildfires (19%) resulted from escaped hazard reduction or agricultural burning carried out on private property. On average 60% of bush and grass fires occurred outside of the Bush Fire Danger Period and resulted from poorly managed burns leaving fires unattended, lighting when 'High' or above fire danger is forecast, insufficient preparation of control lines or insufficient resources used to manage the burn.

The Lower Mid Coast BFMC Bush Fire Risk Management Plan, 2018 identifies the area of the subject site as an 'at risk' asset on the basis of the economic impacts of bushfire impacting the assets within the South Kempsey Industrial Area which includes the subject site, refer to **Figure 8** below.

Figure 8 – Extract from the Lower Mid Coast Bushfire Risk Management Plan (2018)



It is noted that the Lower Mid Coast BFMC Bush Fire Risk Management Plan, 2018 identifies a high bushfire risk for the South Kempsey Industrial Area which includes the subject site with community education nominated as the appropriate risk management response.

It is also noted that the area of the Kalateenee State Forest which extends to the west and southwest of the subject site is also identified as an 'at risk' asset on the basis of the economic impacts of bushfire impacting the forest resource. It is noted that this area is nominated as a Strategic Fire Advantage Zone (SFAZ) with a number of fuel reduction, fire trail maintenance and community education actions identified as being relevant to the management of bushfire risk as it pertains to the forestry land.

Notwithstanding the above the subject site and surrounds are not known to have an extensive history of bushfire. Recent bushfire activity was not detected on immediately adjoining land to the subject site although evidence of fuel reduction burning activities was noted as having occurred within the area of the Kalateenee State Forest to the west/southwest of the subject site.



Evidence of fuel reduction burning activities within the Kalateenee State Forest

2.2.3 Potential Fire Behaviour

Whilst each bushfire event is different, fire spreads by responding to changes in fuel, terrain, and weather conditions. Therefore, based on landscape conditions and fire history, potential fire behaviour can be determined.

It is generally anticipated that a potential fire within the locality and surrounds, would spread more quickly and have the potential for higher intensities when burning under the influence of northerly winds, particularly during warmer summer months.

In this regard the most likely bushfire risk scenario would be a fire moving from the northwest towards the southeast within the areas of forest vegetation which extend to the north and west of the subject site under the influence of the more common northerly wind conditions which prevail during the bushfire season. This risk is however tempered by disruption in fire run conditions due to the reduced fuel loads within the Kempsey Golf Course which is located within 300m to the north of the subject site.

It is possible that bushfires may also move from adjoining and adjacent land to the south/southwest towards the north/northeast under the influence of southerly wind conditions. This risk is however tempered by the presence of the Strategic Fire Advantage Zone (SFAZ) which encompasses the Kalateenee State Forest with a number of fuel reduction, fire trail maintenance and community

education actions identified as being relevant to the management of bushfire risk in this area of land. The bushfire risk is also tempered by the disruption in fire run conditions directly to the south of the due to the reduced fuel loads within the residentially occupied land which is located within adjacent land to the south of the subject site.

Bushfire risks also exist to the west of the subject site however the risk is tempered by the presence of the Strategic Fire Advantage Zone (SFAZ) which encompasses the Kalateenee State Forest with a number of fuel reduction, fire trail maintenance and community education actions identified as being relevant to the management of bushfire risk in this area of land.

The presence of hazard vegetation in the eastern aspect provides for a level of bushfire risk however this risk is significantly reduced due to the reduced fuel loads which exist in the eastern aspect, the upslope topographic conditions and the fragmentation of fire run conditions due to the presence of managed vegetation associated with buildings and associated infrastructure which are present in the eastern aspect.

Notwithstanding the above, the subject site does have the potential to be exposed to landscape scale bushfires due to the extent of bushland which extends to the northwest, southwest and west of the subject site.

It is noted that whilst an area of hazard vegetation is present within the subject site, (narrow band of riparian vegetation), the risks associated with bushfire in this area of vegetation are considered to be significantly reduced due to the fuel loads, slope conditions and fragmented fire run conditions which exist.

The bushfire risk which is relevant to the subject site is summarized as follows.

Table 4 – Bushfire Behaviour Risk Summary

ASPECT	VEGETATION DESCRIPTION	SLOPE CONDITION	WORST CASE WIND INFLUENCE
North/Northwest	Wet Sclerophyll Forest on adjoining land to the north and northwest of the subject site and the riparian vegetation within the subject site.	2° - 4° Downslope	Northwest
South	Wet Sclerophyll Forest on adjoining land to the south of the subject site and the riparian vegetation within the subject site.	2° - 5° Downslope	Southwest
East	Highly modified and fragmented forest vegetation within developed and occupied land to the east of Macleay Valley Way.	3° - 4° (0°) Upslope	Northeast
West	Wet Sclerophyll Forest on adjoining land to the west of the subject site.	4° - 5° Downslope	Northwest/Southwest

2.2.4 Impacts of Climate Change

Climate change influences bushfires in the following four ways:

- **A longer fire season.** Hotter conditions mean a longer fire season, leading to more dangerous bushfires and leaving less time for hazard reduction.
- **Hotter temperatures.** Australia is getting hotter, with more extreme hot days and longer, hotter heatwaves. These conditions are increasing the risk of bushfires in many areas.

- **Drier vegetation & ‘fuel’.** Hotter conditions and periods of low rainfall dry out soil and vegetation, increasing fire risk.
- **More lightning.** A warmer climate increases the chance of lightning, which is a key factor in starting fires.

The climate projections indicate that there is a likelihood of more frequent and higher intensity bushfires occurring when low seasonal rainfall occurs.

2.2.5 Summary of Landscape Bushfire Risk Assessment

The landscape assessment indicates the potential for bushfire attack of the subject site given the presence of bushfire hazard vegetation within the subject site and on adjoining and adjacent lands.

Available information indicates the absence of recent major bushfire activity on the subject site and within the immediately surrounding area.

The risk of bushfire impact can however be reduced in terms of the future industrial development of the subject site through the integration of appropriate fire mitigation via the provision of appropriate bushfire protection measures within the subject site as part of its future development. In particular, the subject site can facilitate defendable spaces/APZ's without further clearing whilst other design mechanisms including access roads connected to the public road network, emergency evacuation arrangements and access to a suitable and appropriate water supply for bushfire suppression and asset defence can be integrated into the future industrial development and use of the subject site.,

Having regards to the aforementioned information it is feasible to design and build resilience into the planned development of the subject site that matches or exceeds the bushfire protection requirements provided for by NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 which would be relevant to the proposed rezoning of the subject site.

2.3 Land Use Assessment

2.3.1 Existing Land Use Context

Being located on the southern fringe of the developed areas of Kempsey land uses within the locality, including the subject site, are dominated by a mixture of activities including industrial, residential, indoor recreation, motel, caravan park, church, golf course, museum and bushland open space. Large areas of forestry extend to the southwest and west of the subject site.



Existing industrial development along the eastern portion of the northern boundary of the subject site



Grounds of the Kempsey golf Course at distance to the north of the subject site



**Slim Dusty
Museum at
distance to the
south of the
subject site**



**Existing motel
development to
the east of the
subject site**



Existing church development to the northeast of the subject site



Existing indoor sports facility to the southeast of the subject site

The character of the area is that of an urban fringe with most development reflecting the historic presence of the Pacific Highway which now bypasses Kempsey. In this regard Macleay Valley Way was the historic Pacific Highway. The mixture of existing land uses therefore reflects the more historic urban fringe context with the presence of the Pacific Highway being the focus of development and land use in the South Kempsey area.

It is noted that the presence of several industrial developments in the area, in addition to the subject site, reflects the historic industrial zoning of the land whilst the Productivity Support (E3) land use zone which applies to the land to the east of Macleay Valley Way provides for a range of land uses.

The area of land which is proposed to be rezoned has a direct context and relationship with land which is approved to support a range of industrial uses. Accordingly, the proposed rezoning of the western portion of the subject site is consistent with the existing land use patterns in the area.

The subject site provides an important opportunity to accommodate a range of industrial land uses which would be expected for an urban fringe locality.

2.3.2 Future Land Use Context

Being located approximately 3.5km to the south of the Kempsey CBD the land within the area has and will continue to experience significant land use change with a range of development expanding into undeveloped land with a rural/bushland history.

The area of the subject site which is proposed to be rezoned is located within an area which already supports industrial development with industrially zoned land extending to the north of the subject site whilst the eastern portion of the subject site is zoned for industrial use.

The proposed rezoning of the western portion of the subject site so as to support its use for industrial purposes reflects the orderly and progressive development of land. In this regard the proposed rezoning is entirely consistent with the evolving nature of land use in the locality with the range of uses provided for by the General Industrial (E4) land use zoning remaining entirely consistent with the desired and expected character of the area.

The suitability of the subject site for the proposed rezoning is also supported by the fact that the subject site falls within the North Coast Regional Plan's (NCRP 2041) urban growth area and the subject site highlighted as an employment land investigation area.

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 areas of bushfire hazard vegetation within the subject site and on land adjoining and adjacent to the subject site needs to be taken into particular consideration in the identification of bushfire risk and threat management responses which are applicable and integral to the future industrial development of the areas of land which are the subject of this report.

2.3.3 Proposed Land Uses and Occupant Characteristics.

The proposed rezoning will provide for the western portion of the subject site to be zoned General Industrial (E4).

It is noted that the rezoning is proposed to facilitate the potential use of the western portion of the subject site for the range of activities provided for by the E4 zoning.

The typical permitted land uses associated with the proposed rezoning are summarized as follows.

Table 5 – Permitted Uses within Proposed Zoning

Land Use Zone	General Industrial (E4) Zone
Objectives of Zone	<ul style="list-style-type: none"><i>To provide a range of industrial, warehouse, logistics and related land uses.</i><i>To ensure the efficient and viable use of land for industrial uses.</i><i>To minimise any adverse effect of industry on other land uses.</i><i>To encourage employment opportunities.</i><i>To enable limited non-industrial land uses that provide facilities and services to meet the needs of businesses and workers.</i><i>To ensure that the scale, design and materials of construction, and the nature of development, contribute positively to the visual quality of the locality.</i>
Permitted without consent	<i>Environmental protection works</i>
Permitted	<i>Depots; Freight transport facilities; Funeral homes; Garden centres; General</i>

with consent	<i>industries; Goods repair and reuse premises; Group homes; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Light industries; Local distribution premises; Neighbourhood shops; Oyster aquaculture; Plant nurseries; Pond-based aquaculture; Rural supplies; Take away food and drink premises; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not prohibited or permitted without consent</i>
Prohibited	<i>Agriculture; Air transport facilities; Airstrips; Amusement centres; Boat launching ramps; Camping grounds; Caravan parks; Cemeteries; Centre-based child care facilities; Commercial premises; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Entertainment facilities; Exhibition homes; Exhibition villages; Farm buildings; Forestry; Function centres; Health services facilities; Heavy industrial storage establishments; Heavy industries; Highway service centres; Home businesses; Home occupations; Home-based child care; Information and education facilities; Jetties; Marinas; Mooring pens; Public administration buildings; Registered clubs; Residential accommodation; Respite day care centres; Stock and sale yards; Tourist and visitor accommodation; Water recreation structures</i>

It is noted that the General Industrial (E4) land use zoning would permit a range of industrial activities which would be entirely consistent with industrial areas. It is however noted that the proposed E4 zoning would not permit residential accommodation developments, nor would the zoning provide for the use of land for special fire protection purpose developments.

Having regards to the above, the future population demographics for the area, which is the subject of the rezoning proposal, would not be expected to include groups which are considered to be 'vulnerable' in the context of mobility and emergency response factors. In this regard the industrial use of the land provides that building occupants are willing and able to evacuate in the event of bushfire activity.

In analysing the question of life safety, the following key points are relevant:

- The estimated population increase associated with the proposed rezoning is small in the context of existing development in the area. The proposed rezoning of the subject site will not significantly increase the density of development from that already contemplated for the area.
- The current and future population demographics for the area does not present as particularly 'vulnerable'.
- The limited fire history within the subject site and surrounding areas and the reduced potential to develop into catastrophic fires.
- 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 future industrial subdivision development of the subject site.
- The existing / proposed evacuation options out of the subject site all of which utilizing existing major public road infrastructure, (i.e. Macleay Valley Way). In this regard travel distances to areas of safety will be short with alternative means of access to and egress from the subject site and future industrial subdivision development available.
- The opportunity which exists to increase the area of managed vegetation in the locality which assists in reducing the bushfire risk to existing and future development in the area.
- There is able opportunity to develop the subject site to meet or exceed the relevant bushfire threat management requirements.

- The presence of the Strategic Fire Advantage Zone (SFAZ) to the west of the subject site which encompasses the Kalateenee State Forest with a number of fuel reduction, fire trail maintenance and community education actions identified as being relevant to the management of bushfire risk in this area of land.
- Any future industrial developments within the subject site would need to demonstrate compliance with the bushfire threat management measures which would be relevant to the specific details of the proposed developments.

In this regard the rezoning of the land does not imply that approval for the future development of the land would be granted rather the proposed rezoning would allow for the merit assessment of a range of future industrial development options and opportunities.

Having regards to the above it is considered that the level of asset and life safety risk associated with the proposed rezoning of portion of the subject site is consistent with the relevant community expectations and the relevant land use planning and development control standards.

2.3.4 Defining ‘Acceptable’ Land Use Planning Risk

With respect to land use planning for natural hazards, defining exactly what represents ‘acceptable’ risk can be a difficult task. Understanding community expectation of what represents acceptable risk versus unacceptable risk is the basis of much research both in Australia and internationally.

It is noted that in NSW, NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 has been adopted as the appropriate risk management standard in relation to land use planning and development control in relation to property and life safety albeit that there remains an understanding that despite this combination of planning, building and other bushfire protection measures provided for in NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019, asset loss may still occur in more extreme events.

Having regard to the above, the bushfire risk to assets can be minimized through compliance with the relevant threat management measures contained within NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 as this represents the appropriate land use planning and development control standards albeit that a level of property loss is ‘accepted’ to a degree by existing land use planning and building construction frameworks.

Property and infrastructure may be lost in a catastrophic event, but the key determinate of ‘acceptable’ risk is life safety risk, and whether the proposed land use rationale, density and settlement pattern supports and enables life safety, including safe evacuation.

In analysing the question of life safety, the following key points are relevant as to the suitability of the subject site for rezoning:

- The nature of population growth is such that in regional locations the rezoning of land will inevitably provide for a bushland interface. Accordingly, the issue for consideration is whether the bushfire risk posed to new industrial development is consistent with community expectation and reflects the relevant bushfire threat management requirements which are provided for by current development standards.

As provided for in the landscape assessment there are no major constraints to the proposed industrial occupation of the subject site as proposed via the rezoning as it is feasible to design and build resilience into future industrial developments that matches or exceeds the bushfire protection requirements as provided for by NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

The landscape characteristics of the subject site and surrounding land are therefore entirely consistent with that contemplated by NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 for new industrial development.

- The current and future population demographics for the area does not present as particularly ‘vulnerable’.

- The limited fire history within the subject site and surrounding areas.
- The generally cleared nature of the land which is the subject of rezoning and the absence of major constraints in terms of landform, vegetation characteristics and topography to the future industrial subdivision development of the subject site.
- The proposed evacuation options provide for high levels of movement to and from the subject site with alternative means of access to and egress from the subject site available via existing public road infrastructure. This issue is further discussed in **Section 2.4** of this report.
- The opportunity which exists to increase the area of managed vegetation in the locality which assists in reducing the bushfire risk to existing and future development in the area.
- The opportunities to reduce life safety risk through the application of accepted and tested bushfire threat management measures which respond to the level of bushfire threat; and
- The proximity of existing emergency services. This issue is further discussed in **Section 2.5** of this report.
- The area of land which is proposed to be rezoned has a direct connect to and relationship with the existing industrial development to the north and northeast and as such represents the logical expansion of industrially zoned land in the area.

In this regard the suitability of the subject site for the proposed rezoning is supported by the fact that the subject site falls within the North Coast Regional Plan's (NCRP 2041) urban growth area and the subject site highlighted as an employment land investigation area.

- Given the spatial dimensions of the area of land, which is the subject of this rezoning proposal, there are ample opportunities to provide for defensible spaces which respond to the assessed level of bushfire threat.
- The presence of the Strategic Fire Advantage Zone (SFAZ) to the west of the subject site which encompasses the Kalateenee State Forest with a number of fuel reduction, fire trail maintenance and community education actions identified as being relevant to the management of bushfire risk in this area of land.
- Any future industrial developments within the subject site would need to demonstrate compliance with the bushfire threat management measures which would be relevant to the specific details of the proposed developments.

In this regard the rezoning of the land does not imply that approval for the future development of the land would be granted rather the proposed rezoning would allow for the merit assessment of a range of future development options and opportunities.

Having regards to the above it is considered that the level of asset and life safety risk associated with the proposed rezoning of portion of the subject site is consistent with the relevant community expectations and the relevant land use planning and development control standards.

Based upon the above information there would appear to be no major land use planning constraints to the proposed rezoning of the subject area of land and its future industrial development.

2.4 Access and Egress

Access to the area of land which is the subject of rezoning will be via existing public and property access road infrastructure which services the existing and continued occupation and use of the subject site.

Access to the subject site is gained via Macleay Valley Way which adjoins the subject site to the east with an existing property access road system connecting the subject site to Macleay Valley Way. Macleay Valley Way is a two-way, two-wheel drive, all weather public road which is the main

southern access road from the Pacific Highway into Kempsey. Up until more recently Macleay Valley Way was the Pacific Highway however Kempsey is now bypassed by the highway. Accordingly, Macleay Valley Way is a major connecting road which services the South Kempsey area.



Macleay Valley Way to the east of the subject site



Macleay Valley Way to the southeast of the subject site

The existing property access road and manoeuvring infrastructure within the subject site provides for two-way, two-wheel drive, all weather access to all areas of the subject site with a combination of bitumen and gravel road surfaces.

It is also noted that the far southern portion of the western boundary of the subject site adjoins the West End Road reserve. West End Road is a gravel two-way, two-wheel drive, all weather access

public road which services a range of rural properties to the west of the subject site. It is however noted that due to topographic conditions within the subject site there is no connection to West End Road.

Access to and egress from the existing industrial buildings and infrastructure in the eastern portion of the subject site, (proposed Lot 1), is to be via a minimum 19m wide 'right of carriageway' arrangement over existing access road infrastructure which will be located along the far southern portion of proposed Lot 4. The existing access road infrastructure has direct connection with Macleay Valley Way.

Access to and egress from the proposed industrial subdivision of the western portion of the subject site, (proposed Lots 2, 3 and 4), is also to be via the proposed 19m wide 'access handle' which forms part of proposed Lot 4 and provides for direct connection with Macleay Valley Way. The 'access handle' would accommodate future road infrastructure which would service future development in the western portion of the subject site with the new access road infrastructure connecting directly with Macleay Valley Way. The 'right of carriageway' arrangement is also proposed over the far eastern portions of proposed Lots 3 and 4 in order to facilitate the movement of vehicles to and from proposed Lot 2 and 3.

The road hierarchy which is available for the future industrial development of the subject site provides for an efficient and effective movement of vehicles with a variety of access and egress opportunities available through the interconnection of new and existing property access road infrastructure to the existing public road network. This is important from an evacuation perspective whereby the existing and proposed road infrastructure will provide for capacity of use, alternatives for travel and the minimization of conflict between site occupants and emergency services.

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

As is currently the case, travel to and from the areas which are the subject of rezoning is principally from the north and south from areas which would be protected from the impacts of bushfire.




The proposed evacuation options out of the future industrial subdivision development of the subject site will utilize existing public road infrastructure which provides for relatively short travel distances to areas of safety with alternative means of access to and egress from the subject site and future development available.

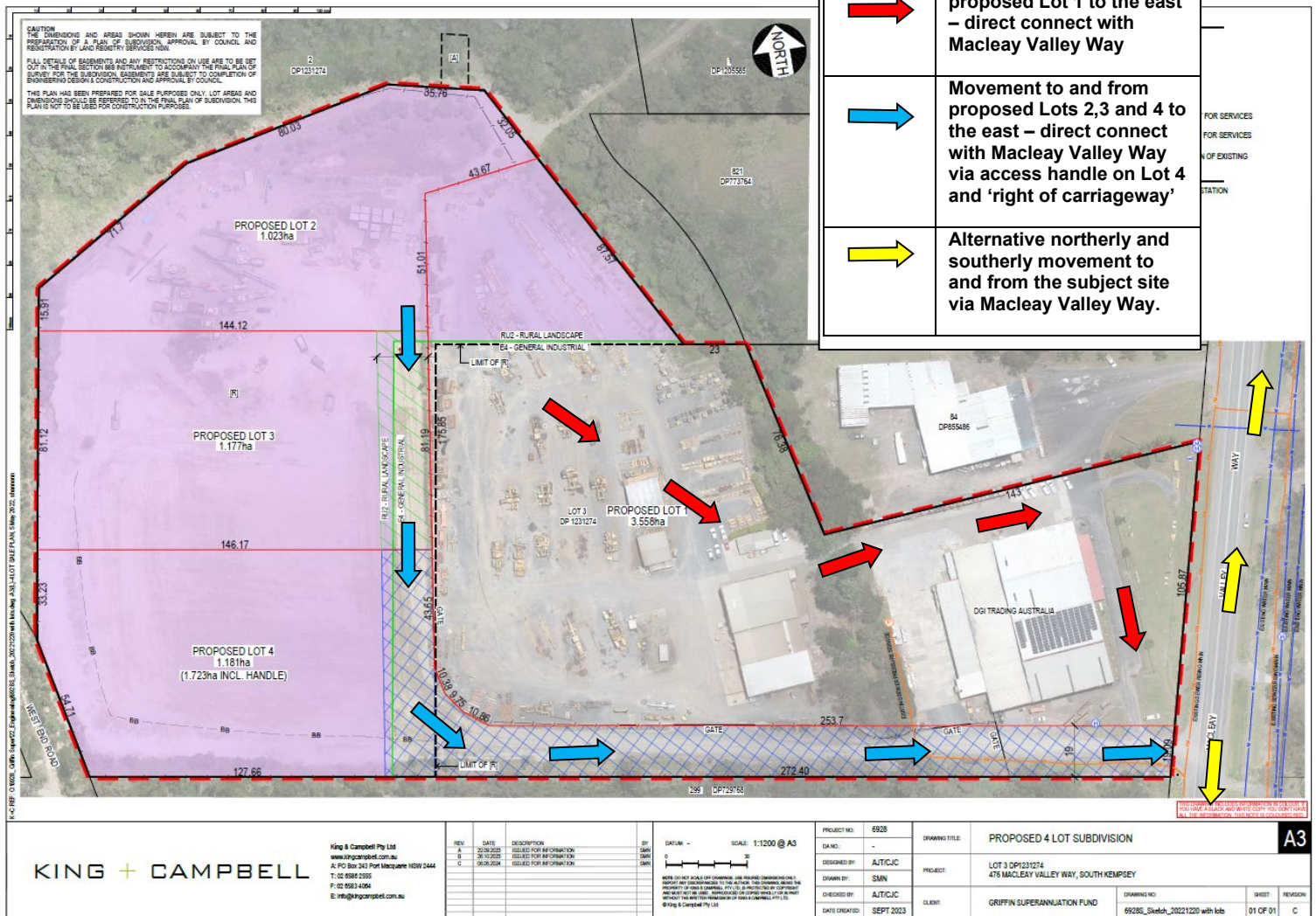
Given the nature of the existing public road system which will provide for access to and egress from any a future industrial subdivision it is considered that suitable arrangements for access and egress will be available for the development of the area of land which is the subject of rezoning.

It is however noted that the design and construction of access and egress infrastructure from public roads to and from the future development within the area of land which is the subject of rezoning will need to be the subject of a lot specific assessment based upon the nature and extent of the future specific development proposal for any future industrial lots.

It is noted that compliance with the relevant access provisions of Chapter 5 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 in relation to the future development of the subject site would be expected to provide for a threat management outcome which is not only relevant to the subject site but would also be of strategic planning value for existing development in the area in that improved access to areas of hazard vegetation will potentially be available from the area of land which is proposed to be rezoned.

The proposed evacuation options out of the area of land which is the subject of rezoning will utilize existing public road infrastructure which provides for relatively short travel distances to areas of safety with alternative means of access to and egress from the subject site and future industrial developments available, refer to **Figure 9**.

LEGEND	
	Movement to and from proposed Lot 1 to the east – direct connect with Macleay Valley Way
	Movement to and from proposed Lots 2,3 and 4 to the east – direct connect with Macleay Valley Way via access handle on Lot 4 and 'right of carriageway'
	Alternative northerly and southerly movement to and from the subject site via Macleay Valley Way.



It is noted that the access and egress arrangements for the subject site are considered appropriate on the basis that future occupants of the site are willing and able to evacuate in the event of bushfire activity.

2.5 Emergency Services

However, the intent of this risk assessment process seeks to rationalise the strategic land use planning approach to mitigate the extent of risk exposure, acknowledging that not all risk can be avoided, and thus residual risk will remain and be transferred to others, (emergency services, the community, insurers, etc.).

At present emergency services are centred predominately upon resources from Kempsey with a range of emergency services which can respond to any incidents. The Kempsey CBD is located approximately 3.5km by road to the north of the subject site.

Travel distances for emergency services are appropriate for industrial development and importantly the location of the subject site provides for a range of emergency service options and opportunities to be available within close proximity of the subject site, refer to **Table 6** below.

Table 6 – Emergency Services Locations

EMERGENCY SERVICE	LOCATION	ROAD TRAVEL DISTANCE TO SUBJECT SITE	ROUTE TO SUBJECT SITE
State Emergency Service	Kempsey SES Unit – River Street	Approximately 7km	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/ Elbow Street/River Street
Police Service	Kempsey – Elbow Street	Approximately 5.3km	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/ Elbow Street
Ambulance Service	Kempsey – Tosser Street	Approximately 5.8km	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/Elbow Street/Tozer Street
Hospitals	Kempsey – River Street	Approximately 6km	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/ Elbow Street/River Street
NSW Fire and Rescue	Kempsey – Central Road	Approximately 5.5km	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/ Elbow Street/River Street/ Central Road
NSW RFS	Fire Control Centre – River Street	Approximately 7km	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/ Elbow Street/River Street
	Federickton Brigade - Wauchope – Cameron Street	Approximately 14km	Macleay Valley Way/Pacific Highway/ Macleay Valley Way/Great North Road
	Kundabung Brigade – Kundabung Road	Approximately 11km	Macleay Valley Way/Pacific Highway/ Kundabung Road
Airport	Kempsey – Boundary Street	Approximately 11km (by road)	Macleay Valley Way/Lachlan Street/ Lord Street/Belgrave Street/ Elbow Street/River Street/ Sherwood Road

Specifically, in relation to bushfire, it is noted that the NSW Fire and Rescue Brigade is located within 5.5km of the subject site which due to the urban nature of the locality are likely to be the fire responders for the subject site. It is however noted that the Federickton and Kundabung RFS Brigades are located within 14km and 11km respectively of the subject site both of which are within an acceptable operational distance from the subject site.

Importantly any increase in demand for emergency services associated with the proposed rezoning of land, (and its subsequent industrial development), needs to be balanced against the fact that the nature of urban expansion which is associated with the rezoning and subsequent development of land for industrial 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 urban context firefighting resources are required not only to respond to bushfire incidents but also in relation to responding to a range of structural building fire scenarios and causes.

Any increase in demand for services needs to be considered in relation to the needs for development in order to support local population growth.

An important consideration in relation to emergency services is the options and opportunities for evacuation. Having regards to the information contained in **Section 2.3** of this report the following factors are considered to be relevant to the issue of evacuation.

- The current and future population demographics for the area does not present as particularly 'vulnerable' in terms of evacuation responsiveness and ability.
- The nature of the future industrial development of the subject site is such that future building occupants are willing and able to evacuate in the event of bushfire activity.
- The existing and future road infrastructure provides for multiple evacuation travel options for any future industrial subdivision development of the subject site.
- Travel distances to areas of safety will be relatively short with alternative means of access to and egress from the subject site and future development available.
- The proposed road hierarchy and the interconnection of the existing and future road infrastructure can provide for safe access and egress for firefighting vehicles while building occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface with hazard vegetation.
- Macleay Valley Way provides for high levels of emergency access to and egress from the subject site.
- Areas which would be protected from the impacts of bushfire are located within short travel distances to the north and south of the subject site with the availability of these areas significant in the context of emergency evacuation.

Having regards to the above, the risk for occupants and emergency service personnel of becoming isolated and at risk of harm is significantly reduced by the availability of a range of emergency evacuation features and opportunities.

It is also considered that there is substantial opportunity to reduce life safety risk through the application of accepted and tested bushfire threat management measures which respond to the level of bushfire threat and can be incorporated within the concept design of future industrial developments.

2.6 Infrastructure

Given that the proposed rezoning and future subdivision of the subject site provides for industrial allotments, all future industrial lots will have access to the reticulated water supply, the extension of which will be required by Kempsey Council to service the future subdivision of the land. 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.

There are no apparent water servicing issues which would preclude the proposed industrial development of the subject site particularly when considered in the context of the existing and proposed development within the locality.

Electricity supply and communications infrastructure is available in the locality and will be accessible for extension to the future industrial development of the subject areas of land. It is also noted that the proposed rezoning of the subject site and its future industrial occupation would provide for increased surveillance of bushfire ignition at a local level which in combination with the integration of the minimum bushfire threat management strategies which are relevant to new industrial subdivision would assist in reducing the risk associated with vegetation ignition by electricity supply infrastructure.

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 may be relevant to any future development which is proposed.

2.7 Adjoining Land

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

The rezoning of the subject site will provide for managed vegetation to be predominately present within the future industrial lots and associated infrastructure whilst areas of Wet Sclerophyll Forest vegetation will be present to the north, south and west, and highly modified and fragmented vegetation extending to the east of Macleay Valley Way.

In this regard the proposed rezoning and future development of the subject land will impose no additional bushfire threat management obligations or responsibilities on adjoining land managers from that which currently exists.

It is noted that the rezoning of the land and its subsequent development for industrial uses does 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 proposed rezoning of the subject site provides for opportunities to implement ongoing vegetation management practices within the subject site thereby reducing the level of bushfire threat posed by the subject site to adjoining and adjacent land holdings.

Additionally, the rezoning and future development of the subject site will provide for improved access to areas of hazard vegetation on adjoining and adjacent land which will be of benefit to the adjoining and adjacent land managers in terms of responding to bushfire threat management associated with their land.

It is noted that the proposed rezoning of the subject site remains consistent with the bushfire risks and management requirements of the Lower Mid Coast BFMC Bush Fire Risk Management Plan, 2018.

3.0 BUSHFIRE THREAT REDUCTION MEASURES

In NSW, the risk to property and people of bushfire associated with new developments is subject to compliance with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019.

Accordingly, the future development of the areas of land which are proposed to be rezoned must meet the relevant bushfire threat management measures as provided for by of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 which are applicable to the nature and extent of development which is proposed.

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 could apply to the proposed rezoning of the subject areas of land to industrial uses and activities.

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 industrial subdivision of the subject areas of land, a Defendable Space/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 Defendable Space/APZ requirements which are relevant to the proposed rezoning in the context of the range of potential industrial development outcomes is provided as follows.

(i) Industrial Development

NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 does not prescribe acceptable solutions for the provision of a defendable spaces/APZ in relation to industrial development with the acceptable solutions provided for by Section 5 and 6 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 applying only to residential and Special Fire Protection Purpose developments. Accordingly, the provision of a defendable space to any future industrial development of the area of land which is proposed to be rezoned for General Industrial (E4) purposes must satisfy the general objectives of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019.

In this regard the following objectives derived from NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 are relevant to the provision of a defendable space/APZ to any future industrial development on the subject site.

- *afford occupants of any building adequate protection from exposure to a bush fire.*
- *provide for a defendable space to be located around buildings.*

- provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.
- provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ).

It is noted that NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019, does not provide a methodology as to how a performance-based approach to meeting the above objectives is to be determined nor assessed. Accordingly, the development of a performance-based approach to meeting the objectives must have regard to qualifying the bushfire risk posed to future industrial use buildings utilizing the ‘Deemed-to-Satisfy’ provisions of the National Construction Code as the basis of determining a buildings resistance to the spread of fire. This approach recognizes that NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 provides that the provisions under the National Construction Code (NCC) are taken as acceptable solutions where the aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 can be met.

In this regard given the performance nature of the determination of defensible space/APZ requirements for industrial developments, the determination of the spatial requirements for any future building developments on the area of land which is proposed to be rezoned to General Industrial (E4) will be the subject of development specific determination as a combination of bushfire threat management measures could be utilized so as to comply with the relevant requirements of Chapter 8 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

Reference to the NCC suggests that a 6m - 10m area between a building and a fire source is acceptable for property protection purposes. Reference to Clause C2D2 and Specification 5 of the NCC provides that a 3m separation distance to a fire source is required for firefighting activities and is generally accepted by the NSW Fire Brigade as being sufficient to allow for firefighting in relation to smaller industrial buildings, (<2000m² in floor area – Type C construction). Increased defensible spaces may however be required for larger buildings.

It is noted that the potential size of the proposed industrial lots is such that a conservative worst case 10m defensible space would be available between future industrial buildings and relevant areas of bushfire hazard vegetation.

Notwithstanding this, reference to the ‘Deemed to Satisfy’ requirements of the NCC suggests that a 6m - 10m area between an industrial use building and a fire source is acceptable for property protection purposes. In this regard Clause 3.2.2.2 of Australian Standard 2419.1 – 2005, (by virtue of Clause E1D2 of the NCC), provides that a 10m separation distance to a fire source is required for firefighting activities and is generally accepted by the NSW Fire Brigade as being sufficient to allow for firefighting in relation to industrial buildings. Lessor distances are permitted however additional measures are required so as to protect fire fighters from the effects of fire.

Compliance with the defensible space/APZ objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 as relevant to industrial development is demonstrated as follows.

Table 7 – Compliance with Performance Objectives of PfbP 2019

PERFORMANCE OBJECTIVE	COMPLIANCE COMMENT
<i>Afford occupants of any building adequate protection from exposure to a bush fire.</i>	The design of the proposed subdivision and the future design of industrial buildings on the proposed lots is capable of providing occupants of any building/s an adequate level of protection from exposure to a bush fire in the context of the bushfire threat management requirements of NSW Rural Fire Service, Planning for Bushfire Protection , 2019.
<i>Provide for a defensible space to be located around buildings.</i>	The size of the proposed industrial lots is such that a conservative worst case 10m defensible space would be available between future industrial buildings and relevant areas of bushfire hazard vegetation. The requirements for defensible spaces should however be the subject of lot specific development assessment as part of its future development.

<i>Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.</i>	The provision of development specific defendable spaces together with compliance with the relevant requirements of the NCC will assist in preventing direct flame contact and material ignition of any future industrial buildings.
<i>Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ).</i>	The nature of the proposed development and the potential size of the proposed lots provide for the ongoing management and maintenance of bush fire protection measures, including fuel loads in any relevant defendable spaces.

It is therefore considered that there are opportunities to position future industrial use buildings within the area of land which is proposed to be rezoned for General Industrial (E4) purposes so as to comply with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 and accordingly the proposed rezoning of the subject area of land to allow for future industrial development is appropriate although it will be necessary to demonstrate compliance with the defendable space/APZ requirements in relation to any specific future development proposal on any proposed industrial lots.

Notwithstanding the above, based upon the size and shape of the area of land which is proposed to be rezoned, it is considered that the intent of the requirement for the provision of defendable space/APZ's as provided for by NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 can be satisfied for the future industrial development of the subject land 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 defendable spaces/APZ's for any future industrial building developments within the area of land which is proposed to be rezoned 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

3.1.3 Operational Access and Egress

Access to the areas of land which are the subject of rezoning will be via existing public and property access road infrastructure which services the existing and continued occupation and use of the subject site.

Access to the subject site is gained via Macleay Valley Way which adjoins the subject site to the east with an existing property access road system connecting the subject site to Macleay Valley Way.

Macleay Valley Way is a two-way, two-wheel drive, all weather public road which is the main southern access road from the Pacific Highway to Kempsey. Up until more recently Macleay Valley Way was the Pacific Highway however Kempsey is now bypassed by the highway. Accordingly, Macleay Valley Way is a major connecting road which services the South Kempsey area.

The existing property access road and manoeuvring infrastructure within the subject site provides for the two-way, two-wheel drive, all weather access to all areas of the subject site with a combination of bitumen and gravel road surfaces.



Exiting property access road adjacent to the southern boundary of the subject site – currently the main internal access road to and from the subject site



Exiting property access road adjacent to the central northern boundary of the subject site – provides for alternatives in travel within the subject site

Access to and egress from the existing industrial buildings and infrastructure in the eastern portion of the subject site, (proposed Lot 1), is to be via a minimum 19m wide 'right of carriageway' arrangement over existing access road infrastructure which will be located along the far southern portion of proposed Lot 4. The existing access road infrastructure has direct connection with Macleay Valley Way.

Access to and egress from the proposed industrial subdivision of the western portion of the subject site, (proposed Lots 2, 3 and 4), is also to be via the proposed 19m wide 'access handle' which forms part of proposed Lot 4 and provides for direct connection with Macleay Valley Way. The 'access handle' would accommodate future road infrastructure which would service future development in the western portion of the subject site with the new access road infrastructure connecting directly with Macleay Valley Way. The 'right of carriageway' arrangement is also proposed over the far eastern portions of proposed Lots 3 and 4 in order to facilitate the movement of vehicles to and from proposed Lot 2 and 3.

It is considered that the easterly movement of vehicles to and from proposed Lots 2, 3 and 4 is appropriate in the circumstance particularly when considered in relation to the ability to provide for the two way movement of vehicles along the proposed 19m wide 'access handle' also noting the significant topographic shielding which is available to future building development within the area of proposed Lots 2, 3 and 4.

The road hierarchy which is available for the future industrial development of the subject site provides for an efficient and effective movement of vehicles with a variety of access and egress opportunities available through the interconnection of new road infrastructure to the existing public road network. This is important from an evacuation perspective whereby the existing and proposed road infrastructure will provide for capacity of use, alternatives for travel and the minimization of conflict between site occupants and emergency services.

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

As is currently the case, travel to and from the areas which are the subject of rezoning is principally from the north and south from areas which would be protected from the impacts of bushfire.

The proposed evacuation options out of future industrial development on the subject site will utilize existing private and public road infrastructure which provides for relatively short travel distances to areas of safety with alternative means of access to and egress from the subject site and future development available.

Given the nature of the existing public road system which will provide for access to and egress from any future industrial subdivision it is considered that suitable arrangements for access and egress will be available for the development of the area of land which is the subject of rezoning.

It is however noted that the design and construction of any new access road infrastructure from public roads to and from future development within the area of land which is the subject of rezoning will need to be the subject of a development specific assessment based upon the nature and extent of the future proposal for any future industrial lots.

It will be necessary to design and construct any new public and property access road infrastructure to service any future development within the area of land which is proposed to be rezoned so as to comply with the relevant access provisions of Chapter 5 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019. The access road requirements are summarized as follows.

Table 8 - Acceptable Solutions (Access Roads) PfBP 2019

Performance Criteria	Acceptable Solutions
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 	Property access roads are two-wheel drive, all-weather roads; and
	Perimeter roads are provided for residential subdivisions of three or more allotments; and

vegetation.	Subdivisions of three or more allotments have more than one access in and out of the development; and
	Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; and
	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
	Traffic management devices are constructed to not prohibit access by emergency services vehicles; 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.
The capacity of access roads is adequate for firefighting vehicles.	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.
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression. Hydrants 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.
(ii) Perimeter Roads	
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 interface	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 3°; and
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

(iii) Non-Perimeter Roads	
Access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while residents are evacuating.	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.
(iv) Property Access Roads	
Firefighting vehicles can access the dwelling and exit the property safely	Minimum 4m carriageway width.
	In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay.
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.
	Provide a suitable turning area in accordance with Appendix 3 of PfBP, 2019
	Curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress.
	The minimum distance between inner and outer curves is 6m.
	The crossfall is not more than 10 degrees.
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and
	A development comprising more than three dwellings has access by dedication of a road and not by right of way.

Subject to compliance with the relevant requirements of **Table 8** above in relation to the design and construction of new access road infrastructure which is required to service any proposed industrial development within the area of land which is proposed to be rezoned, it is considered that the proposed access and egress arrangements will be acceptable for any future development of the areas of land which are 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 access road systems which will be required to be provided to serve any future development of the areas of land which are the subject of rezoning as provided for in this report.

3.1.4 Services - Water, Gas and Electricity

All future lots within the industrial subdivision of the subject site, will have access to the reticulated water supply, the extension of which has been required by Kempsey Council to service any industrial subdivision of the land. It is noted that the provision of water services to any future industrial subdivision would be subject to compliance with the relevant provisions of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019.

There are therefore no apparent water servicing issues which would preclude the proposed industrial development of the subject site particularly when considered in the context of the range and size of existing development within the locality.

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 development 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 may be relevant to any future industrial development which is proposed.

Any future development of the land which is the subject of rezoning must demonstrate compliance with the relevant provisions of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 as applicable to the nature and extent of each individual development proposal.

The incorporation into any future industrial subdivision of the 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 development and occupation of proposed industrial lots.

Table 9 – Service Provision Requirements (PfBP 2019)

<i>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.</i>	
Performance Criteria	Acceptable Solutions
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.
<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.
<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.

<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.
<p>Electricity Services</p> <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.
<p>Gas services</p> <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.

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 any future development of the area of land which is 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 site, 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 the future development of the subject site 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 development of the areas of land which are proposed to be rezoned.

3.1.6 Emergency Evacuation Planning

Industrial developments should have suitable management arrangements and structures capable of developing and implementing an Emergency Plan.

Existing industrial development on the subject site and any future development proposals for the areas of land which are the subject of rezoning should prepare and implement an Emergency Evacuation Plan incorporating bushfire evacuation.

The current emergency evacuation standards are provided for by Clause 6.8.4 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 and summarized as follows.

Table 10 – Emergency Management Planning Compliance Requirements (PfBP, 2019)

Intent of measures: to provide suitable emergency and evacuation arrangements for occupants of SFPP developments.	
Performance Criteria	Acceptable Solutions
The intent may be achieved where:	
A Bush Fire Emergency Management and Evacuation Plan is prepared	<p>Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the:</p> <ul style="list-style-type: none"> • The NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i>. • <i>NSW RFS Schools Program Guide</i>. • Australian Standard AS 3745:2010 <i>Planning for emergencies in facilities</i>; and • Australian Standard AS 4083:2010 <i>Planning for emergencies – Health care facilities</i> (where applicable). <p>The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.</p> <p>Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.</p>
Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan	<p>An Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual; and detailed plans of all emergency assembly areas including onsite and off.</p> <p>Site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted.</p>

There would be no apparent impediments or restrictions on existing and future development being able to prepare and implement an Emergency Evacuation Plan as per the requirements of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019.

3.2 Construction of Buildings in Bushfire Prone Areas

3.2.1 General

The bushfire threat management related construction requirements for buildings 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.

It is noted that NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 provides that AS3959 - 2018 is the relevant construction standard for Class 1, 2, 3, Class 4 parts of buildings, some Class 10 and Class 9 buildings with AS 3959 - 2018 being the current construction standard in NSW. It is however noted that NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 seeks to modify certain provisions of the relevant referenced AS 3959 construction standards. These changes are provided for by Clause 7.5.2 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 and the Addendum to NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

3.2.2 Construction Requirements (Future Industrial/Commercial Development)

Notwithstanding the information provided in Section 3.2.1 above, the construction requirements of AS3959 – 2018, (Construction of Buildings in Bushfire Prone Areas), may not be specifically relevant to the future industrial development within the area of land which is proposed to be rezoned as these provisions may not be applicable by virtue of the assumed uses of future industrial building infrastructure, (not being a residential/accommodation or Special Fire Protection Purpose development), and the likely NCC classifications as Classes 7 or 8 buildings.

In this regard it is noted that the application of Part G5, (Construction Requirements in Bushfire Prone Areas), of the NCC in NSW only applies to:

- a Class 2 or 3 building.
- a Class 4 part of a building.
- a Class 9 building that is a Special Fire Protection Purpose; or
- a Class 10a building or deck associated with a building referred to in the above dot points.

Accordingly, the determination of Bushfire Attack Levels, (BAL's), in accordance with Appendix 1 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 and AS3959 – 2018 is not specifically relevant to the future industrial development of the area of land which is proposed to be rezoned as compliance with Part G5 of the NCC and hence AS3959 – 2018 are not mandatory.

In this regard future industrial buildings within the area of land which is proposed to be rezoned will be required to comply with the relevant fire safety requirements of the NCC which can be accepted for bushfire compliance purposes where the aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 are met.

The general fire safety construction provisions of the NCC are taken as acceptable solutions where industrial developments are undertaken and accordingly the requirements of Appendix 1 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 and AS3959 – 2018 may not be applicable to future industrial buildings constructed on the area of land which is proposed to be rezoned.

Having regards to above, the design and construction of future industrial buildings within the area of land which is proposed to be rezoned needs to be the subject of development specific bushfire hazard assessment based upon the nature and extent of the future development proposal/s.

In this regard the relevant fire safety requirements of the NCC can be accepted for bushfire compliance purposes where the aim and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 are met.

It is considered that the intent of the requirements for the construction of building assets can be satisfied for any future industrial development of the area of land which is proposed to be rezoned.

4.0 SUMMARY OF FINDINGS

The following findings are considered to be integral to this bushfire study and must be incorporated into the design and construction of any future industrial development of land which is known as Lot 3 DP 1231274, 476 Macleay Valley Way, South Kempsey.

- (i) Any future development within the area of land which is proposed to be zoned General Industrial (E4) is to be the subject of development specific bushfire hazard assessment in accordance with Appendix 1 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019.
- (ii) The design and construction of any future industrial development within the areas of land which are proposed to be zoned General Industrial (E4) is to comply with the relevant acceptable solutions as provided for in NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019.

5.0 CONCLUSION

It is considered that the proposed rezoning of the western portion of Lot 3 DP 1231274, 476 Macleay Valley Way, South Kempsey is at risk of bushfire attack; however, it is in our opinion that with the development and implementation of specific bushfire threat reduction measures, the bushfire risk is manageable for the proposed rezoning of land albeit that the design and construction of any future industrial development within the subject site will need to demonstrate compliance with the relevant requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019.

There would be no apparent impediments or restrictions on the future industrial development of the area of land which is the subject of this report being able to comply with the bushfire threat management requirements of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2019 which are assessed as being relevant to future development.

It is considered that it will be possible for future development of the subject site to meet the applicable performance objectives and acceptable solutions as provided for in NSW Rural Fire Service, **Planning for Bushfire Protection**, 2019 as relevant to industrial development.

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

Assumptions

- (i) There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
- (ii) It is assumed that the building works will comply with the DTS provisions of the NCC including the relevant requirements of Australian Standard 3959 where assessed as being relevant.
- (iii) Any future developments are constructed and maintained in accordance with the risk reduction strategy in this report and the required development specific bushfire hazard assessment.
- (iv) The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.
- (v) The information contained in this report is based upon the information provided for review, refer to **Appendix 1**.

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

- Lower Mid Coast Bush Fire Risk Management Plan, (BFMP 2018)
- NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2006
- 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
- 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.

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
Proposed Rezoning & Indicative Subdivision Layout

