DAVID PENSINI
Building Certification and
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STRATEGIC BUSHFIRE STUDY

PROPOSED REZONING

THRUMSTER BUSINESS PARK
LOT 2 DP 1245588,
314 JOHN OXLEY DRIVE,
PORT MACQUARIE

CLIENT:
GROENEVELD DEVELOPMENTS

JULY 2024

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

The information contained in this report has been gathered from discussions with representatives of Groeneveld Developments, a review of the plans provided on behalf of Groeneveld Developments 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 Groeneveld Developments 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: *16th July 2024*

Version	**Date**	**Information relating to report**			
		Reason for issue			
1.0	10th May 2023		Draft		
2.0	17th May 2023		Draft Issued to Client		
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4.0	16th July 2024		Updated Rezoning Proposal		
			Prepared by	**Verified by**	**Approved by**
		Name	David Pensini		David Pensini
		Signature			

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1.0 INTRODUCTION

The land which is the subject of this report is known as Lot 2 DP 1245588, 314 John Oxley Drive, Port Macquarie with the subject site already having the benefit of development approval for industrial subdivision (Development Consent (2014/114).

Construction of the approved industrial subdivision, which is known as the Thrumster Business Park, has commenced with the construction of the southern stage of the development completed with the release of created lots pending.

It is now proposed to seek approval for the rezoning of southern portion of land within the already approved industrial subdivision so as to support additional land uses within the industrial estate. In this regard it is proposed to rezone the southern portion of the industrial estate from the existing General Industrial (E4) zoning to a Productivity Support (E3) land use zoning. It is further proposed that the rezoning provide for Serviced Apartments and Shop Top Housing to be an additional permitted use within two (2) distinct precincts within the proposed Productivity Support (E3) area.

It is noted that the proposed Productivity Support (E3) zoning would also permit various types of development which would be Special Fire Protection Purpose developments in accordance with the Rural Fires Act, 1997.

This report is based on site assessments carried out on 15th May 2023.

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 mixed-use purposes.

As the proposed rezoning of the subject land would support its future use for residential developments, any future development of the subject areas of land for these purposes could be integrated development which would be subject to the issuing of a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*. Likewise, any special fire protection purpose developments would also be subject to the issuing of a Bushfire Safety Authority by the RFS.

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
- Ensure that any development 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 in close proximity to, land mapped as Bush Fire Prone Land (BFPL). Under these directions, draft LEPs should follow the below objectives:

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

Under Direction 4.4, a relevant authority must consult with the Commissioner of the NSW Rural Fire Service during the preparation of a draft LEP and take into account any comments made. The draft LEP shall also have regard to 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 development 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 however construction requirements for bush fire protection will to be considered on a case-by-case basis.

(ii) Objectives for Residential Subdivision Developments

Given that the proposed rezoning could potentially support residential development such as shop top housing and serviced apartment buildings on the subject land it is considered that the following specific objectives for residential subdivision developments as provided for by Chapter 5 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 are applicable to the proposed rezoning in the circumstances to**:**

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

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

This report will therefore detail the relevant compliance issues associated with NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 which are relevant to the proposed rezoning of land and the future development of the subject areas of land.

(iii) Objectives for Special Fire Protection Purpose Developments

Given that the proposed rezoning could potentially support Special Fire Protection Purpose developments such as hotels, motels and childcare centres on the subject land it is considered that the following specific objectives for residential subdivision developments as provided for by Chapter 6 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 are applicable in the circumstances to**:**

- *minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting.*
- *provide an appropriate operational environment for emergency service personnel during firefighting and emergency management.*
- *ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and*
- *ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.*

It is noted that the development of some areas of land which are proposed to be rezoned would be consistent with the above objectives and that the future development of some areas of land can be

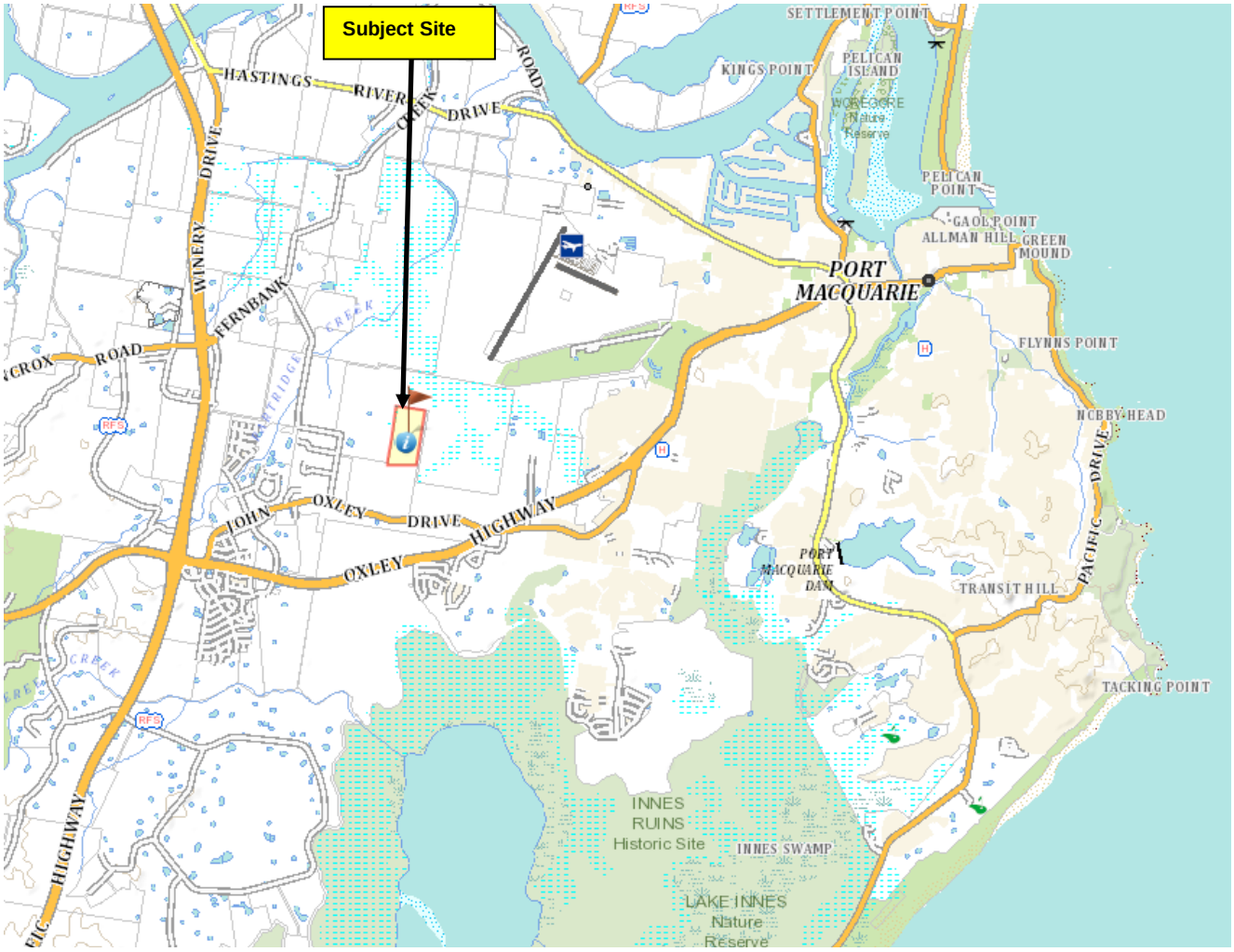
undertaken so as to be compliant with the relevant acceptable solutions/standards which are applicable to Special Fire Protection Purpose developments.

This report will therefore detail the relevant compliance issues associated with NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 which are relevant to the proposed rezoning of land and the future development of the subject areas of land.

1.3 Location and Site Description

The subject site is comprised of a single rectangular shaped Torrens Title lot known as Lot 2 DP 1245588, 314 John Oxley Drive, Port Macquarie which is located within the Port Macquarie Hastings local government area, on the mid north coast of New South Wales, refer to **Figure 1** below.

Figure 1 - Site Location

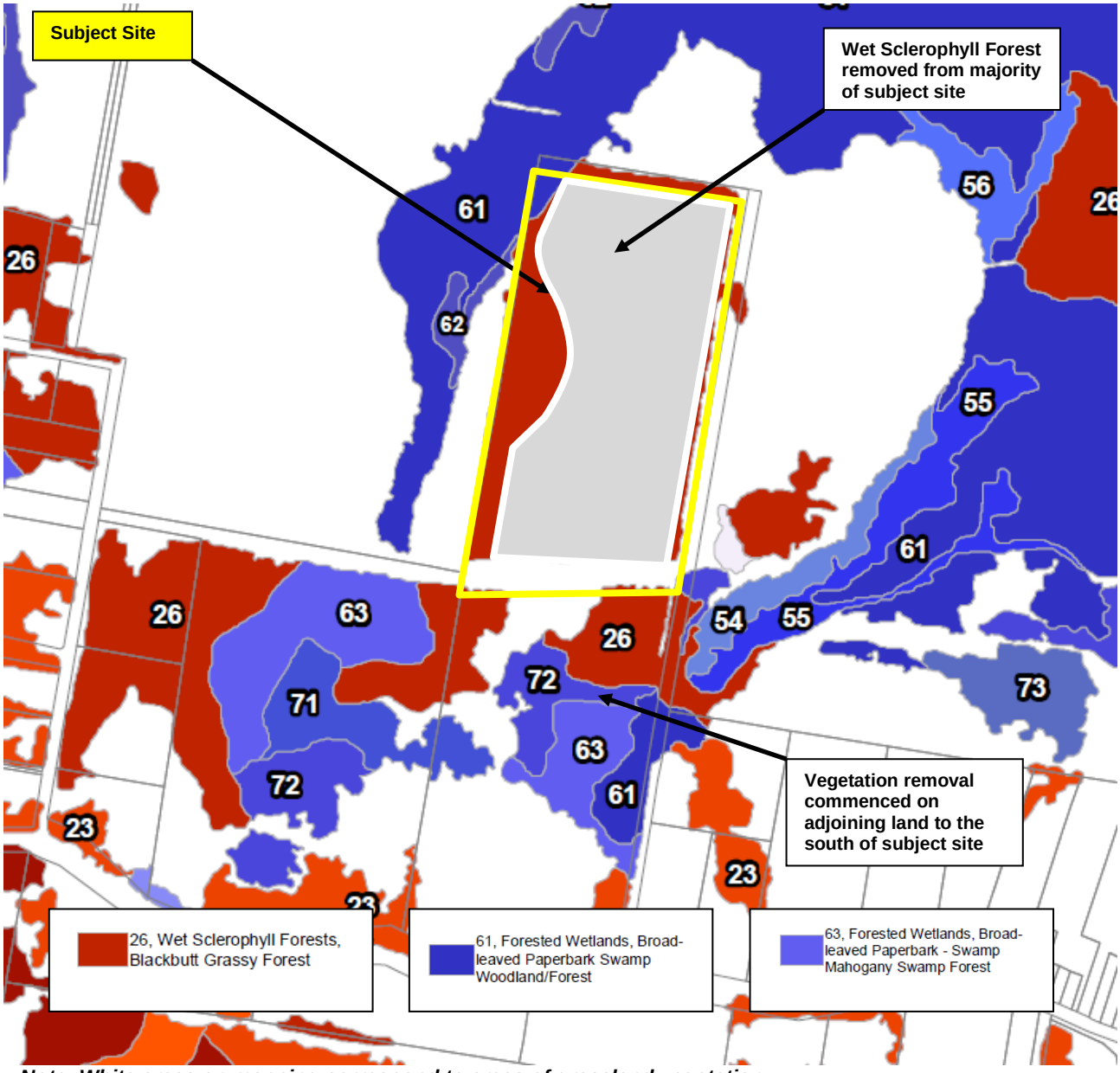


It is noted that the subject site has been approved for industrial subdivision in conjunction with the staged residential subdivision of the adjoining land to the south of the subject site. It is further noted that the far southern portion of the subject site is transacted east to west by an electricity supply easement with this feature defining the transition between approved residential and industrial land uses.

It is noted that construction of Stage 1 of the approved for industrial subdivision, (which occupies the southern portion of the subject site), has recently been completed with the release of the completed lots pending title registration. Activities associated with the construction of the northern portion of the approved industrial subdivision are continuing.

Up until recently areas of Swamp Forest dominated the far north-western portion of the subject site with Wet Sclerophyll Forest present over the remaining areas of the subject site. Vegetation clearing associated with the construction of the approved industrial subdivision has removed most of the Wet Sclerophyll Forest from the subject site with only a narrow band of forest vegetation present adjacent to the western boundary of the subject site. Areas of Swamp Forest dominate the vegetation to the north and west of the subject site. Grasslands with remnant areas of Forest and Swamp Forest extend to the east of the subject site whilst similar vegetation is present in the southern aspect. It is noted that vegetation clearing has also commenced to the south of the subject site as part of the construction of the approved residential subdivision in this aspect with Stage 1 of the approved residential subdivision recently completed. The vegetation characteristics of the subject site and adjoining and adjacent land is shown in **Figure 2** below.

Figure 2 – Extract from Vegetation Management Report (PMHC 2013)



Note: White areas on mapping correspond to areas of grassland vegetation

The landform of the subject site is influenced by a small south to north ridgeline the crest of which is located in the centre of the subject site. The presence of intermittently flowing creeks/gullies to the northwest, west and southeast provides for gentle to moderate downslope conditions in all aspects of the subject site with these conditions radiating from the ridgeline crest on the subject site. Gentler slope conditions are present adjacent to the crest of the ridgeline. Slope conditions on adjoining and adjacent land to the north and west provide for gentle downslopes before transitions to flat and

upslope conditions. Gentle north to south downslope conditions is present over adjoining land to the south whilst gentle to moderate northerly and southerly downslopes are present on adjoining land to the east.

Access to the subject site is via John Oxley Drive which is present approximately 600m to the south with access to the subject site from existing public road infrastructure being via adjoining land to the south. In this regard the access arrangements to the approved industrial lots within the subject site have recently been formalized through the construction of new public road infrastructure which is required to service the already approved residential lots on adjoining land to the south. It is also noted that temporary access to the subject site is available via a property access road which connects the southwestern corner of the subject site to Thrumster Street which is located approximately 570m to the west.

Temporary access road to the subject site – connects to Thrumster Street to the west

The closest Fire Service is located approximately 2.6km to the west of the subject site, (Sancrox Thrumster RFS Brigade), with the closest Fire Control Centre being at Port Macquarie.

1.4 Site History

The subject site is rectangular in shape and has a total area of some 21 hectares, refer to **Appendix 1**.

Forming part of the Area 13 Urban Growth Precinct, (which is located to the west of the urbanized area of Port Macquarie), the land within this area has recently and will continue to experience significant urban expansion with urban development expanding into residentially and industrially zoned but as yet undeveloped land with a recent rural land use history.

The character of the locality is that of an urban fringe area with residential development expanding into undeveloped parcels of residentially zoned land. The subject site forms part of an already approved residential and industrial subdivision which is located on the eastern fringe of the Sovereign Hills urban growth area. Whilst rural sized allotments of land adjoin the subject site it is noted that land to the west/northwest has been approved for residential subdivision as has adjacent land to the south of the subject site.

Development Consent (2014/114), for the residential and industrial subdivision of an area of land, which includes the subject site, has been granted by Port Macquarie-Hastings Council. The development approval provides for the staged development of two hundred and seven (207) separate residential lots and sixty-three (63) separate industrial lots, refer to **Appendix 2**. It is noted

that the development which is the subject of this report comprises land within Lot 2 DP 1245588, 314 John Oxley Drive, Port Macquarie.

It is also noted that approvals have been issued for the following activities which are associated with the construction and occupation of the approved industrial subdivision.

- Subdivision Construction Certificate for the undertaking of tree clearing and bulk earthworks associated with the construction of the industrial subdivision. These works having been commenced with the construction of Stage 1 of the approved industrial subdivision having been completed.

- Development Approval (DA 869/2022), for the construction of an open-air carpark in the far southern portion of the subject site, refer to **Appendix 3**.

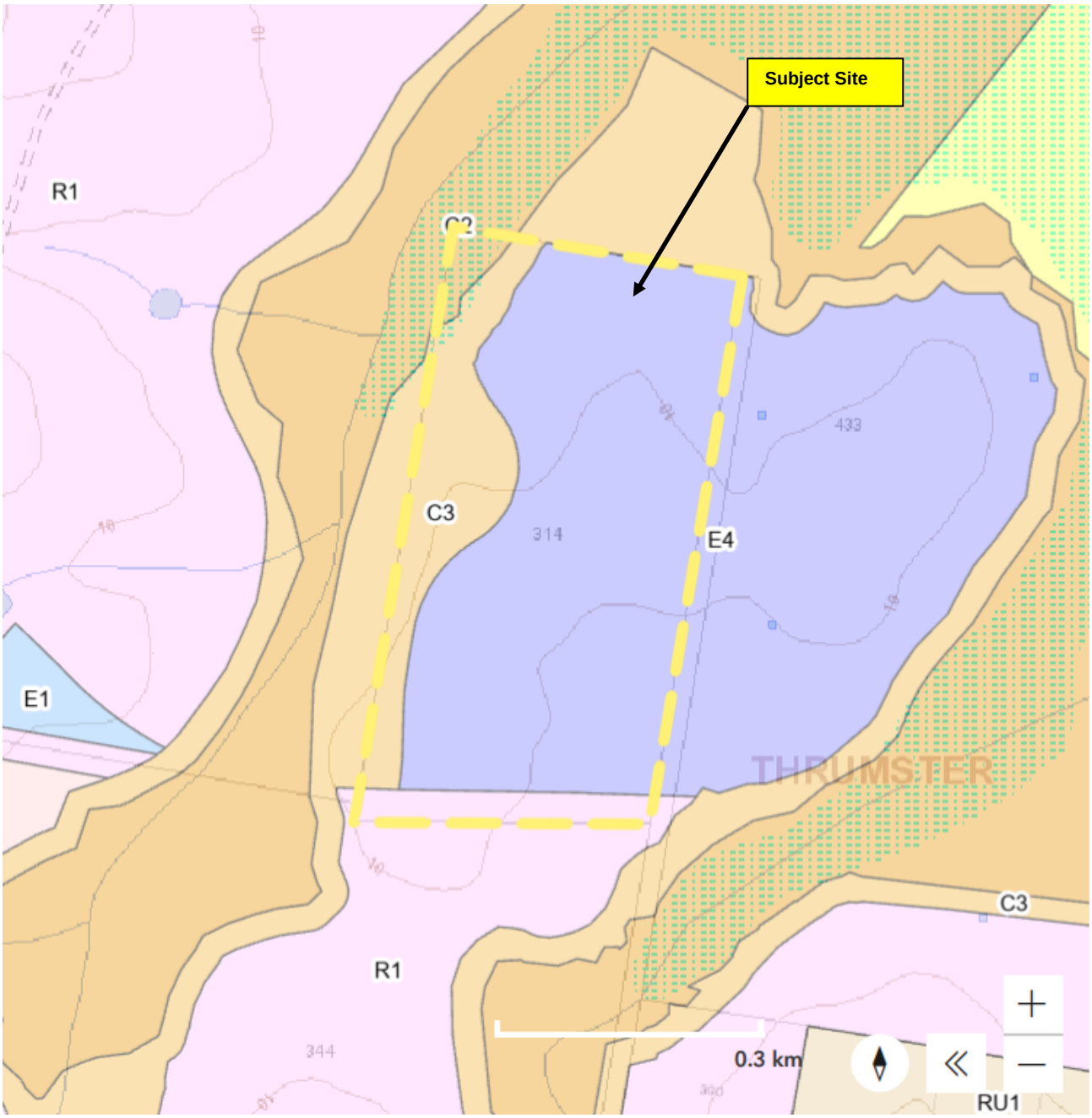
  The approved carparking area is located within the electricity supply corridor which is located in the far southern portion of the industrial subdivision site. Development within the industrial subdivision site will now adjoin with the approved residential lots on adjoining land to the south.

- Development Approval (DA 8242022), for the construction and operation of a medical centre within approved Lots 102 and 103 of the industrial subdivision. This development only proceeding post completion of the construction of the industrial subdivision.

It is noted that construction of Stage 1 of the approved for industrial subdivision, (which occupies the southern portion of the subject site), has recently been completed with the release of the completed lots pending title registration, refer to **Appendix 4**.

Most of the subject site is zoned General Industrial (E4) whilst land with an Environmental Management (C3) land use zoning is present along the far western portion of the subject site. Land to the north and west of the subject site has been zoned for environmental protection purposes with Environmental Conservation (C2) and Environmental Management (C3) zones present in these aspects. Industrially zoned land extends to the east of the subject site whilst land to the south provides for predominately residentially (R1) zoned land together with some areas of Environmental Conservation (C2) and Environmental Management (C3) zoned land, refer to **Figure 3** below.

Figure 3 – Land Use Zoning

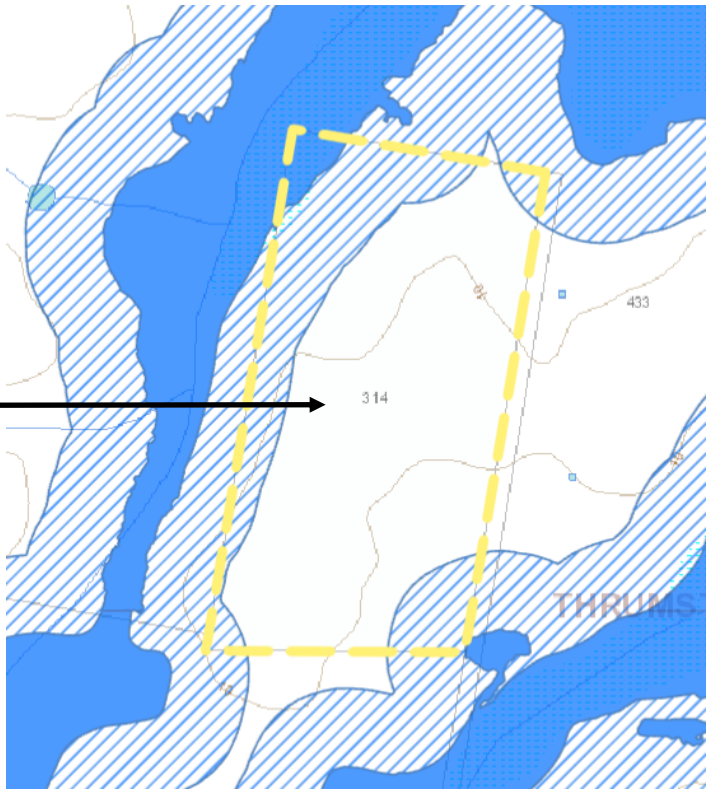


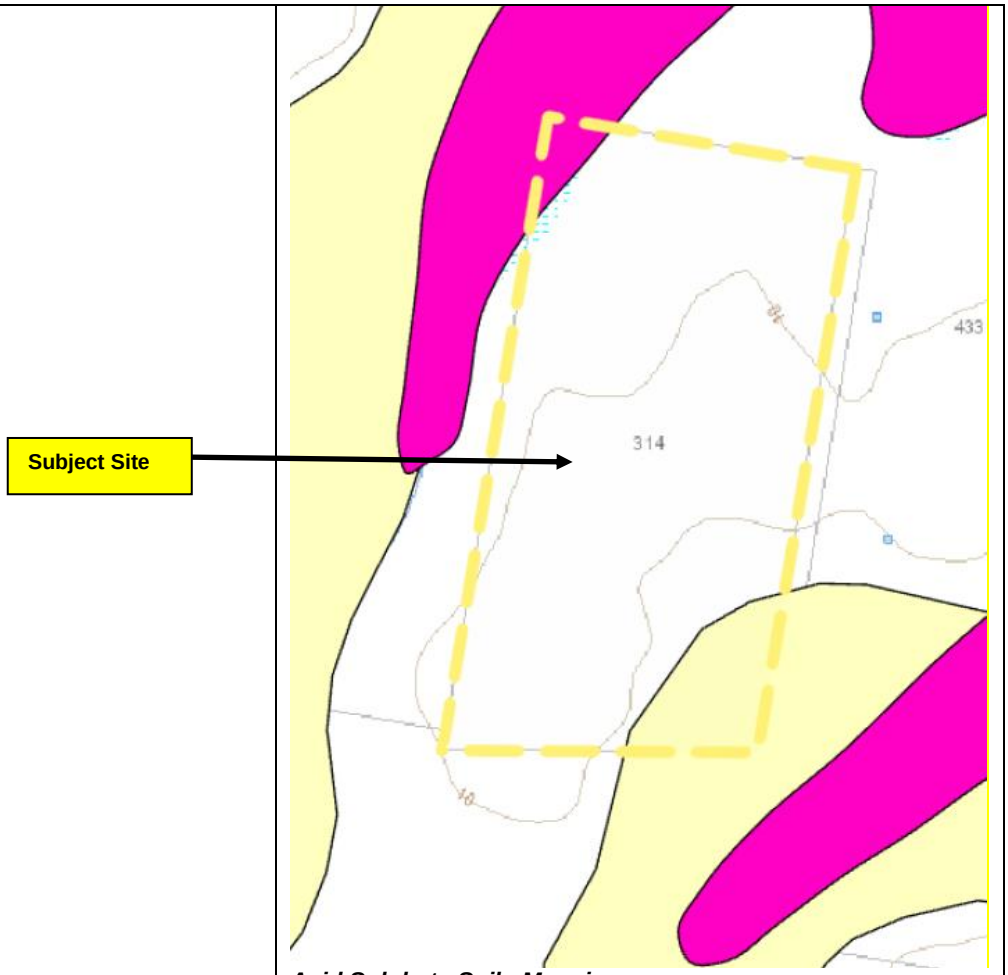
There are indications of recent, (2019/2020), fire activity on the subject site and on adjoining and adjacent land.

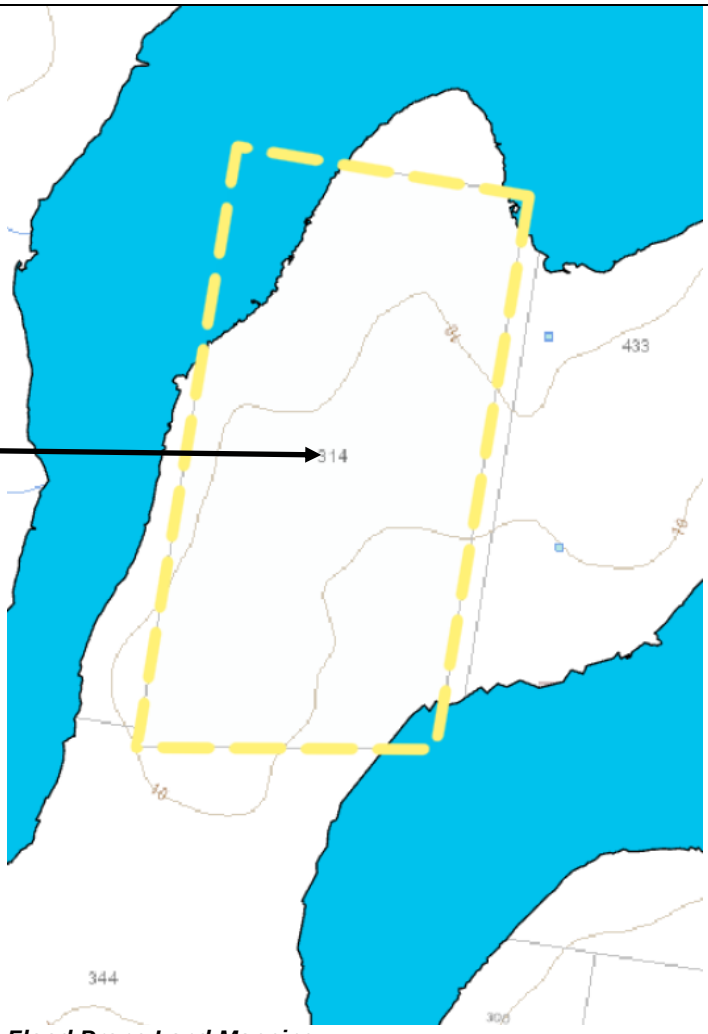
The environmental and heritage features of the areas of the subject site which forms the basis of this report are summarized as follows.

Table 1 – Environmental and Heritage Features

ENVIRONMENTAL/HERITAGE FEATURE	COMMENT
Riparian Corridors	There are no riparian corridors on the subject site in the area of the already approved industrial subdivision development which is the subject of this report.
SEPP (Resilience and	The subject site is identified as containing Coastal

Hazards) 2021	Wetlands as identified by the SEPP.  ***Coastal Wetlands Mapping (including Buffer Zone)*** The relevance of the provisions of the SEPP are outside the scope of this report and is the subject of separate assessment.
SEPP (Biodiversity and Conservation) 2021	The relevance of the provisions of the SEPP are outside the scope of this report and is the subject of separate ecological assessment where vegetation clearing is to be undertaken. It is however noted that the issue of koala habitat and impacts was the subject of consideration as part of the granting of development approval for the subdivision of the subject site.
Areas of geological interest	Potential acid sulphate soils, (Class 2 and 5), are indicated as being present in the low-lying north-western and south-eastern areas of the subject site, refer below.

	 ***Acid Sulphate Soils Mapping*** Based upon the nature of the already approved development and the various construction and land use management options available it is considered that land contamination issues, (including the disturbance of acid sulphate soils), will not be an impediment to the development of the already approved industrial subdivision development.
Environmental Protection Zones	The subject site, in the area of the approved industrial subdivision, is zoned pursuant to Port Macquarie Hastings LEP, (2011) as Industrial (E4), refer to **Figure 3** above.
Land slip	Given the gently 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 development.
Flood prone land	The far north-western and south-eastern areas of the subject site are identified as being flood prone.

	 ***Flood Prone Land Mapping*** The issue of flooding and associated impacts was the subject of consideration as part of the granting of development approval for the industrial subdivision of the subject site.
Bushfire Prone Land	The subject site is identified as being bushfire prone land for the purposes of the Environmental Planning and Assessment Act, 1979 and the Rural Fires Act, 1997, refer to Section 2 of this report.
National Park Estate or other Reserves	The subject land does not form part of the National Park Estate or other Reserves.
Threatened species, populations, endangered ecological communities and critical habitat	Threatened species, populations, endangered ecological communities, and critical habitat are unlikely to be present as the subject site has been the subject of significant modification over time. It is however noted that the issues of threatened species, populations, endangered ecological communities, and critical habitat was the subject of consideration as part of the granting of development approval for the industrial subdivision of the subject site. The relevance of this issue is therefore outside the scope of this report and is the subject of separate assessment.

OEH Key Habitats and Corridors	Given the level of disturbance, the subject site is unlikely to form part of OEH key habitats and corridors. It is however noted that the issue habitats and corridors was the subject of consideration as part of the granting of development approval for the subdivision of the subject site. The relevance of this issue is outside the scope of this report and is the subject of separate assessment.
Aboriginal Heritage	Items of aboriginal heritage are unlikely to be present given the level of historic disturbance which has occurred on the subject site. This issue has already been assessed as part of the already approved industrial subdivision development.

1.5 Development Proposal

It is now proposed to seek approval for the rezoning of southern portion of land within the already approved industrial subdivision so as to support additional land uses within the industrial estate. This area of the approved industrial subdivision encompasses Lots 101 – 128 inclusive and Lots 301 – 304 inclusive, refer to **Appendix 5**. In this regard it is proposed to rezone the southern portion of the industrial estate from the existing General Industrial (E4) zoning to a Productivity Support (E3) land use zoning.

It is further proposed that the rezoning provide for Serviced Apartments and Shop Top Housing to be an additional permitted use within two (2) distinct precincts within the proposed Productivity Support (E3) area.

The two separate Precincts encompass areas of land within the already approved industrial subdivision which known as:

- Precinct A – Lots 101 – 108 inclusive and Lots 115 and 116.
- Precinct B - Lots 124 – 128 inclusive and Lots 303 and 304

It is noted that the proposed Productivity Support (E3) zoning would also permit various types of development which would be Special Fire Protection Purpose developments in accordance with the Rural Fires Act, 1997.

A preliminary development concept for Precinct A is included as **Appendix 6**.

Access to the areas of land within the already approved industrial subdivision which are proposed to be rezoned remain unchanged with access and egress available via the public road system which has been constructed within the subject site and on adjoining land to the south of the Thrumster Business Park in order to service the development of residential lots in the approved residential subdivision which extends to the south of the Thrumster Business Park.

It is noted that the approved access and egress strategy from the industrial subdivision involves the provision of perimeter public roads which separate the already approved lots from areas of hazard vegetation. The approved development concept for the industrial subdivision also provides for each of the approved lots to have public road frontage either by way of perimeter roads or by other public through roads which connect with the perimeter road system.

1.6 Fauna and Flora Issues

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

2.0 STRATEGIC BUSHFIRE STUDY

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

The level of information required within such a study is dependent upon the nature of the LEP amendment, scale of the proposal, the bush fire risk and its potential impact upon the wider infrastructure network.

The Strategic Bush Fire Study provides the opportunity to assess whether new development is appropriate in the bush fire hazard context. It also provides the ability to assess the strategic implications of future development for bush fire mitigation and management.

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

2.1 Landscape Assessment

2.1.1 Assessment Methodology

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

(i) Stage 1 - Desktop Survey

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

- Weather
- Vegetation.
- Topographic features.

(ii) Stage 2 - Field Survey.

Detailed inspections of the subject site were undertaken by David Pensini - Building Certification and Environmental Services on on 18th February 2023 and 27th March 2023 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.

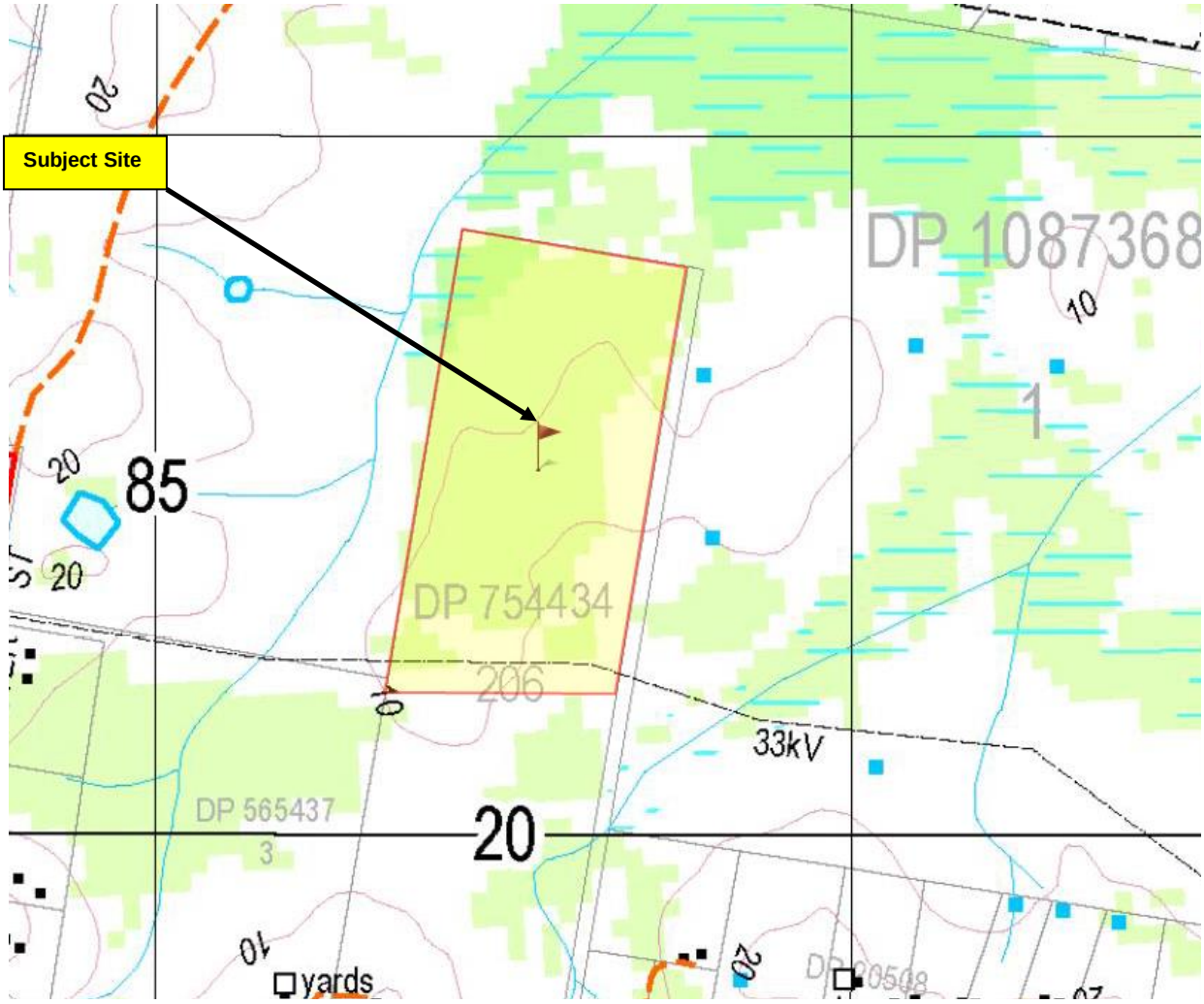
2.1.2 Topography

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 a small south to north ridgeline the crest of which is located in the centre of the subject site. The presence of intermittently flowing creeks/gullies to the northwest, west and southeast provides for gentle to moderate downslope conditions in all aspects of the subject site with these conditions radiating from the ridgeline crest on the subject site. Gentler slope conditions are present adjacent to the crest of the ridgeline. Slope conditions on adjoining and adjacent land to the north and west provide for gentle downslopes before transitions to flat and upslope conditions. Gentle north to south downslope conditions is present over adjoining land to the south whilst gentle to moderate northerly and southerly downslopes are present on adjoining land to the east.

The topographic features of the subject site and adjoining and adjacent land can be seen in **Figure 4** below:

Figure 4 – 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
North	3˚ - 4˚	Downslope
South	4˚ - 5˚	Downslope
Southeast	2˚ - 3˚	Downslope

Southwest	5˚ - 6˚	Downslope
East	3˚ - 4˚	Downslope
West	3˚ - 4˚	Downslope

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

Managed vegetation will be present within the approved industrial lots and supporting infrastructure which includes the provision of the following APZ's to the perimeters of the already approved industrial subdivision.

- North – minimum 26m (required by condition of Development Approval)
- South – minimum 60m (available via public road infrastructure, public infrastructure and approved carparking area along the southern aspect of the approved industrial subdivision)
- East - minimum 23m (available via public road infrastructure)
- West - minimum 26m (required by condition of Development Approval)

Accordingly, no areas of hazard vegetation have been assessed as being present within the approved industrial lots and supporting infrastructure including the APZ's specified above.

Recently cleared development area on subject site – looking from the north to the south

Recently cleared development area on subject site – looking from the south to the north

Earthworks in the area of the approved carparking area in the far southern portion of the subject site

It is however noted that the approved development concept provides for the retention of an area of Wet Sclerophyll Forest/Swamp Forest vegetation along the western portion of the subject site.

Wet Sclerophyll Forest vegetation retained along the western portion of the subject site – looking from the north to the south

Coastal Swamp Forest vegetation retained in the far north-western portion of the subject site

(ii) Vegetation on Adjoining and Adjacent Land to Development 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

To the north of the subject site are areas of scrub regrowth and areas of Coastal Swamp Forest. A Coastal Swamp Forest classification has been adopted for the northern aspect.

Coastal Swamp Forest vegetation to the north of the subject site

Coastal Swamp Forest vegetation to the north of the subject site

(ii) South

Approved residential lots extend for greater than 140m to the south of the subject site albeit that the industrial lots and residential lots are separated by the electricity supply easement which bisects the southern portion of the subject site. Whilst a managed vegetation classification could be adopted for the southern aspect, the uncertain timing of the development of the residential lots to the south and the presence of areas of Coastal Swamp Forest to the southeast and southwest provides for the adoption of the following bushfire hazard classifications for the southern aspect.

- South – Grasslands
- Southeast – Coastal Swamp Forest
- Southwest – Coastal Swamp Forest

Development of residential lots to the south of the subject site

Coastal Swamp Forest vegetation to the southeast of the subject site

Coastal Swamp Forest vegetation to the southwest of the subject site

(iii) East

Immediately to the east of the subject site, (beyond the industrial lots and supporting infrastructure which are the subject of this report), is an area of unmanaged Grasslands within a large undeveloped parcel of land. It is however noted that areas of Coastal Swamp Forest are present in the southern portion of the adjoining land to the east.

Grasslands to the east of the subject site

Coastal Swamp Forest vegetation in southern portion of adjoining land to the east

(iv) West

To the west of the subject site are areas of scrub regrowth and Coastal Swamp Forest which separate the subject site from a large parcel of land which holds development approval for residential subdivision development. The development footprint of land to the west contains grasslands.

In adopting a conservative approach to bushfire hazard assessment, a Coastal Swamp Forest classification has been adopted for land to the west of the subject site.

Coastal Swamp Forest vegetation to the west of the subject site

Scrub regrowth to the west of the subject site

Grasslands within approved residential development area at distance to the west of the subject site

The aforementioned assessment of vegetation is consistent with vegetation mapping of the area conducted by Port Macquarie-Hastings Council in 2013, refer to **Figure 2** of this report.

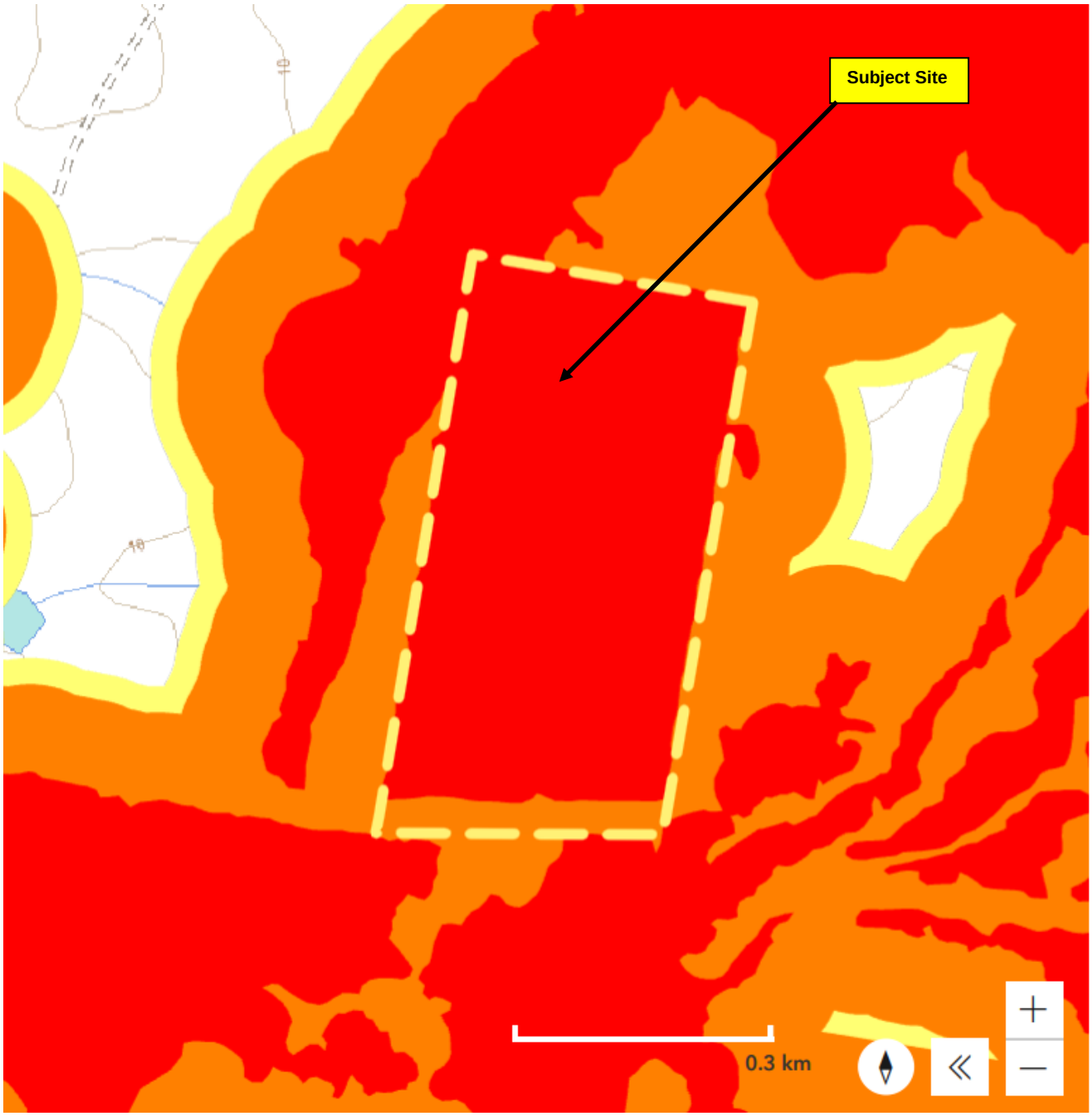
The following table summarizes the worst-case vegetation structures which are of bushfire significance to the proposed rezoning and consequential development allotments.

Table 3 – Bushfire Hazard Vegetation Summary

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)
North	Coastal Swamp Forest to the north of the subject site	Coastal Swamp Forest
South	Grasslands within area of adjoining land which has been approved for residential subdivision. Subdivision works having been commenced.	Grassland
Southeast	Coastal Swamp Forest on adjoining land to the south and east of the subject site	Coastal Swamp Forest
Southwest	Coastal Swamp Forest on adjoining land to the south of the subject site	Coastal Swamp Forest
East	Grasslands on adjoining land to the east of the subject site	Grassland
West	Wet Sclerophyll Forest along the far western portion of the subject site	Wet Sclerophyll Forest

It is noted that the identification of areas of bushfire hazard vegetation on adjoining and adjacent land is generally consistent with the bushfire risk mapping for the area, refer to **Figure 5**.

Figure 5 - Bushfire Prone Land Mapping



It is however noted that the above mapping does not reflect the significant vegetation removal and modification which has occurred in the area of the approved industrial subdivision with all Category 1 hazard vegetation now removed from the area of the subdivision.

It is also noted that significant areas of Category 1 hazard vegetation have been removed from the adjoining land to the south with this vegetation removal associated with the construction of the approved residential lots within the adjoining land to the south.

2.1.4 Climate/Weather

The typical/average climate of the Port Macquarie area is a humid subtropical climate characterised by warm humid summers and mild winters. The average daily maximum temperature is around 21.5^{0}C, while the average daily minimum temperature is around 10^{0}C - 11^{0}C.
Long-term average annual rainfall is around 1,500mm whilst annual pan evaporation is estimated to be approximately 1,400mm.

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

The bush fire season for the Port Macquarie area generally runs from July to November, however, can extend into December or January with low rainfalls. Strong northwest to southwest winds often prevails 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 of 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 Mid Coast Bush Fire Risk Management Plan, (BFMP 2019), identifies that the main sources of ignition in mid coast area, (includes the subject site), are:

- Escapes from Legal Burning off
- Incendiarism/arson
- Re ignition of previous wildfire or hazard reduction
- Illegal burning off
- Lightning

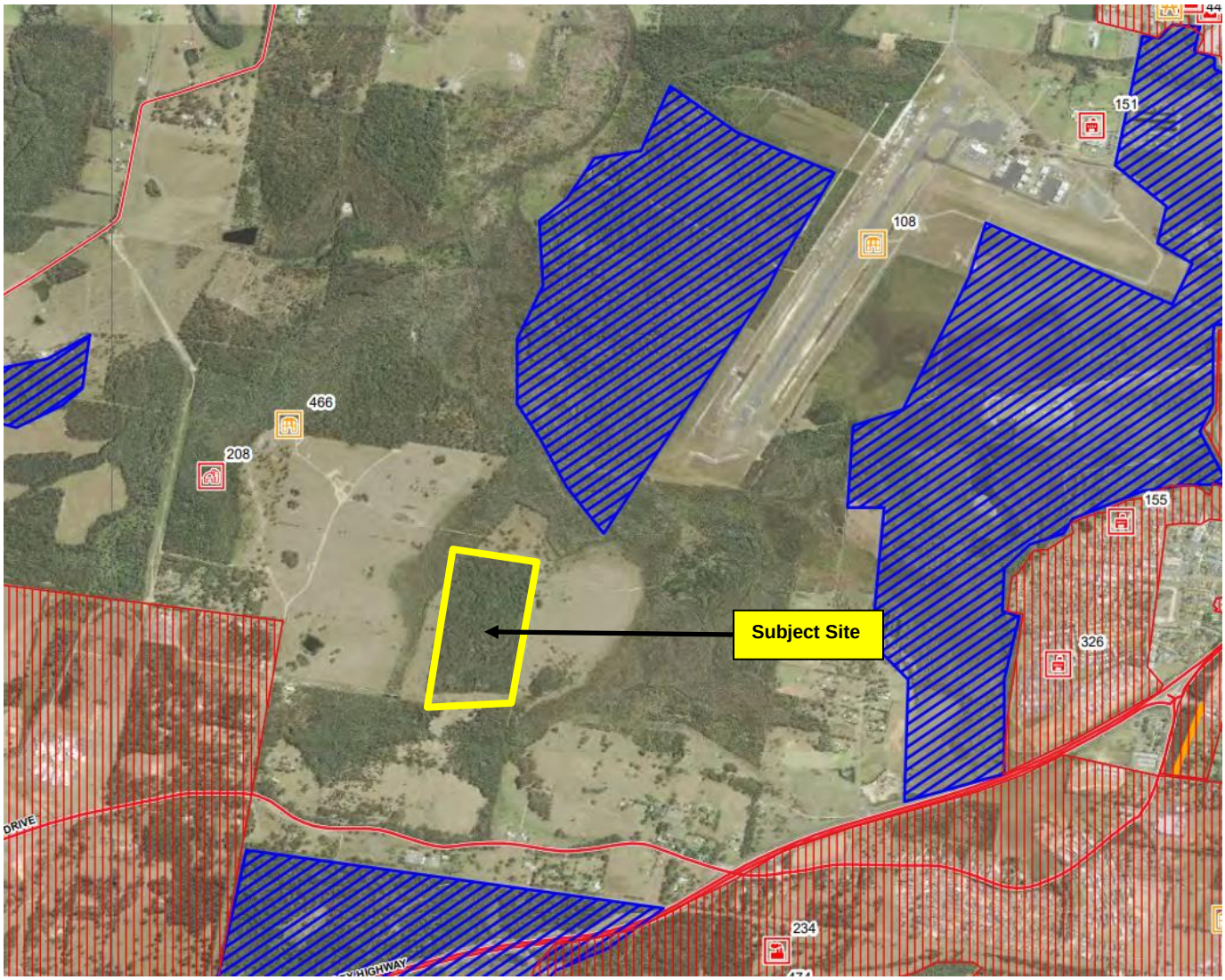
Many of the abovementioned fires occur as a result of private 'Hazard Reduction' burns by private landowners, which by act or omission have escaped into forested areas requiring major suppression efforts.

Incendiarism/arson commonly occurs in both grassland and forested areas across the Midcoast area. Increased visitation is thought to be a contributing factor to increased incidence of incendiarism.

Lightning activity in the area is mainly associated with late spring and summer thunderstorm activity, which is normally, (but not always), accompanied by rainfall.

The Mid Coast BFMC Bush Fire Risk Management Plan 2019 identifies the Port Macquarie Airport to the northeast of the subject site and isolated residential dwellings and a reticulated sewerage pumping station to the northwest of the subject site as being 'at risk' assets adjacent to the subject site. Land to the northeast of the subject site in the vicinity of the Port Macquarie Airport is identified as being a Strategic Fire Advantage Zone, refer to **Figure 6**.

Figure 6 – Extract from the Mid Coast Bushfire Risk Management Plan (2019)



The subject site and surrounds are not known to have an extensive history of bushfire.

Recent bushfire activity was detected on and immediately adjacent to the subject site with this activity likely to have been associated with the bushfires which occurred to the northwest of Port Macquarie during November and December 2019 and January 2020.

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 north towards the south within the areas of Coastal Swamp Forest vegetation which extend to the north 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 generally flat topography to the north of the subject site and the disruption in fire run conditions due to the reduced fuel loads within the Port Macquarie Airport which is located within 600m to the northeast of the subject site.

It is possible that bushfires may also move from adjoining and adjacent land to the south towards the north under the influence of southerly wind conditions. This risk is however tempered by the reduced fuel loads associated with the large residential subdivision which extends to the south of the subject site together with the presence of grasslands within rural and rural residential lots to the southeast and southwest of the subject site.

Bushfire risks also exist to the east and west of the subject site however the presence of grasslands and remnant forest area fuel loads in these aspects would be expected to provide for reduced fire impacts.

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 north, east and west of the subject site.

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

Table 4 – Bushfire Behaviour Risk Summary

ASPECT	VEGETATION DESCRIPTION	SLOPE CONDITION	WORST CASE WIND INFLUENCE
North	Coastal Swamp Forest to the north of the subject site	3˚ - 4˚ Downslope	Northwest
South	Grasslands within area of adjoining land which has been approved for residential subdivision. Subdivision works having been commenced.	4˚ - 5˚ Downslope	Southwest
Southeast	Coastal Swamp Forest on adjoining land to the south and east of the subject site	2˚ - 3˚ Downslope	Southeast
Southwest	Coastal Swamp Forest on adjoining land to the south of the subject site	5˚ - 6˚ Downslope	Southwest
East	Grasslands on adjoining land to the east of the subject site	3˚ - 4˚ Downslope	Northeast
West	Wet Sclerophyll Forest along the far western portion of the subject site	3˚ - 4˚ Downslope	Northwest

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 recent 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 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 APZ's without further clearing whilst other design mechanisms including perimeter roads and a connected public road network have already been integrated into the already approved development of the subject site.

The landscape assessment indicates that it is feasible to design and build resilience into the planned community 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 southern portion of the already approved industrial subdivision.

2.3 Land Use Assessment

2.3.1 Existing Land Use Context

Being located on the north-western fringes of the developed areas of Port Macquarie land uses within the locality, including the subject site, have until recently been dominated by rural and bushland activities.

In this regard, the subject site contained areas of Wet Sclerophyll Forest the majority of which has recently been removed as part of the construction of the already approved industrial subdivision of the land.

The character of the area is predominately rural although the presence of residential subdivision construction works immediately to the south of the subject site and a recently constructed Manufactured Housing Estate (MHE) at a distance of 600m to the west of the subject site highlights the transitioning nature of land use in the locality.

Residential lots being development on adjoining land to the south of the subject site

MHE development under construction at distance to the west of the subject site

It is also noted that a large residential subdivision has been granted development approval on land immediately to the west of the subject site albeit that the development of this land for residential purposes has not as yet commenced. A new Sewerage Treatment Plant is proposed for land to the northwest of the subject site with the provision of this infrastructure recognizing the significant growth which has and will continue to occur in the Thrumster area.

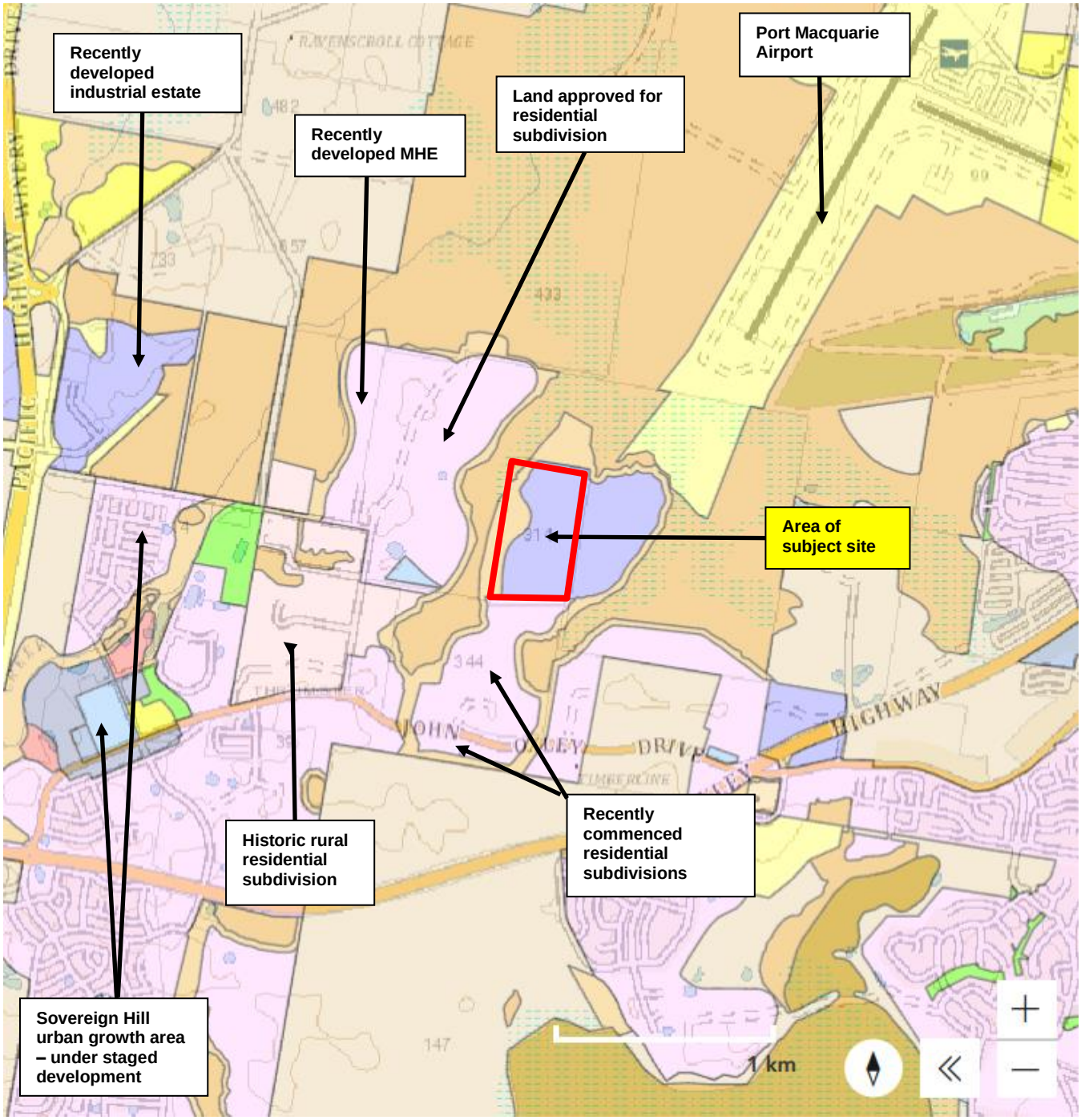
Area of approved residential lots to the west of the subject site

Being located approximately 1.2km to the east of the Sovereign Hills urban growth area, (which is located to the west of the urbanized area of Port Macquarie), the land within the area has recently and will continue to experience significant land use change with residential and industrial development expanding into undeveloped land with a rural/rural residential land use history.

The character of the area is also influenced by the Port Macquarie Airport the runway of which is located within 850m to the northeast of the subject site.

The area of land which is proposed to be rezoned has a direct context and relationship with residential areas with the subject site already approved to support a range of industrial uses with immediately adjoining land to the south being development for residential occupation. In this regard the Thrumster area has, in more recent time, seen a significant transition in land use with residential and commercial development expanding into areas which have had a rural land use, refer to **Figure 7** below.

Figure 7 – Existing Land Use Context



The use of land which has already been approved to support urban expansion, as is the case with the subject site, adopts sustainable land use principles. The subject site provides an important opportunity to accommodate a range of land uses which would be expected for an emerging residential locality.

2.3.2 Future Land Use Context

The area of land which is proposed to be rezoned occupies the southern portion of the already approved industrial subdivision with the industrial subdivision being located to the north of a recently commenced residential subdivision with the development of the already approved lots within both the industrial and residential subdivisions providing for a range and diversity of land use which is significantly different to the historic rural/bushland uses which have predominated up until more recently.

The development of the subject site and adjoining and adjacent land reflects the orderly and progressive development of land which has been identified as being suitable to accommodate the urban expansion of Port Macquarie.

With a range of existing and proposed commercial, educational, industrial and residential land uses in the Thrumster area the use of the subject site for a range of support purposes as proposed via the rezoning is entirely consistent with the evolving nature of land use in the locality with the additional uses provided for by the Productivity Support (E3) land use zoning remaining entirely consistent with the desired future character of the area. This includes the potential for Shop Top Housing and Serviced Apartments within Precincts A and B within the proposed Productivity Support (E3) zone.

It is however acknowledged that the subject site does and will continue to have an interface with areas of land containing bushfire hazard vegetation. In this regard the ongoing presence of areas of bushfire hazard vegetation 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 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 would provide for the following land use zone.

- Productivity Support (E3)
- Productivity Support (E3) with Serviced Apartments and Shop Top Housing to be an additional permitted use.

It is noted that the rezoning is proposed to facilitate a broader range of activities within the already approved industrial subdivision which the proposed rezoning relates to.

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

Table 5 – Permitted Uses within Proposed Zoning

Land Use Zone	Productivity Support (E3)
Objectives of Zone	• To provide a range of facilities and services, light industries, warehouses and offices. • To provide for land uses that are compatible with, but do not compete with, land uses in surrounding local and commercial centres. • To maintain the economic viability of local and commercial centres by limiting certain retail and commercial activity. • To provide for land uses that meet the needs of the community, businesses and industries but that are not suited to locations in other employment zones. • To provide opportunities for new and emerging light industries. • To enable other land uses that provide facilities and services to meet the day to day needs of workers, to sell goods of a large size, weight or quantity or to sell goods manufactured on-site. • To minimise conflict between land uses within the zone and with adjoining zones. • To ensure development makes a positive contribution to the public domain and streetscape. • To create employment environments within large scale developments that are of high visual quality and relate favourably in architectural and landscape treatment to

	the large-scale development. • To ensure that development does not conflict with the hierarchy of business and retail centres in the Port Macquarie-Hastings region and the role of the Greater Port Macquarie Central Business District as the focal point for subregional functions and service delivery.
Permitted without consent	Nil
Permitted with consent	Animal boarding or training establishments; Boat building and repair facilities; Business premises; Centre-based child care facilities; Community facilities; Depots; Food and drink premises; Function centres; Garden centres; Hardware and building supplies; Hotel or motel accommodation; Industrial retail outlets; Industrial training facilities; Information and education facilities; Kiosks; Landscaping material supplies; Light industries; Liquid fuel depots; Local distribution premises; Markets; Mortuaries; Neighbourhood shops; Office premises; Oyster aquaculture; Passenger transport facilities; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Research stations; Respite day care centres; Rural supplies; Service stations; Specialised retail premises; Storage premises; Take away food and drink premises; Tank-based aquaculture; Timber yards; Vehicle body repair workshops; Vehicle repair stations; Vehicle sales or hire premises; Veterinary hospitals; Warehouse or distribution centres; Wholesale supplies; Any other development not prohibited Note: Serviced Apartments and Shop Top Housing are to be an additional permitted use on Lots 101 – 108 inclusive, Lots 115 and 116, Lots 124 – 128 inclusive and Lots 303 and 304 only
Prohibited	Advertising structures; Agriculture; Air transport facilities; Airstrips; Amusement centres; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Eco-tourist facilities; Electricity generating works; Entertainment facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Freight transport facilities; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home occupations; Home occupations (sex services); Industries; Marinas; Mooring pens; Open cut mining; Port facilities; Registered clubs; Residential accommodation; Restricted premises; Rural industries; Sewerage systems; Sex services premises; Tourist and visitor accommodation; Transport depots; Truck depots; Waste or resource management facilities; Water recreation structures; Water supply systems; Wharf or boating facilities

It is noted that the E3 land use zoning would continue to permit a range of business and commercial activities which would be entirely consistent with industrial and business use areas however it is noted that the proposed E3 zoning as proposed would also permit Shop Top Housing and Serviced Apartments on the nominated lots within Precincts A and B. It is also noted that the E3 zoning would also permit some development which would be special fire purpose developments such as hotels, motels and childcare centres. Unlike the approved industrial land use of the subject site, the residential and special fire protection purpose use of the subject site has not been the subject of specific bushfire threat management assessment.

Having regards to the above, the future population demographics for the area, which is the subject of the rezoning proposal, could include groups which are considered to be ‘vulnerable’ in the context of mobility and emergency response factors. In this regard the use of land for short term tourist accommodation and childcare facilities requires consideration of the possibility that building occupants may not be able to evacuate in the event of bushfire activity.

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

- The proposed rezoning only relates to the southern portion of the already approved industrial subdivision with the purpose of the rezoning being to allow for a greater diversity in activities within the locality. Whilst the demographics of the area of land which is the

subject of this report will be potentially altered by the proposed rezoning it is considered that this change will not be significant in the context of the evolving nature of land use in the locality, in particular the large residential area which is present immediately to the south of the subject site.

- The already approved industrial subdivision has a direct connection to and relationship with the residential subdivision which has been approved for and is under construction on adjoining land to the south of the subject site.

- The approved design of the industrial subdivision provides for the presence APZ's around the perimeter of the industrial lots. These APZ's are generally in accordance with the requirements which would be applicable to the residential development of the land.

- Given the spatial dimensions of the area of land, which is the subject of this rezoning proposal, there are some opportunities to provide for defendable spaces which would provide for building occupants to shelter onsite.

- The design and construction of public road infrastructure within the approved industrial subdivision provides for compliance with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006. This includes the provision of perimeter roads. This ensures that the access and egress strategy from the area is based upon recognized bushfire threat management standards.

- The design and construction of services within the approved industrial subdivision provides for compliance with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006. This includes the provision of water supplies for fire suppression and asset protection activities. This ensures that the availability of services is based upon recognized bushfire threat management standards.

- There is ample opportunity to construct buildings to meet or exceed the relevant bushfire threat management construction requirements.

- Any future residential and/or special fire protection purpose developments within the area of land which is the subject of this rezoning 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.

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 considered to be 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 urban 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 future occupation of the subject site as proposed via the rezoning as it is feasible to design and build resilience into the planned community that is consistent with the bushfire protection requirements 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 development.

- The proposed rezoning only relates to the southern portion of the already approved industrial subdivision with the purpose of the rezoning being to allow for a greater diversity in activities within the locality. Whilst the demographics of the area of land which is the subject of this report will be potentially altered by the proposed rezoning it is considered that this change will not be significant in the context of the evolving nature of land use in the locality, in particular the large residential area which is present immediately to the south of the subject site.

- The already approved industrial subdivision has a direct connect to and relationship with the residential subdivision which has been approved for and is under construction on adjoining land to the south of the subject site.

- The approved design of the industrial subdivision provides for the presence APZ's around the perimeter of the industrial lots. These APZ's are generally in accordance with the requirements which would be applicable to the residential development of the land.

- Given the spatial dimensions of the area of land which is the subject of this rezoning proposal, there are some opportunities to provide for defendable spaces which would provide for building occupants to shelter onsite.

- The design and construction of public road infrastructure within the approved industrial subdivision provides for compliance with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006. This includes the provision of perimeter roads. This ensures that the access and egress strategy from the area is based upon recognized bushfire threat management standards.

- The design and construction of services within the approved industrial subdivision provides for compliance with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006. This includes the provision of water supplies for fire suppression and asset protection activities. This ensures that the availability of services is based upon recognized bushfire threat management standards.

- There is able opportunity to future construct buildings to meet or exceed the relevant bushfire threat management construction requirements.

- Any future residential and/or special fire protection purpose developments within the area of land which is proposed to be rezoned 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 areas of land and their future development.

2.4 Access and Egress

Access to the areas of land which are the subject of rezoning will be via the already approved public road system which will service the industrial subdivision development. In this regard access to and egress from the approved industrial subdivision is available via the public road system which has recently been constructed within the southern portion of the subject site as part of Stage 1 of the industrial subdivision and on adjoining land to the south as part of the development of the residential lots in the southern aspect.

The road hierarchy which has already been adopted for the development of the subject site and adjoining and adjacent land to the south provides for an efficient and effective movement of vehicles with a variety of access and egress opportunities available through the interconnection of the proposed public road network with proposed and existing public road infrastructure. This is important from an evacuation perspective whereby the proposed road system will provide for capacity of use, alternatives for travel and the minimization of conflict between road users and emergency services.

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

The already approved access and egress strategy from the industrial subdivision involves the provision of perimeter roads which separate the approved lots from areas of hazard vegetation. The approved development concept for the industrial subdivision provides for each of the approved lots to have public road frontage either by way of perimeter roads or by other public through roads which connect with the perimeter road system.

As is currently the case, travel to and from the areas which are the subject of rezoning is principally from the south from areas which would be protected from the impacts of bushfire. All public roads are required to be all-weather two-way, bitumen sealed public roads which are to be designed and constructed so as to comply with the relevant public road standards as provided for by NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006.

The existing approved public road infrastructure servicing the subject site, (including the southern portion of the industrial estate which is the subject of rezoning) provide for:

- Perimeter public road separation between development lots and areas of bushfire hazard vegetation.

- The ‘through road’ movement of vehicles. No dead-end road arrangements are present.

- Roads which are suitable and appropriate for bushfire threat management activities and are consistent with the acceptable solution requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006.

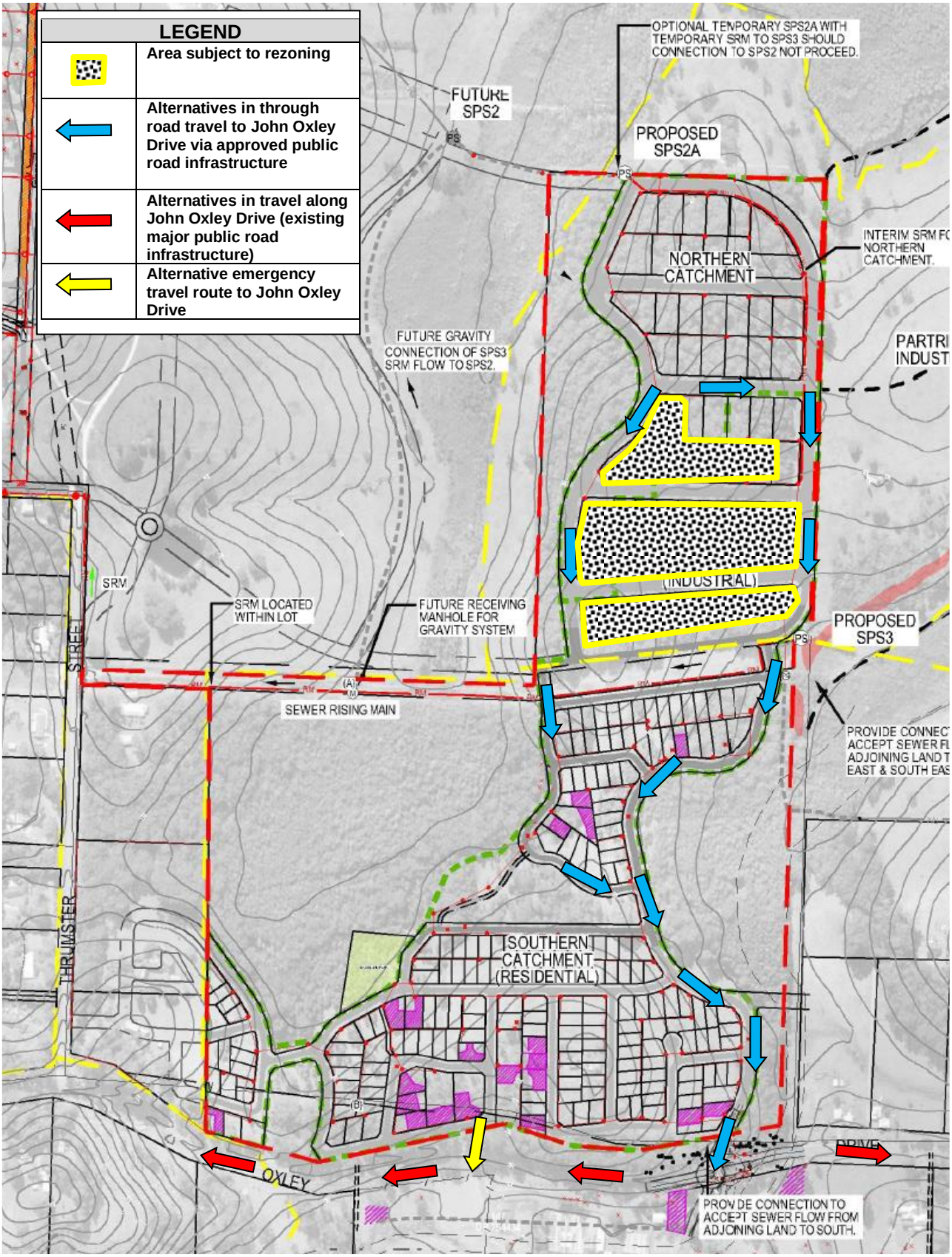
- Direct public road frontage to the subject site, the design and construction of which will be suitable for emergency service access and egress purposes.

Given the nature of the already approved public road system which will provide for access to and egress from each of the approved 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 separate allotment of land which are the subject of rezoning will need to be the subject of a lot specific assessment based upon the nature and extent of the future development proposal for each Precinct.

The proposed evacuation options out of the area of land which is the subject of rezoning will utilize already approved major 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 developments available, refer to **Figure 8**.

Figure 8 – Access and Egress Opportunities



2.5 Emergency Services

The question of increased demand for emergency services is a difficult one in a strategic land use planning context. On the one hand, the proposed development increases exposure of people, property and infrastructure, including increased exposure of firefighting personnel.

It is noted that any increase in demand for emergency services has already been considered to a large extent via the approval of the industrial subdivision and the residential subdivision on adjoining land to the south. In this regard an increase in demand for emergency services has already been acknowledged regardless of the additional land uses which may result from the proposed rezoning of the southern portion of the already approved industrial subdivision.

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 Port Macquarie, with Wauchope also supporting a range of emergency services which can respond to any incidents. Port Macquarie is located approximately 3km by road to the east from the subject site. Travel distances and times to and for emergency services are appropriate for industrial, business and residential development and importantly the location of the subject site provides for a range of emergency service options and opportunities, 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	Port Macquarie – Central Road	Approximately 6km	Central Road/Lake Road/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
	Wauchope – Cameron Street	Approximately 13.5km	Cameron Street/High Street/Oxley Highway/ John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
Police Service	Port Macquarie – Hay Street	Approximately 8.5km	Hay Street/Clarence Street/Horton Street/Gordon Street/ Oxley Highway/ John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
	Wauchope- Young Street	Approximately 13.5km	Young Street/Hastings Street/High Street/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
Ambulance Service	Port Macquarie – Central Road	Approximately 6km	Central Road/Lake Road/Oxley Highway/John Oxley Drive/Yet to be constructed public roads within the subject site and adjoining land to the south
	Wauchope – High Street	Approximately	High Street/Oxley Highway/ John Oxley

		13.5km	Drive/Yet to be constructed public roads within the subject site and adjoining land to the south.
Hospitals	Port Macquarie – Wrights Road	Approximately 3.6km	Wrights Road/ Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
	Wauchope – High Street	Approximately 13.5km	High Street/Oxley Highway/ John Oxley Drive/Yet to be constructed public roads within the subject site and adjoining land to the south.
NSW Fire and Rescue	Port Macquarie – Central Road	Approximately 6km	Central Road/Lake Road/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
	Wauchope - Campbell	Approximately 13.5km	Young Street/Hastings Street/High Street/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
NSW RFS	Fire Control Centre – Cameron Street	Approximately 13.5km	Cameron Street/High Street/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
	Lake Innes Brigade – Lake Innes Drive	Approximately 5.6km	Lake Innes Drive/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south
	Sancrox-Thrumster Brigade – Bushland Drive	Approximately 6.2m	Bushland Drive/Billabong Drive/Oxley Highway/ John Oxley Drive/Yet to be constructed public roads within the subject site and adjoining land to the south
Airport	Port Macquarie – Boundary Street	Approximately 600m (direct air travel distance) Approximately 9.5km (by road)	Boundary Street/Hastings River Drive/Clifton Drive/Oxley Highway/John Oxley Drive/ Yet to be constructed public roads within the subject site and adjoining land to the south

Specifically, in relation to bushfire, it is noted that the Lake Innes RFS brigade is located within 5.5km of the subject site whilst the Sancrox-Thrumster Brigade is located within 6.5km of the subject site. In addition, the NSW Fire Brigades at Port Macquarie and Wauchope provide for the presence of firefighting resources which due to the urban nature of the locality are likely to be the fire responders for the subject site.

Importantly any increase in demand for emergency services associated with the proposed rezoning of land, (and its subsequent 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 a range of 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 contexts 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 existing land use for the subject site and surrounding areas already provides of a range of population demographics in terms of evacuation responsiveness and ability.

- The concept design for the already approved public road infrastructure provides for multiple evacuation travel options for any future 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 already approved public road infrastructure will 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.

- Given the size of the subject site there will be locations/areas which would be protected from the impacts of bushfire and will be available to occupants within the area of the already approved industrial subdivision.

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 noted that due to the size of the subject site and the spatial separation which would be available to areas of hazard vegetation there are opportunities for emergency service personnel and estate occupant to shelter onsite.

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 developments within the allotments which are the subject of rezoning.

2.6 Infrastructure

Given that the proposed rezoning relates to areas of land which have already been approved for industrial subdivision, all approved lots within the subdivision, including the areas of land which are the subject to the rezoning proposal, will have access to the reticulated water supply, the extension of which has been required by Port Macquarie-Hastings Council to service the already approved subdivision of the land. It is noted that the provision of water services to the industrial subdivision is subject to compliance with the relevant provisions of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006.

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

Additionally, it is noted that 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.

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 development which is proposed.

2.7 Adjoining Land

It is noted that the proposed 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 as a result of the proposed rezoning.

The rezoning of the southern portion of the existing industrial subdivision as provided for in this report will provide for managed vegetation to be present within the already approved industrial lots and associated infrastructure whilst Forest vegetation will be present to the north, west , southwest and southeast with grasslands to the south and east noting that the development of residential lots on the adjoining land to the south will provide for extensive areas of managed land in the southern aspect.

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 a range of 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.

The obligations and expectations for bushfire threat management activities on adjoining and adjacent land to the subject site will remain unchanged as a consequence of the proposed rezoning as the subject land is already approved for industrial development which is subject to compliance with the bushfire threat management requirements of the Bushfire Hazard Assessment Report which forms part of the development approval for the subdivision of the subject site, refer to **Appendix 7.**

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 support a range of land use activities which are consistent with the proposed Productivity Support (E3) zoning.

3.1.1 Asset Protection Zone

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

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

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

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

The following assessment of APZ requirements which are relevant to the proposed rezoning in the context of the range of potential development outcomes is provided as follows.

(i) Commercial/Industrial Development

NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 do not prescribe acceptable solutions for the provision of a defendable space in relation to commercial/business 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 business/commercial development on the area of land which is proposed to be rezoned for Productivity Support (E3) 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 to any future commercial/business 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 business 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 defendable space requirements for industrial and commercial developments, the determination of the spatial requirements for any future building development on the area of land proposed to be rezoned to Productivity Support (E3) 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 3m - 10m area between a building and a fire source is acceptable for property protection purposes. Reference to Clause C2D2 and Specification C5 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/commercial buildings, (<2000m^2 in floor area – Type C construction). Increased defendable spaces maybe required for larger buildings however the provision of a minimum 10m wide defendable space around q proposed development maybe relevant in the circumstances

It is therefore considered that there are opportunities to position future commercial/industrial use buildings within the area of land which is proposed to be rezoned for Productivity Support (E3) 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 areas of land to allow for future development is appropriate although it will be necessary to demonstrate compliance with the defendable space requirements in relation to any specific future development proposal on the subject areas of land.

(ii) Residential Development

Any future residential development of the subject areas of land, (i.e. allotments within Precincts A and B of the rezoning area), will need to provide for APZ's in accordance with the residential subdivision requirements of Chapter 5 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019. APZ's in residential situations must be such that radiant heat levels of greater than 29kW/m^2 will not be experienced at a residential building.

It is also noted that the already approved industrial subdivision which the proposed rezoning relates to provides for the provision of the following minimum defendable spaces to the industrial lots within the already approved subdivision.

- North - minimum 26m (required by condition of Development Approval).
- South - minimum 60m (available via public road infrastructure, public infrastructure and approved carparking area along the southern aspect of the approved industrial subdivision).
- East - minimum 23m (available via public road infrastructure)
- West - minimum 26m (required by condition of Development Approval)

The following table indicates the minimum worst case 'Deemed to Satisfy' Asset Protection Zones required from the identified areas of bushfire hazard vegetation to future residential buildings within the areas of land which are the subject of rezoning. The table is based upon the vegetation type, slopes, and fire weather (FDI) which is applicable to this assessment.

Table 7 – APZ Requirements for Residential Subdivision Developments

DIRECTION OF HAZARD	VEGETATION TYPE	SLOPE	IPA	OPA	TOTAL REQUIRED APZ	APZ AVAILABLE	APZ COMPLIANCE
North	Coastal Swamp Forest	3˚ - 4˚ Down slope	15m	10m	25m	>120m	✔
South	Grassland	4˚ - 5˚ Down slope	11m	-	11m	>60m	✔
Southeast	Coastal Swamp Forest	2˚ - 3˚ Down slope	15m	10m	25m	Minimum 25m	✔
Southwest	Coastal Swamp Forest	5˚ - 6˚ Down slope	16m	15m	31m	>60m	✔
East	Grassland	3˚ - 4˚ Down slope	11m	-	11m	Minimum 23m	✔
West	Wet Sclerophyll Forest	3˚ - 4˚ Down slope	15m	10m	25m	Minimum 26m	✔

Having regards to the above it is possible to locate future residential buildings within the areas of land which are proposed to be rezoned and comply with the relevant APZ performance requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 albeit that the final design and spatial relationships of future residential buildings will need to be confirmed. In this regard it is noted that the APZ requirements in **Table 7** above reflect worst case conditions with the nature and extent of the minimum APZ's dependent upon future building design.

The APZ performance criteria and acceptable solution provisions which would apply to any future residential development on the Precincts of land which are proposed to be rezoned to allow for Shop Top Housing and Serviced Apartment developments are detailed in the following tables:

Table 8 – Residential Subdivision Development APZ Performance Requirements

Intent of measures: to provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at the buildings does not exceed 29kW/m².		
Performance Criteria	**Acceptable Solutions**	**Compliance Comment**
The intent may be achieved where:		
• potential building footprints will not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot	•APZs are provided in accordance with Tables A1.12.2 and A1.12.4 based on the FDI	✔ To be complied with in relation to the design of future development.
• APZs are managed and maintained to prevent the spread of a fire towards the building.	•APZs are managed in accordance with the requirements of 'Appendix 4	✔ To be complied with in relation to the design of future development
• the APZ is provided in perpetuity.	•the APZ is wholly within the boundaries of the	✔ To be complied with in relation to the design of future

	development site.	development All APZ's can be provided in accordance with PfBP Guideline requirements.
• APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	• APZ's is located on lands with a slope less than 18 degrees.	✔ To be complied with in relation to the design of future development All APZ's can be provided on lands with a slope less than 18 degrees.

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

Having regard to the above it will be necessary to ensure that the future design of any residential development within the areas of land which are the subject of this report provides for compliance with the minimum APZ requirements specified in **Table 7** above. In this regard, an indicative concept plan for the provision of APZ's to the future residential development of the land within the proposed rezoning areas is included as **Appendix 8**.

(iii) Special Fire Protection Purpose Development

It is noted that the range of activities which are permitted within the Productivity Support (E3) zoning does include uses which would be considered to be Special Fire Protection Purposes developments for the purposes of the Rural Fires Act, 1997.

These types of developments require APZ's in accordance with the requirements of Chapter 6 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 with larger APZ's required in recognition of mobility and/or emergency response factors which are relevant to the occupants associated with particular building uses.

Typically, tourist and visitor accommodation and childcare centre developments would be considered as Special Fire Protection Purpose (SFPP) development for the purposes of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019.

APZ's in SFPP situations must be such that radiant heat levels of greater than 10kW/m² will not be experienced by occupants or emergency workers entering or exiting a building.

The relevant performance criteria and acceptable solutions for APZs for SFPP developments are as follows.

Table 9 – APZ Performance Requirements (SFPP Developments)

Intent of measures: to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.	
Performance Criteria	**Acceptable Solutions**
The intent may be achieved where:	
Radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building.	The building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.

APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.
APZs are managed and maintained to prevent the spread of fire to the building. The APZ is provided in perpetuity.	The APZ is managed in accordance with the requirements of Appendix 4 of this document, and is wholly within the boundaries of the development site. APZ are wholly within the boundaries of the development site; and Other structures located within the APZ need to be located further than 6m from the refuge building.

In accordance with Table 6.8a and A1.12.1 of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019, the following APZ's would typically be applicable to any SFPP developments within the areas of land which are the subject of rezoning.

Table 10 – SFPP Development Asset Protection Zone Requirements (PfBP 2019)

ASPECT	VEGETATION	SLOPE	TOTAL REQUIRED APZ			MINIMUM AVAILABLE APZ within Property Boundaries (Worst Case)	COMPLIANCE with Minimum APZ Requirements
			IPA	OPA	APZ		
North	Coastal Swamp Forest	3˚ - 4˚ Down Slope	**54m**	**25m**	**79m**	**>120m**	✔
South	Grassland	4˚ - 5˚ Down slope	**40m**	**-**	**40m**	**>60m**	✔
Southeast	Coastal Swamp Forest	2˚ - 3˚ Down slope	**54m**	**25m**	**79m**	**>79m**	✔
Southwest	Coastal Swamp Forest	5˚ - 6˚ Down slope	**68m**	**25m**	**93m**	**>93m**	✔
East	Grassland	3˚ - 4˚ Down slope	**40m**	**-**	**40m**	**>40m**	✔
West	Wet Sclerophyll Forest	3˚ - 4˚ Down slope	**54m**	**25m**	**79m**	**>79m**	✔

Having regard to the above, the minimum required APZ's which would be relevant to any future SFPP development within the areas of land which are the subject of rezoning could be provided in accordance with the requirements of Chapter 6 of NSW Rural Fire Services, ***Planning for Bushfire Protection*****,** 2019 however APZ compliance would require that areas of land within the area which is proposed to be rezoned for Productivity Support (E3) uses be set aside for this purpose, refer to **Appendix 9**. Therefore, compliance with the minimum required APZ requirements for any future SFPP development/s would require specific consideration of the design of building infrastructure as

APZ compliance will be a constraint to the extent of development of the land. As can be seen in **Appendix 8** the following areas of land would not be suitable for SFPP development as these areas of land would be required for SFPP development APZ compliance purposes.

- Lots 101, 108, 115 and 116 and portion of Lot 102.
- Lots 303 and 304 and portion of Lots 124 and 125.

It is noted that adopting a performance-based approach to bushfire threat management could reduce the extent of the areas of land which are required for APZ compliance purposes for future SFPP developments however this approach would require a merit-based development specific approach to bushfire hazard assessment.

Notwithstanding the above, based upon the size and shape of the area of land which is proposed to be rezoned Productivity Support (E3), it is considered that the intent of the requirement for the provision of Asset Protection Zones as required by NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 can be satisfied for the future development of the subject land for a variety of land use purposes albeit that the location, nature and form of construction of future development must reflect the performance objectives of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019.

3.1.2 Defendable Space/Asset Protection Zone Management

Areas identified as forming part of future APZ's for any future developments within the areas of land which are 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.

(ii) Outer Protection Area (OPA)

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

3.1.3 Operational Access and Egress

Access to the areas of land which are the subject of rezoning will be via the already approved public road system which services the industrial subdivision development. In this regard access to and egress from the approved industrial subdivision is available via the public road system which has been constructed on adjoining land to the south as part of the development of the residential lots in the southern aspect.

The road hierarchy which has already been adopted for the development of the subject site and adjoining and adjacent land to the south provides for an efficient and effective movement of vehicles with a variety of access and egress opportunities available through the interconnection of the public road network with proposed and existing public road infrastructure. This is important from an evacuation perspective whereby the public road system will provide for capacity of use, alternatives for travel and the minimization of conflict between road users and emergency services.

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

The already approved access and egress strategy from the industrial subdivision involves the provision of perimeter roads which separate the approved lots from areas of hazard vegetation. The approved development concept for the industrial subdivision provides for each of the approved lots to have public road frontage either by way of perimeter roads or by other public through roads which connect with the perimeter road system.

As is currently the case, travel to and from the area of land which is the subject of rezoning is principally from the south from areas which would be protected from the impacts of bushfire. All public roads are required to be all-weather two-way, bitumen sealed public roads which are to be designed and constructed so as to comply with the relevant public road standards as provided for by NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006.

The existing approved public road infrastructure servicing the subject site, (including the areas which are the subject of rezoning) provide for:

- Perimeter public road separation between development lots and areas of bushfire hazard vegetation.
- The 'through road' movement of vehicles. No dead-end road arrangements are present.
- Roads which are suitable and appropriate for bushfire threat management activities and are consistent with the acceptable solution requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006.
- Direct public road frontage to each Precinct, the design and construction of which will be suitable for emergency service access and egress purposes.

Given the nature of the approved public road system which will provide for access to and egress from each of the approved industrial subdivision it is considered that suitable arrangements for access and egress will be available for the future development of the areas of land which are 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 allotments of land which are the subject of rezoning will need to be the subject of a development specific assessment based upon the nature and extent of the future specific development proposal for each allotment.

It will be necessary to design and construct all new internal access roads to service any future development within the areas of land which are proposed to be rezoned so as to comply with the relevant access provisions of NSW Rural Fire Services**,** ***Planning for Bushfire Protection***, 2019. The specific access requirements are summarized as follows.

Table 11 - Acceptable Solutions (Access/Internal Roads for Residential Development) PfBP 2019

Performance Criteria	Acceptable Solutions
• firefighting vehicles can access the dwelling and exit safely.	• minimum carriageway width of 4m. • 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; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; and • provide a suitable turning area in accordance with Appendix 3; and • curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; and • the minimum distance between inner and outer curves is 6m; and • the cross fall is not more than 10°; and • maximum grades for sealed roads do not exceed 15° and not more than 10° for unsealed roads; and a development comprising more than three dwellings has formalised access by dedication of a road and not by right

	of way. Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. the gradients applicable to public roads also apply to community style development property access roads in addition to the above.

Table 12 - Acceptable Solutions (Access/Internal Roads for SFPP Developments) PfBP 2019

Intent of measures: to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.	
Performance Criteria	**Acceptable Solutions**
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation	SFPP access roads are two-wheel drive, all-weather roads. Access is provided to all structures. Traffic management devices are constructed to not prohibit access by emergency services vehicles. Access roads must provide suitable turning areas in accordance with Appendix 3; and One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.
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 the relevant clauses of AS 2419.1:2005; and There is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available.
Perimeter Roads	
Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during	There are two way sealed roads. Minimum 8m carriageway width kerb to kerb. Parking is provided outside of the carriageway width. Hydrants are to be located clear of parking areas. There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.

firefighting and emergency management on the interface.	Curves of roads have a minimum inner radius of 6m. The maximum grade road is 15 degrees and average grade of not more than 10 degrees. The road crossfall does not exceed 3 degrees; and A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.
Non-Perimeter Roads	
Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	Minimum 5.5m carriageway width kerb to kerb. Parking is provided outside of the carriageway width. Hydrants are located clear of parking areas. There are through roads, and these are linked to the internal road system at an interval of no greater than 500m. Curves of roads have a minimum inner radius of 6m. The maximum grade road is 15 degrees and average grade of not more than 10 degrees. The road crossfall does not exceed 3 degrees; and A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

Subject to compliance with the requirements of **Tables 11** and **12** above in relation to the design and construction of new property access infrastructure 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 approved public road infrastructure which is present in the locality and the future property 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

Given that the proposed rezoning relates to areas of land which have already been approved for industrial subdivision, all approved lots within the subdivision, including the allotments of land which are subject to the rezoning proposal, will have access to the reticulated water supply, the extension of which has been required by Port Macquarie-Hastings Council to service the already approved subdivision of the land. It is noted that the provision of water services to the industrial subdivision is subject to compliance with the relevant provisions of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006.

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

Additionally, it is noted that 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.

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 development which is proposed.

It is noted that the provision of services to the future development of each allotment of land within the already approved industrial subdivision will be subject to compliance with the relevant requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2019 regardless of the form of development which is proposed.

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 allotments of land which are proposed to be rezoned.

3.1.5 Landscaping

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

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

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

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

Any landscaping proposed to be undertaken in conjunction with the future development of the subject Precincts of land 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 Provisions Applying to Residential Flat Buildings

It is noted that Chapter 8 of NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 provides that:

Buildings exceeding three storeys in height are considered to be multi-storey buildings. The rise in storeys shall be calculated as per the definition in Volume 1 of the NCC 2019. A residential flat building under the meaning within the Standard Instrument LEP is a multi-storey building in the context of PBP.

Multi-storey buildings are required to comply with the performance criteria within Chapter 5, including the requirement for an APZ which meets a threshold of 29kW/m². There are additional considerations associated with multi-storey residential buildings and the key issues are as follows:

- *Population - higher resident densities can pose issues for emergency management.*
- *Location – bush fire impacts can be increased where high rise buildings are located in higher elevations or on ridge tops.*
- *Egress - is more challenging and places an increased demand on road infrastructure during evacuation.*
- *Construction - there is a higher external façade surface area that may be exposed to bush fire attack and: car and storage facilities on the ground level can provide an additional fuel loading; balconies and external features can easily trap embers which can ignite combustible materials.*
- *Height -the height can result in increased exposure to convective heat.*

Table 8.2.2 of Chapter 8 of NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019 provides the bushfire threat management issues and considerations which would be relevant to multi-storey residential buildings, as follows.

Table 13 – Table 8.2.2 PfBP 2019, Multi-Storey Residential Development

ISSUE	SPECIFIC CONCERN	TECHNICAL CONSIDERATIONS
Population	› Impact on existing community and infrastructure.	› What capacity does the existing infrastructure have to allow evacuation of existing and proposed residents in the event of a bush fire?
Location of Building	› Locating on ridge tops emphasises the risk of convective plume interaction and wind related impacts.	› Can the building be located away from ridge tops to areas that have a reduced bush fire exposure? › If unavoidable, what is the impact on the risk to the building? › Is this risk appropriate for the building and occupant numbers?
Design Fire	› Different elements of the flame could have different impacts on different levels of the building; and › The whole building could be impacted by ember attack and multiple floors could be alight simultaneously.	› What are the flame dimensions, including the flame angle? › Where is the hottest part of the flame located? How would this impact on the proposed building? › How would the warning and suppression systems in the building cope with this?
Egress	› Elevations exposed to bush fire risk.	› How does the emergency evacuation procedure take account of the location of bush fire prone vegetation?
Building construction	› Performance of the building façade in a bush fire scenario. › Balconies may contain external features which could ignite and contribute to building ignition and fuel loads.	› What wall and cladding materials are proposed and what is proposed for the openings/penetrations (i.e. windows and doors)? › How does the proposed building construction deal with fire spread from the vegetation to the inside of the building? › Is compliance with AS 3959 sufficient to ensure that the bush fire risk is mitigated? › Is this appropriate for the design fire scenario? › Are there balconies proposed? › What may be stored on the balconies? › Can there be restrictions on what is stored on the balconies due to fire risk?
Car Parking	› Lower storey car park could be subject to ember attack and high radiant heat loads.	› Is the warning and suppression system designed to take account of bush fire impact? › Where are exits located? Are they guiding occupants away from the car park?
Other Considerations	› Access for fire fighters may be restricted or challenging; and › Risk implications of floor to floor fire spread.	› What would this mean for fire suppression? › How would warning and suppression systems take account of this? › What would this mean for evacuation?

As the proposed Productivity Support (E3) land use zoning could result in the development of the subject areas of land for the purposes of Shop Top Housing and Serviced Apartment buildings the following table lists the additional consideration points which are relevant to multi storey residential buildings and provides comments regarding any future development proposals ability to address them.

Table 14– High Rise Development in Bushfire Prone Land

ISSUE	SPECIFIC CONCERN	TECHNICAL CONSIDERATION	COMPLIANCE COMMENT
Population	Impact on existing community and infrastructure.	What capacity does the existing infrastructure have to allow evacuation of existing and proposed residents in the event of a bush fire?	The already approved access and egress strategy from the industrial subdivision involves the provision of perimeter roads which separate the approved lots from areas of hazard vegetation. The approved development concept for the industrial subdivision provides for each of the approved lots to have public road frontage either by way of perimeter roads or by other public through roads which connect with the perimeter road system. As is currently the case, travel to and from the areas which are the subject of rezoning is principally from the south from areas which would be protected from the impacts of bushfire. All public roads are required to be all-weather two-way, bitumen sealed public roads which are to be designed and constructed so as to comply with the relevant public road standards as provided for by NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006. The existing approved public road infrastructure servicing the subject site, (including the areas which are the subject of rezoning) provide for: • Perimeter public road separation between development lots and areas of bushfire hazard vegetation. • The ‘through road’ movement of vehicles. No dead-end road arrangements are present. • Roads which are suitable and appropriate for bushfire threat management activities and are consistent with the acceptable solution requirements of NSW Rural Fire Service, ***Planning for Bushfire Protection***, 2006. • Direct public road frontage to

			the subject site, the design and construction of which will be suitable for emergency service access and egress purposes. The presence of significant areas of land which would be protected from the impacts of bushfire within relatively short travel distances to the south and west of the subject site provides for a number of evacuation opportunities within close proximity to any future development.
Location of Building	Locating on ridge tops emphasizes the risk of convective plume interaction and wind related impacts.	• Can the building be located away from ridge tops to areas that have a reduced bush fire exposure? • If unavoidable, what is the impact on the risk to the building? • Is this risk appropriate for the building and occupant numbers?	The existing approved industrial subdivision, in particular the area of land which is proposed to be rezoned, is not located on a ridgetop which would have a significant bushfire exposure. The location and topography of the subject site and the spatial relationship of the areas of land which are the subject of rezoning to areas of hazard vegetation provide for a significantly reduced exposure from bushfire activity. Given the range of uses which are contemplated by the Productivity Support (E3) land use zoning and the context of the subject allotments of land within the already approved industrial subdivision it is considered the future development of the rezoned allotments can be undertaken in accordance with the relevant requirements of NSW Rural Fire Services**, *Planning for Bushfire Protection***, 2019 as relevant to the nature and extent of development albeit that the design of future development will need to respond a range of compliance limitations and constraints.
Design Fire	• Different elements of the flame could have different impacts on different levels of the building; and • The whole building could be impacted by ember attack and multiple floors	• What are the flame dimensions, including the flame angle? • Where is the hottest part of the flame located? How would this impact on the proposed building? • How would the warning and suppression systems in the building cope with this?	The most likely bushfire risk scenario would be a fire moving from the north towards the south within the areas of Coastal Swamp Forest vegetation which extend to the north of the subject site under the influence of the more common northerly wind conditions which prevail during the. bush fire season. This risk is however tempered by generally flat topography to the north of the subject site and the disruption

	could be alight simultaneously.		in fire run conditions due to the reduced fuel loads within the Port Macquarie Airport which is located within 600m to the northeast of the subject site. It is possible that bushfires may also move from adjoining and adjacent land to the south towards the north under the influence of southerly wind conditions. This risk is however tempered by the reduced fuel loads associated with the large residential subdivision which extends to the south of the subject site together with the presence of grasslands within rural and rural residential lots to the southeast of the subject site. Bushfire risks also exist to the east and west of the subject site however the presence of grasslands and remnant forest area fuel loads in these aspects would be expected to provide for reduced fire impacts. Bushfire threat management measures which are relevant to the future development of the areas of land which are the subject of this report should be determined based upon the design fire characteristics which are considered to be most relevant to the future development of the allotments of land which are the subject of rezoning to Productivity Support (E3) purposes.
Egress	Elevations exposed to bush fire risk.	How does the emergency evacuation procedure take account of the location of bush fire prone vegetation?	Refer to Section 2.2 of this report. The proposed evacuation options out of the area of land which is the subject of rezoning will utilize already approved major 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 developments available. 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 allotments of land which are 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 each allotment.

Building Construction	• Performance of the building façade in a bush fire scenario. • Balconies may contain external features which could ignite and contribute to building ignition and fuel loads.	• What wall and cladding materials are proposed and what is proposed for the openings/penetrations (i.e. windows and doors)? • How does the proposed building construction deal with fire spread from the vegetation to the inside of the building? • Is compliance with AS 3959 sufficient to ensure that the bush fire risk is mitigated? Is this appropriate for the design fire scenario? • Are there balconies proposed? • What may be stored on the balconies? • Can there be restrictions on what is stored on the balconies due to fire risk?	The design and construction of future buildings can provide for a level of resistance to the spread of bushfire which is consistent with the relevant bushfire attack levels determined in accordance with NSW Rural Fire Services**, *Planning for Bushfire Protection,*** 2019. In this regard the level of bushfire attack which is applicable to the future development of buildings within the areas of land which are the subject of this report must be determined in accordance with NSW Rural Fire Services**, *Planning for Bushfire Protection,*** 2019 and the relevant construction requirements implemented in response to the assessed level of bushfire attack. There would be no apparent impediments or restrictions on future development being designed and constructed so as to meet the relevant requirements of NSW Rural Fire Services**, *Planning for Bushfire Protection,*** 2019.
Carparking	Lower storey car park could be subject to ember attack and high radiant heat loads.	• Is the warning and suppression system designed to take account of bush fire impact? • Where are exits located? Are they guiding occupants away from the car park?	The design and construction of future buildings can provide for a level of resistance to the spread of bushfire which is consistent with the relevant bushfire attack levels determined in accordance with NSW Rural Fire Services**, *Planning for Bushfire Protection,*** 2019. In this regard the nature and extent of bushfire threat management measures which are applicable to the future development of buildings within the areas of land which are the subject of this report must be determine in accordance with NSW Rural Fire Services**, *Planning for Bushfire Protection,*** 2019. There would be no apparent impediments or restrictions on future development being designed and constructed so as to meet the relevant requirements of NSW Rural Fire Services**, *Planning for Bushfire Protection,*** 2019.
Other considerations	• Access for fire fighters may be restricted or challenging; and • Risk implications	• What would this mean for fire suppression? • How would warning and suppression systems take account	The nature and extent of bushfire threat management measures which are applicable to the future development of buildings within the areas of land which are the subject of

	of floor to floor fire spread.	of this? • What would this mean for evacuation?	this report must be determine in accordance with NSW Rural Fire Services**,** ***Planning for Bushfire Protection,*** 2019. There would be no apparent impediments or restrictions on future development being designed and constructed so as to meet the relevant requirements of NSW Rural Fire Services**,** ***Planning for Bushfire Protection,*** 2019.

3.1.7 Emergency Evacuation Planning

Special Fire Protection Purpose developments should have suitable management arrangements and structures capable of developing and implementing an Emergency Plan.

Any future development proposals for the areas of land which are the subject of rezoning which are Special Fire Protection Purpose developments in accordance with NSW Rural Fire Services**,** ***Planning for Bushfire Protection***, 2019 must 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 15 – 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	Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: • The NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*; • *NSW RFS Schools Program Guide;* • Australian Standard AS 3745:2010 *Planning for emergencies in facilities*; and • Australian Standard AS 4083:2010 *Planning for emergencies – Health care facilities* (where applicable). The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants. 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.
Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency	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. Site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted.

Management and Evacuation Plan	

There would be no apparent impediments or restrictions on 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 'Deemed-to-Satisfy' provisions for construction requirements are detailed in AS 3959-2018 however in NSW the relevant Bushfire Attack Level and construction requirements must be determined in accordance with Appendix 1 of NSW Rural Fire Services**,** ***Planning for Bushfire Protection*****,** 2019 (in particular Table A1.12.6), rather than in accordance with Section 2 of AS 3959 - 2018.

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 buildings and Class 9 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.

Given that the rezoning proposal which is the subject of this report does not involve the design of any buildings, the determination of Bushfire Attack Levels (BAL's) that would be applicable to future buildings within the areas of land which are the subject of rezoning is not relevant at this time.

It is however noted that compliance with the minimum Asset Protection Zone requirements which would be relevant to the range of developments as provided for in Section 3.1.1 of this report, will provide for opportunities for future buildings to be constructed upon each of the areas of land which are the subject of this report in compliance with the requirements provided for in AS 3959 – 2018 (as modified by NSW Rural Fire Services**,** ***Planning for Bushfire Protection***, 2019).

There would be no apparent impediments or restrictions on the future development of each of the areas of land which are the subject of this report being able to comply with the construction requirements of NSW Rural Fire Services**,** ***Planning for Bushfire Protection,*** 2019 which are assessed as being relevant to the future development of the allotments of land which are the subject of the rezoning proposal.

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 development of the allotments of land within the already approved industrial subdivision of land known as Lot 2 DP 1245588, 314 John Oxley Drive, Port Macquarie which are the subject of rezoning to Productivity Support (E3) including the additional Serviced Apartments and Shop Top Housing permitted uses within the areas nominated as Precincts A and B.

(i) Any future development within the areas of land which are proposed to be zoned Productivity Support (E3) 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 development of portions of the allotments of land which are to be rezoned to Productivity Support (E3) for Special Fire Protection Purpose development maybe constrained due to APZ compliance requirements.

(iii) The design and construction of any future development within the areas of land which are proposed to be zoned Productivity Support (E3) are 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 southern portion of land within the already approved industrial subdivision of Lot 2 DP 1245588, 314 John Oxley Drive, Port Macquarie is at risk of bushfire attack; however, it is in our opinion that with the implementation of development specific bushfire threat reduction measures, the bushfire risk is manageable for the proposed rezoning albeit that the design and construction of any future development within the rezoning area will need to demonstrate compliance with the relevant requirements of NSW Rural Fire Service**,** ***Planning for Bushfire Protection*****,** 2019**.**

There would be no apparent impediments or restrictions on the future development of each of the areas of land which are the subject of this report being able to comply with the construction 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 allotments of land which are the subject of rezoning to meet the applicable performance objectives and acceptable solutions as provided for in NSW Rural Fire Service**,** ***Planning for Bushfire Protection*****,** 2019**.**

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

Assumptions

(i) For a satisfactory level of bushfire safety to be achieved regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.

(ii) There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.

(iii) It is assumed that the building works will comply with the DTS provisions of the NCC including the relevant requirements of Australian Standard 3959.

(iv) Any future developments are constructed and maintained in accordance with the risk reduction strategy in this report.

(v) The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.

(vi) The information contained in this report is based upon the information provided for review, refer to **Appendix 5**.

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

Mid Coast Bush Fire Risk Management Plan, (BFMP 2019)

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.

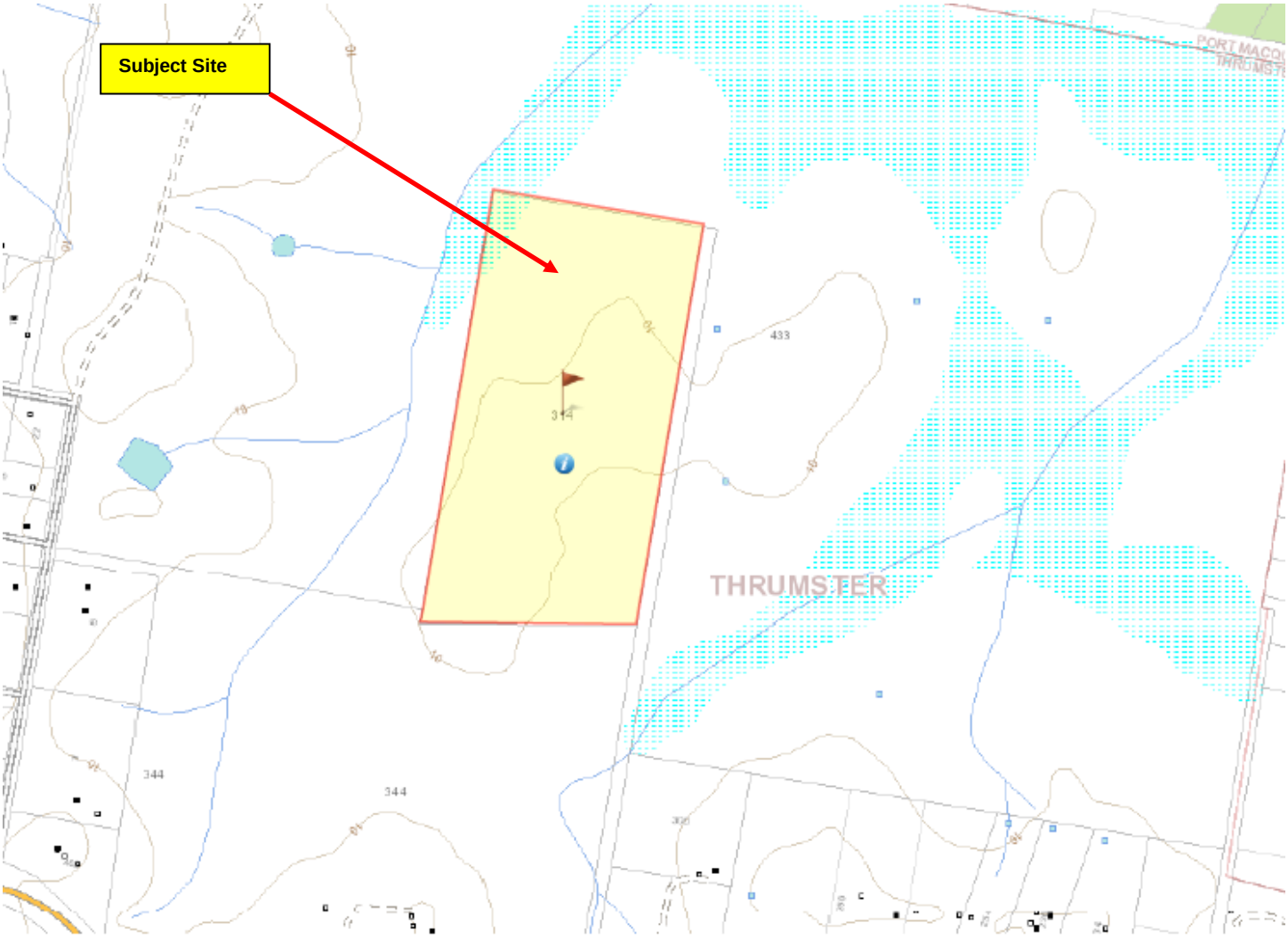
This report has been prepared partially on information provided by the client.

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

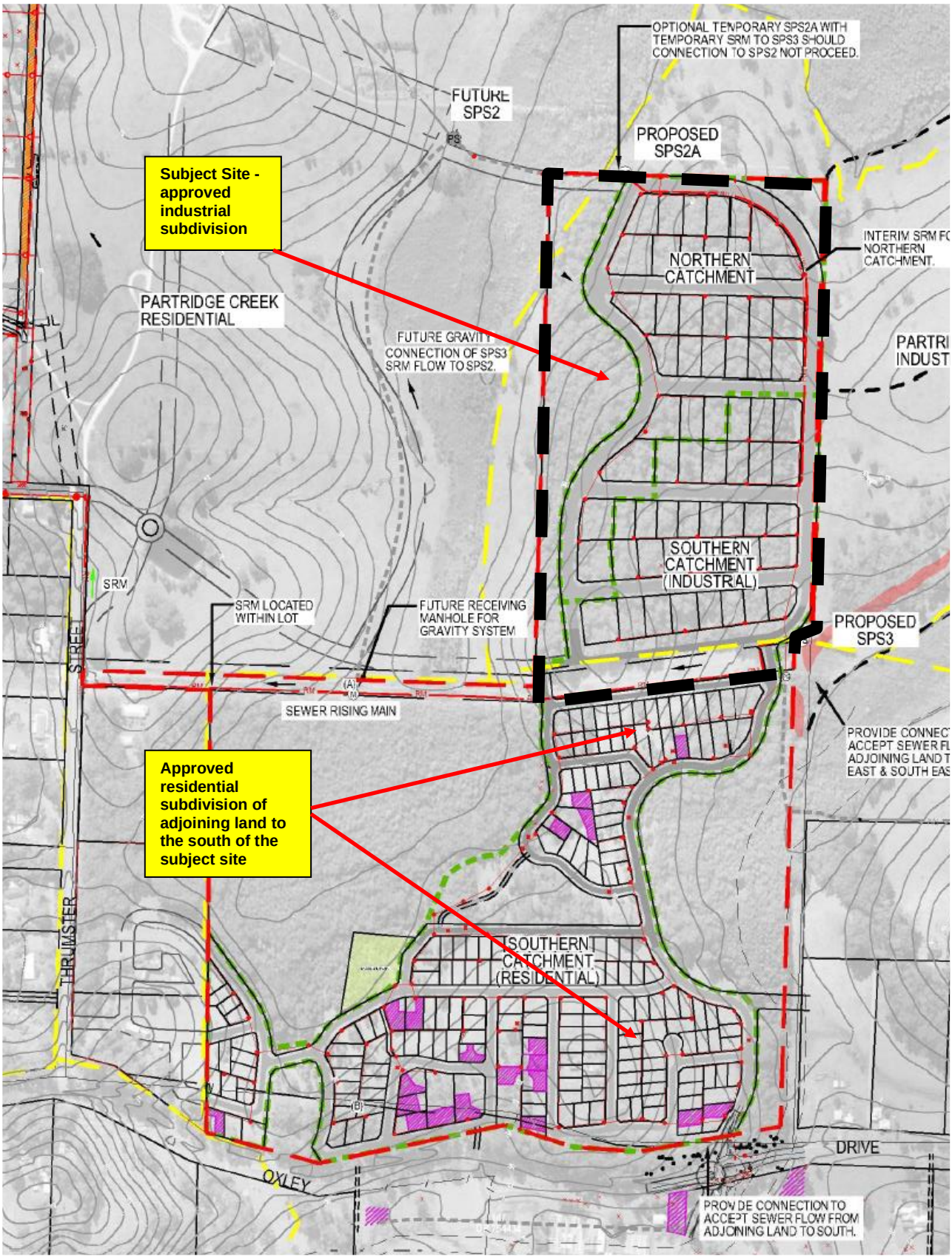
- The Local Authority requiring alternative or additional requirements to those proposed or recommended in this report.

- Incorrect information, or misinformation, provided by the client with regard the proposed development which is in good faith included in the strategies proposed in this report and later found to be false.

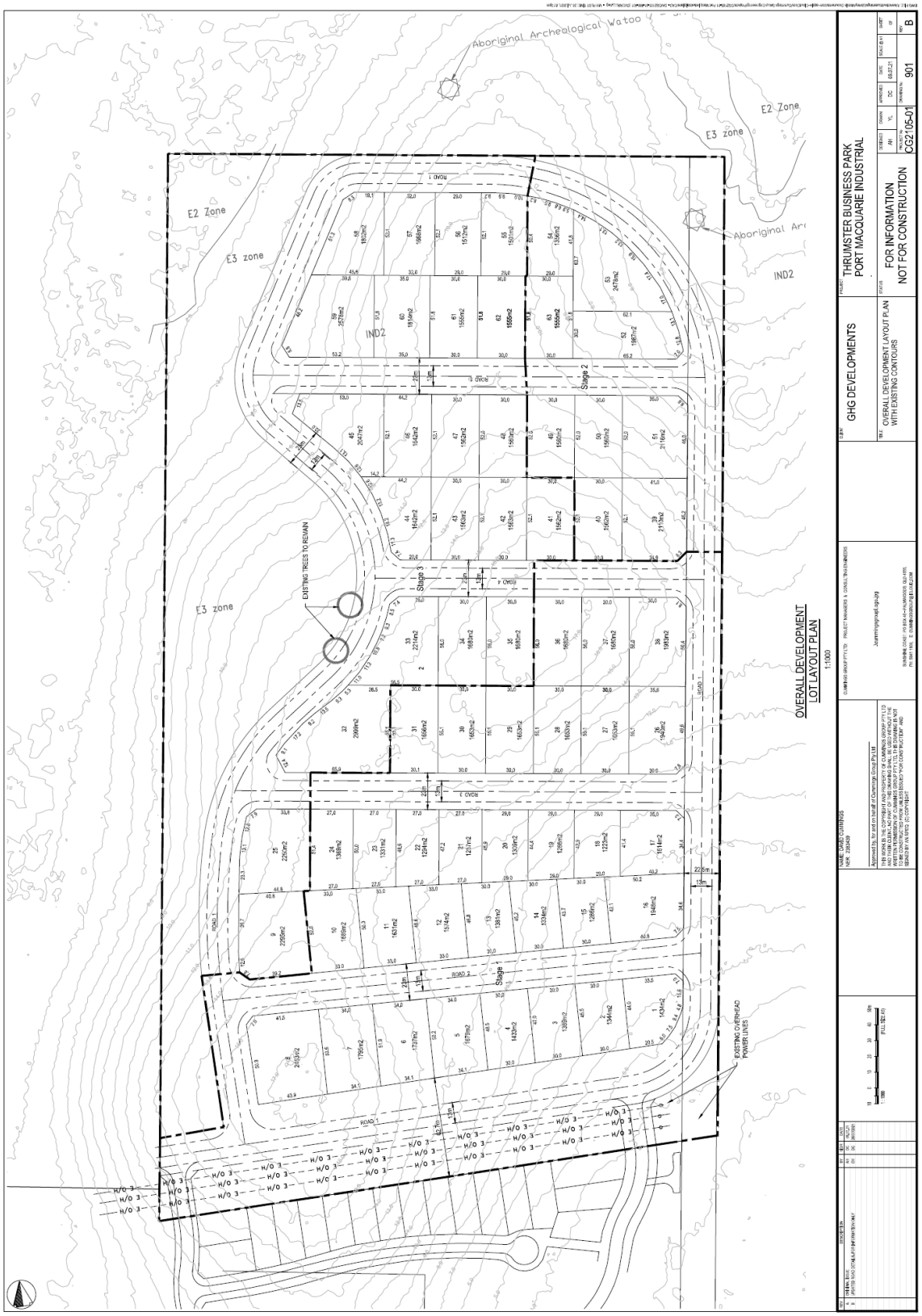
APPENDIX 1
Subject Site



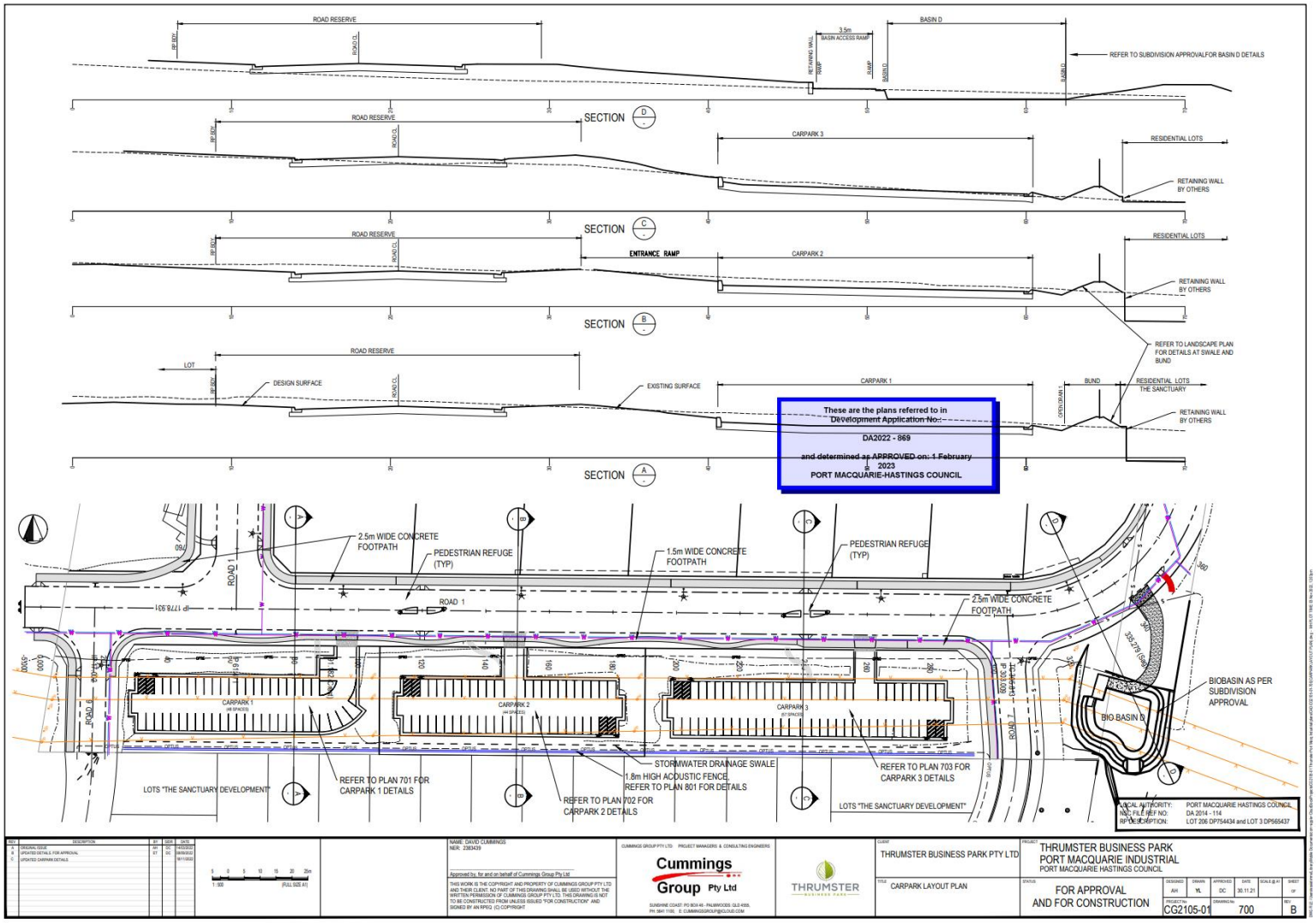
APPENDIX 2
Approved Industrial Subdivision Development of the Subject Site



APPENDIX 2
Approved Industrial Subdivision Development of the Subject Site

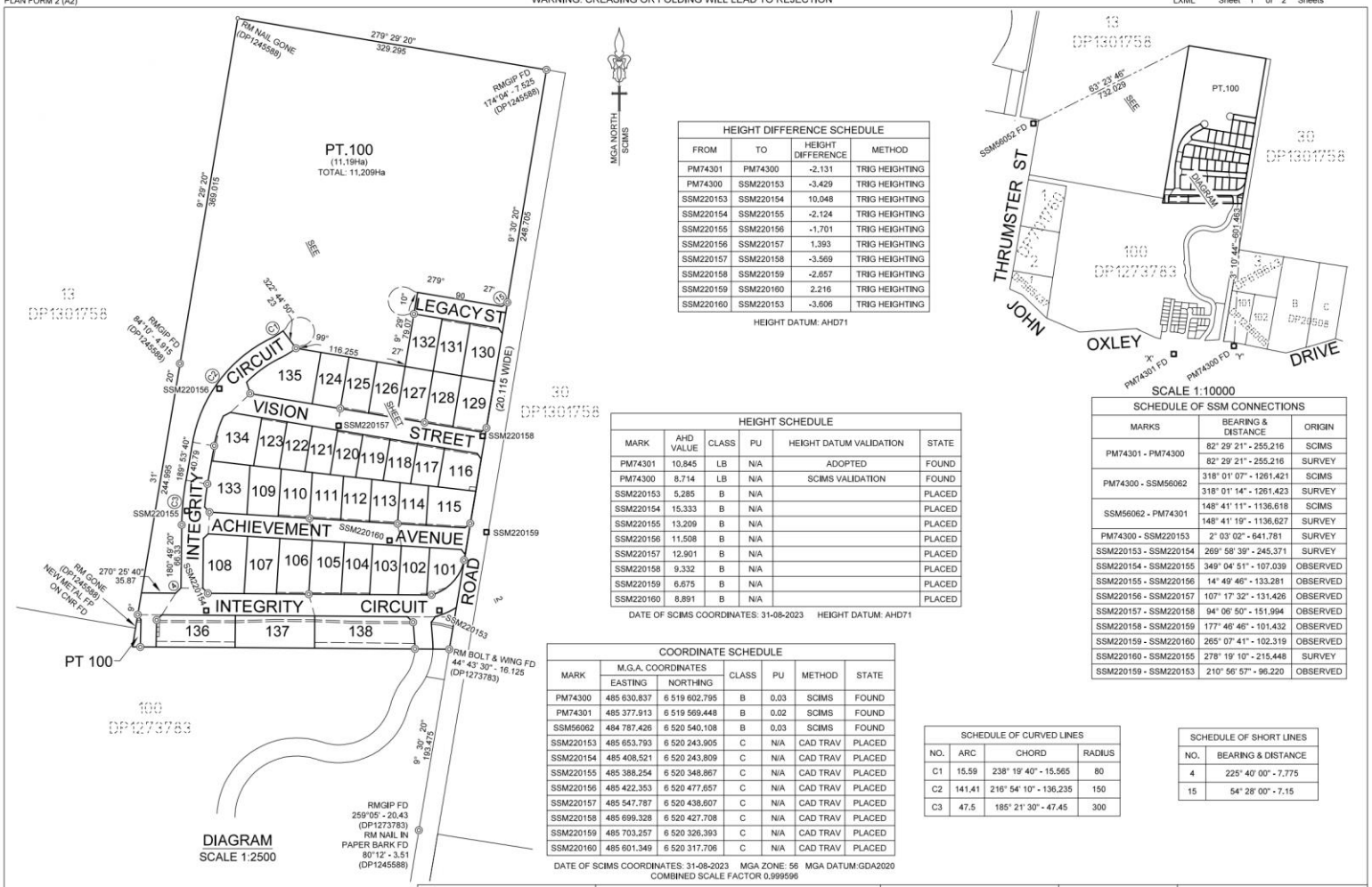


APPENDIX 3
Approved Carparking Area in the Southern Portion of the Subject Site



APPENDIX 4
Completed Stage 1 of Industrial Subdivision

PLAN FORM 2 (A2) WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION LXML Sheet 1 of 2 Sheets



HEIGHT DIFFERENCE SCHEDULE			
FROM	TO	HEIGHT DIFFERENCE	METHOD
PM74301	PM74300	-2.131	TRIG HEIGHTING
PM74300	SSM220153	-3.429	TRIG HEIGHTING
SSM220153	SSM220154	10.048	TRIG HEIGHTING
SSM220154	SSM220155	-2.124	TRIG HEIGHTING
SSM220155	SSM220156	-1.701	TRIG HEIGHTING
SSM220156	SSM220157	1.393	TRIG HEIGHTING
SSM220157	SSM220158	-3.569	TRIG HEIGHTING
SSM220158	SSM220159	-2.657	TRIG HEIGHTING
SSM220159	SSM220160	2.216	TRIG HEIGHTING
SSM220160	SSM220153	-3.606	TRIG HEIGHTING

HEIGHT DATUM: AHD71

HEIGHT SCHEDULE					
MARK	AHD VALUE	CLASS	PU	HEIGHT DATUM VALIDATION	STATE
PM74301	10.845	LB	N/A	ADOPTED	FOUND
PM74300	8.714	LB	N/A	SCIMS VALIDATION	FOUND
SSM220153	5.285	B	N/A		PLACED
SSM220154	15.333	B	N/A		PLACED
SSM220155	13.209	B	N/A		PLACED
SSM220156	11.508	B	N/A		PLACED
SSM220157	12.901	B	N/A		PLACED
SSM220158	9.332	B	N/A		PLACED
SSM220159	6.675	B	N/A		PLACED
SSM220160	8.891	B	N/A		PLACED

DATE OF SCIMS COORDINATES: 31-08-2023 HEIGHT DATUM: AHD71

SCHEDULE OF SSM CONNECTIONS		
MARKS	BEARING & DISTANCE	ORIGIN
PM74301 - PM74300	82° 29' 21" - 255.216	SCIMS
	82° 29' 21" - 255.216	SURVEY
PM74300 - SSM56062	318° 01' 07" - 1261.421	SCIMS
	318° 01' 14" - 1261.423	SURVEY
SSM56062 - PM74301	148° 41' 11" - 1136.618	SCIMS
	148° 41' 19" - 1136.627	SURVEY
PM74300 - SSM220153	2° 03' 02" - 641.781	SURVEY
SSM220153 - SSM220154	269° 58' 39" - 245.371	SURVEY
SSM220154 - SSM220155	349° 04' 51" - 107.039	OBSERVED
SSM220155 - SSM220156	14° 49' 46" - 133.281	OBSERVED
SSM220156 - SSM220157	107° 17' 32" - 131.426	OBSERVED
SSM220157 - SSM220158	94° 06' 50" - 151.994	OBSERVED
SSM220158 - SSM220159	177° 46' 46" - 101.432	OBSERVED
SSM220159 - SSM220160	265° 07' 41" - 102.319	OBSERVED
SSM220160 - SSM220155	278° 19' 10" - 215.448	SURVEY
SSM220159 - SSM220153	210° 56' 57" - 96.220	OBSERVED

COORDINATE SCHEDULE						
MARK	M.G.A. COORDINATES		CLASS	PU	METHOD	STATE
	EASTING	NORTHING				
PM74300	485 630.837	6 519 602.795	B	0.03	SCIMS	FOUND
PM74301	485 377.913	6 519 569.448	B	0.02	SCIMS	FOUND
SSM56062	484 787.426	6 520 540.108	B	0.03	SCIMS	FOUND
SSM220153	485 653.793	6 520 243.905	C	N/A	CAD TRAV	PLACED
SSM220154	485 408.521	6 520 243.809	C	N/A	CAD TRAV	PLACED
SSM220155	485 388.254	6 520 348.867	C	N/A	CAD TRAV	PLACED
SSM220156	485 422.353	6 520 477.657	C	N/A	CAD TRAV	PLACED
SSM220157	485 547.787	6 520 438.607	C	N/A	CAD TRAV	PLACED
SSM220158	485 699.328	6 520 427.708	C	N/A	CAD TRAV	PLACED
SSM220159	485 703.257	6 520 326.393	C	N/A	CAD TRAV	PLACED
SSM220160	485 601.349	6 520 317.706	C	N/A	CAD TRAV	PLACED

DATE OF SCIMS COORDINATES: 31-08-2023 MGA ZONE: 56 MGA DATUM:GDA2020
COMBINED SCALE FACTOR 0.999596

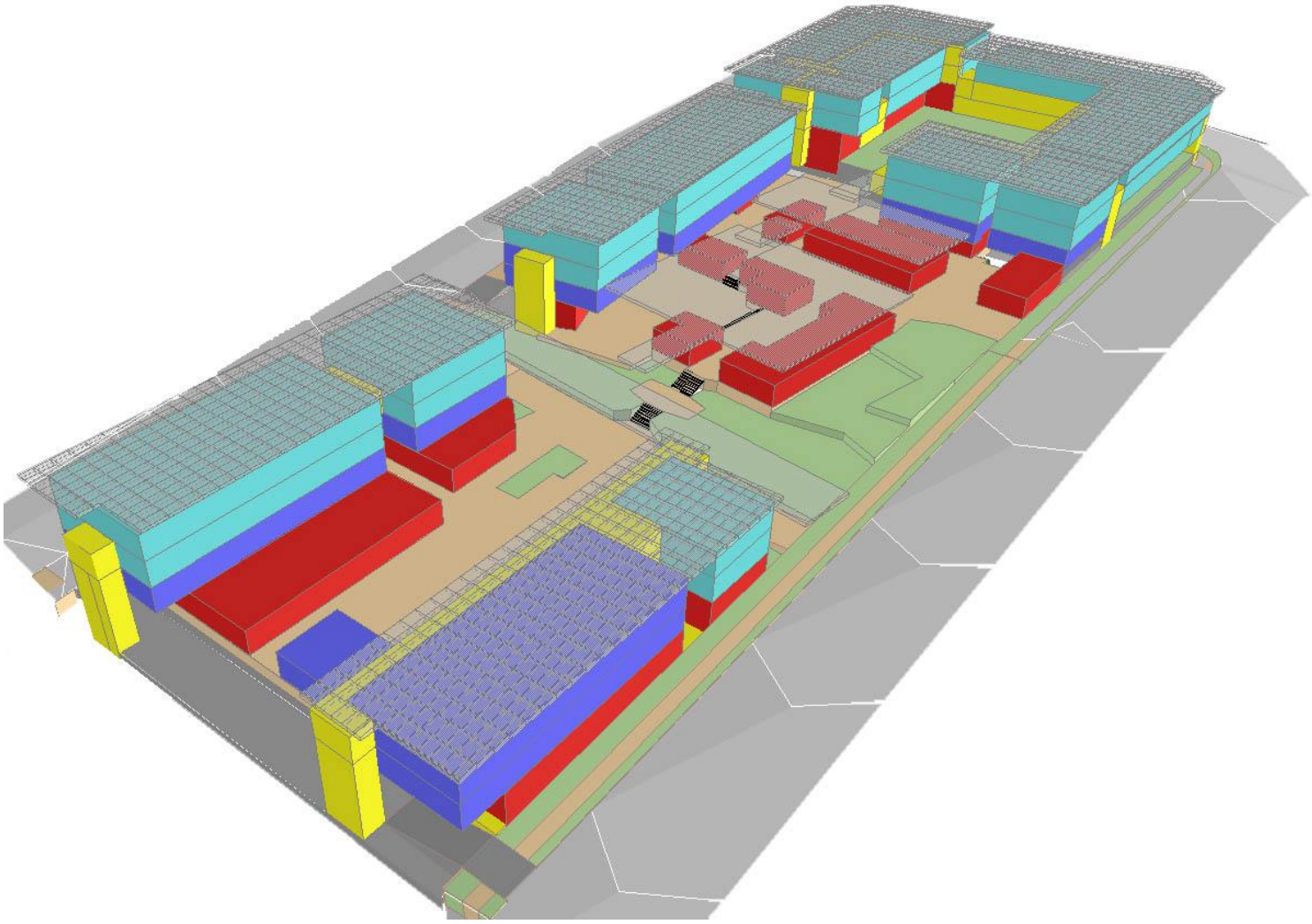
SCHEDULE OF CURVED LINES			
NO.	ARC	CHORD	RADIUS
C1	15.59	238° 19' 40" - 15.565	80
C2	141.41	216° 54' 10" - 136.235	150
C3	47.5	185° 21' 30" - 47.45	300

SCHEDULE OF SHORT LINES	
NO.	BEARING & DISTANCE
4	225° 40' 00" - 7.775
15	54° 28' 00" - 7.15

SURVEYOR	PLAN OF SUBDIVISION OF LOT 2 DP1245588	L.G.A: PORT MACQUARIE - HASTINGS	REGISTERED	DP1304965
Name: RYAN HENRY CLARK		Locality : THRUMSTER	07/06/2024	
Date: 25TH JANUARY 2024		Reduction Ratio 1: 2500		
Reference : 5538 STG1		Lengths are in metres.		

APPENDIX 5
Area of Proposed Rezoning

APPENDIX 6
Shop Top Housing/Serviced Apartment Precinct Development Concept (Precinct A)



APPENDIX 7
Recommendations of Original Bushfire Hazard Assessment Report

SECTION 8
RECOMMENDATIONS – INDUSTRIAL DEVELOPMENT

8.1 Recommendation 1:
Provision of Defendable Space to future industrial buildings:

There shall be provided a twenty six [26] metre wide Defendable Space to the west and north of the future industrial buildings located with exposure to the bushfire hazard in the E2/E3 zoned land to the west and north of the industrial precinct.

8.2 Recommendation 2:
Management of Industrial lots & provision of bushfire protection measures:

It is recommended that a Consent Condition require that a Positive Covenant be established on the title of the new industrial allotments requiring that the whole of these lots be managed, in perpetuity, as an Inner Protection Area in accordance with Section 4.1.3 and Appendix A5.4 & Appendix A5.5 of *Planning for Bushfire Protection 2006* and the Rural Fire Service *"Standards for Asset Protection Zones"* and that the bushfire protection requirements recommended in this report and those matters required by the NSW Rural Fire Service be maintained in perpetuity.

8.3 Recommendation 3:
Construction Standards to Building:

The elevations of the future industrial buildings that are directly exposed to the bushfire hazard in the E2/E3 zoned land shall be constructed to comply with Section 8 – BAL 40 of Australian Standard A.S. 3959 – 2009 – *'Construction of Buildings in Bushfire Prone Areas'* whilst those elevations which are not directly exposed to the bushfire hazard shall be constructed to comply with Section 7 – BAL 29 of Australian Standard A.S. 3959 – 2009 – *'Construction of Buildings in Bushfire Prone Areas'*.

All buildings located within 100 metres of the bushfire hazard shall be constructed, as a minimum, to comply with Section 5 – BAL 12.5 of Australian Standard A.S. 3959 – 2009 – *'Construction of Buildings in Bushfire Prone Areas'*.

The following additional precautionary measures should be incorporated into the construction of the buildings:

- Any operable windows shall be fitted with aluminium/stainless steel mesh flyscreens having a maximum mesh aperture size of 2mm;

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Email. abpp@bigpond.net.au

- Access doors [PA and Vehicle] to the buildings shall be fitted with seals that seal the bottom, stiles and head of the door against the opening/frame to prevent the entry of embers into the building. Particular attention shall be paid to the gap at the head of the curtain of the roller doors, where mohair type seals shall be used;

- Any external vents, grilles and ventilation louvres shall have stainless steel mesh with a maximum aperture of 2mm square fitted to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.

- Roof ventilators shall be fitted with stainless steel flymesh [2mm aperture] to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.

8.4 Recommendation 4:

Water Supply for Firefighting Operations:

A fire fighting water supply shall be provided to the industrial precinct, in compliance with A.S. 2419.1 – 2005.

Individual fire-fighting water supplies to future buildings shall comply with the Building Code of Australia and A.S. 2419.1 – 2005 in respect to the provision of hydrants, booster valve assemblies and fire hose reels.

8.5 Recommendation 5:

Emergency Management:

An Evacuation Plan shall be prepared for each of the future industrial buildings within the industrial estate. The Evacuation Plan shall address the protocols required for the management of emergencies, including bushfire events which may warrant the relocation of occupants of the industrial buildings.

A Copy of the Evacuation Plan shall be provided to the Port Macquarie/Hastings District Office of the NSW Rural Fire Service, Fire & Rescue NSW and the Local Emergency Management Committee.

The Evacuation Plan shall comply with AS 3745 -2002 *"Emergency Control Organisation and Procedures for Buildings, Structures and Workplaces".*

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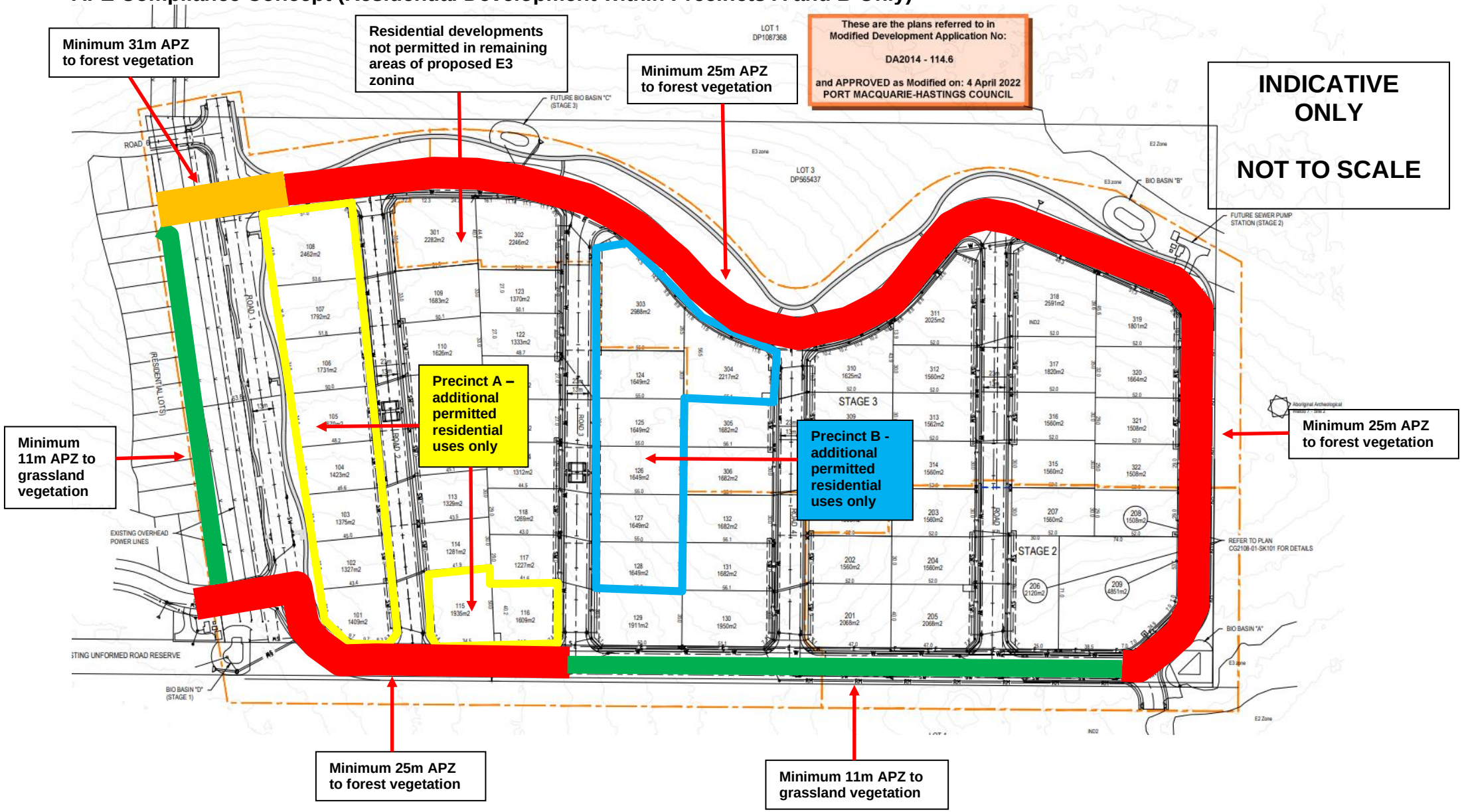
APPENDIX 8
APZ Compliance Concept (Residential Development within Precincts A and B Only)



APPENDIX 9
APZ Compliance Concept (SFPP Development within E3 Rezoning Area)