



Strategic Bushfire Study

Coffs Harbour Jetty Foreshore

State Assessed
Planning Proposal

Property and Development
NSW (PDNSW)

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Executive summary

This report is a 'Strategic Bushfire Study' prepared to address the requirements of the NSW Rural Fire Service (RFS) document *Planning for Bush Fire Protection 2019* (NSW RFS 2019) and the *Environmental Planning and Assessment Act 1979* Section 9.2 Ministerial Direction 4.3 – 'Planning for Bush Fire Protection' for the proposal to rezone land at Coffs Harbour Jetty Foreshore to facilitate future development and intensification. The future uses will include short and long term accommodation, retail, commercial and community uses, as well as improved open space and recreational areas.

This study presents the results of a detailed investigation into landscape and site influences on bushfire behaviour and development design. The study has informed the development of the Illustrative Masterplan and details bushfire protection measures such as Asset Protection Zones (APZ) and access for evacuation and emergency response.

Research on bushfire hazard (comprising vegetation and topography), fire weather, fire history and fire intensity patterns has allowed an analysis of potential fire scenarios that could impact the subject land. The lack of fire in the surrounding areas is attributable to the less flammable vegetation communities, separation from the ranges west of Coffs Harbour and setting within an urban environment. Smaller, nuisance fires could occur along foreshore vegetation, however the subject land is not at threat from a wider, landscape fire.

The bushfire risk to the subject land is assessed to be within the risk management planning category of 'lowest risk'. This rating is consistent with the findings of the *Coffs Coast Bush Fire Risk Management Plan*. The rezoning will attract an intensification of uses and introduction of new uses such as accommodation. The risk profile does not preclude intensification of the subject land and compliance with the standard suite of bushfire protection measures specified by *Planning for Bush Fire Protection 2019* will suffice.

This study demonstrates the proposal to rezone the subject land satisfies EP&A Act s.9.2 Direction 4.3 – 'Planning for Bush Fire Protection' and *Planning for Bush Fire Protection 2019*. The proposal is not considered incompatible with the surrounding environment and bushfire risk. With sound bushfire management, the proposal can exist within bushfire prone land.

1 Introduction

Property and Development NSW (PDNSW) is continuing to lead the revitalisation of the Coffs Harbour Jetty Foreshore Precinct (the Precinct) on behalf of the NSW Government. Peterson Bushfire has been engaged by PDNSW to prepare a Strategic Bushfire Study to demonstrate compliance with the relevant bushfire protection legislation for rezoning applications involving land mapped as 'bushfire prone land'.

This Strategic Bushfire Study supports a Planning Justification Report that outlines proposed amendments to the Coffs Harbour Local Environmental Plan (CHLEP) 2013 and will be submitted to the Department of Planning, Housing and Infrastructure (DPHI) as part of a State Assessed Planning Proposal (planning proposal).

As Coffs Harbour continues to grow as a Regional City, the NSW Government and Coffs Harbour City Council have, through various strategic planning exercises, identified four key strategic priorities to reimagine its direction and respond to current and future challenges and opportunities:

- Deliver a regional economy (CHCC LSPS, 2020; CH Economic Development Strategy, 2017) that is diverse, sophisticated and able to retain businesses and skills
- Evolve the tourism offering (CHCC LSPS, 2020) with improved attractions, activities and accommodation
- Provide more housing (CHCC LSPS, 2020) in accessible locations, including affordable housing
- Provide better connections between places with more sustainable movement choices (CHRCAP, 2021; CHCC, 2020)

As a large, strategically located and wholly government owned site, the Precinct represents a significant opportunity to deliver on each of these key regional priorities. In this planning proposal, PDNSW seeks to celebrate the unique location, history and culture of the Jetty Foreshore to deliver outcomes for the benefit of the Coffs Harbour community. The revitalisation will be staged and funded, over time, to deliver the shared community vision.

1.1 Our shared community vision

Coffs' family playground, a precinct of parks and places, that connects community with Country. The community is and always has been at the heart of creating a thriving regional economy and destination for Coffs Harbour. Shaped with the community, our vision is to ensure The Jetty Foreshore will become a world-class oceanfront precinct through the vision shown in Figure 1.



Figure 1: Vision for the Coffs Harbour Jetty Foreshore

1.2 The Precinct

The Precinct, wholly owned by the NSW Government, is strategically significant to the State and to the Coffs Harbour region. The Precinct is located on the traditional lands of the Gumbaynggirr people, in saltwater freshwater Country. It encompasses approximately 62 hectares of foreshore land, 5km east of the Coffs Harbour CBD, located on the Coffs Harbour coast with direct access to the Pacific Ocean. Access is provided on Marina Drive in the north, and Camperdown Street in the south, with Jordan Esplanade bisecting the site north to south. A Precinct map showing existing conditions is provided at Figure 2.

The west boundary is generally defined by the railway line and Coffs Harbour Railway Station. To the north the Precinct borders a culturally significant site known as “Happy Valley”, which has been returned as freehold land to the Coffs Harbour and District Local Aboriginal Land Council (LALC). Gallows and Boambee Beaches are located to the south of the Precinct, where Littoral Rainforest occurs. Coffs Harbour itself, the Pacific Ocean, Muttonbird Island and South Coffs Island (Corambirra Point) form the eastern boundary.

The Precinct is a popular destination for both locals and tourists offering a variety of attractions and amenities. These include Jetty Beach and extensive parklands with biodiversity value, as well as items of heritage significance such as the Coffs Harbour Jetty and Ferguson’s Cottage, owned by the Coffs Harbour LALC. Further, the Coffs Harbour Fisherman’s Co-op, the Coffs Harbour Yacht Club, weekly Sunday markets, and community hub building (recently delivered

by PDNSW) are located within the Precinct. Various public works including breakwater and boat ramp upgrades have been undertaken over recent years to support the marina function.

There are redeveloped and well-maintained parts in the area however, much can be done to enhance the Coffs Harbour Jetty Foreshore Precinct. A large portion of the Precinct is currently gravelled, and a large area of residual railway land is fenced off and inaccessible to the public, as shown in Figure 3. While gravelled areas provide informal overflow parking, they do not reflect the potential of this foreshore.



Figure 2: Coffs Harbour Jetty Foreshore Precinct (Source: SJB)



Figure 3: Existing state of the Precinct rail lands and gravelled areas (Source: PDNSW)

1.3 The Illustrative Masterplan

The planning proposal is supported by an Illustrative Masterplan (Figure 4) that presents a potential development outcome that could be realised at the Coffs Harbour Jetty Foreshore Precinct – it is not prescriptive nor is it determined. The Illustrative Masterplan builds on the shared vision created via extensive community and stakeholder consultation and provides further detail in relation to land use and development outcomes sought for the Precinct.

The Place Principles shown in Figure 5, agreed with the community, guided the formation of the Illustrative Masterplan.

The Illustrative Masterplan is broadly organised across six sub-precincts that will each have a distinct character and function. These are identified as:

- Foreshore Parklands – with improved amenities, proposed new board walk and nature-based playground.
- The Marina – An active marina revitalised to accommodate local marine based businesses that reflect their regional importance.
- North Park – Functional open space with recreational courts and formalised parking.
- Jetty Hub – A hub of residential and tourist accommodation supporting activation, tourism and regional attraction located adjacent to the current Jetty Walkway, with massing capped at 6 storeys stepping down in scale when closer to public areas.
- Activity Hub and Village Green – An active village green that delivers increased public open space connected to the existing foreshore parklands and may include family-friendly food and beverage, community uses and club houses or facilities to support events. A local business activity zone connected to the rail station.
- Corambirra Point – A new regional tourist destination on the site of the former Deep Sea Fishing Club site including publicly accessible cafes and restaurants, a function space, activity centre and tourist accommodation.

A precinct map showing the Illustrative Masterplan and the six distinct zones is provided at Figure 6.



Figure 4: Illustrative Masterplan (Source: SJB)

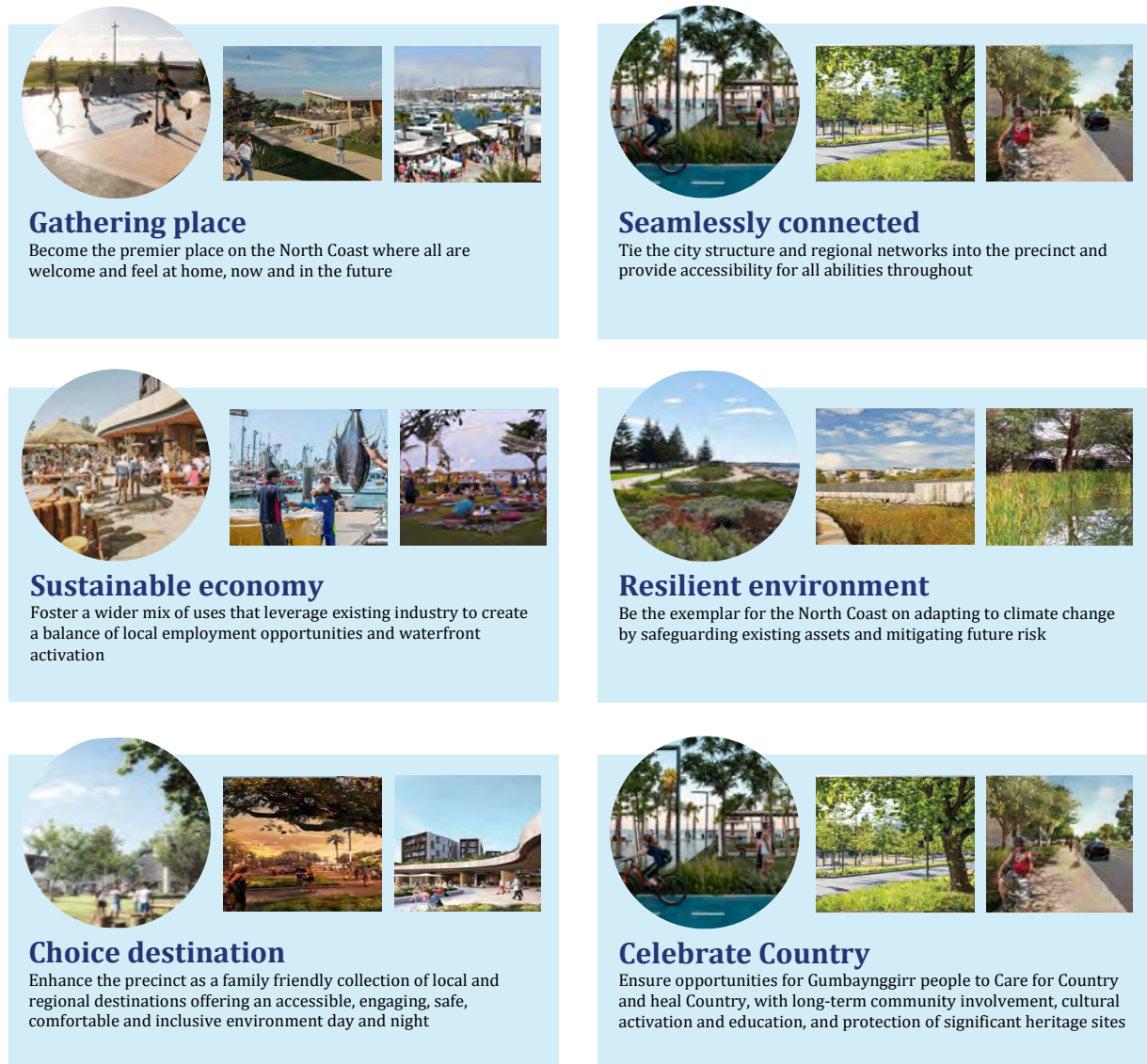


Figure 5: Community-led place principles



Figure 6: Sub-precinct map (Source: SJB)

1.4 The planning proposal

The master planning of large-scale precincts follows a highly consultative and stepped approach. The current step, which paves the way for the revitalisation of the Coffs Harbour Jetty Foreshore Precinct, is the application for a State Assessed Planning Proposal, which is a legislated process.

PDNSW is lodging a planning proposal with the Department of Planning, Housing and Infrastructure that seeks approval for:

- Changes to permissible land uses
- Changes to permissible maximum building heights
- Planning controls for future State Significant Development Applications including design guidelines and design excellence processes

This Strategic Bushfire Study supports this planning proposal.

2 Assessment process

2.1 Bushfire assessment requirements

The subject land is identified as 'bushfire prone land' as shown on Figure 7. When investigating the capability of bushfire prone land to be rezoned, submissions must have regard to Section 9.1(2) Direction 4.3 – 'Planning for Bush Fire Protection' of the *Environmental Planning and Assessment Act 1979*. The objectives of Direction 4.3 are:

- *To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas; and*
- *To encourage sound management of bushfire prone areas.*

Direction 4.3 instructs councils on the bushfire matters which need to be addressed when drafting and amending Local Environmental Plans (LEP). They are as follows:

- *In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 3.34 of the Act, and prior to undertaking community consultation in satisfaction of clause 4, Schedule 1 to the EP&A Act, and take into account any comments made.*
- *A planning proposal must:*
 - o *have regard to the document Planning for Bush Fire Protection 2019;*
 - o *introduce controls that avoid placing inappropriate developments in hazardous areas; and*
 - o *ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ).*
- *A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:*
 - o *provide an Asset Protection Zone (APZ) incorporating at a minimum:*
 - *an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and,*
 - *an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road.*
 - o *for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the*

provisions of the planning proposal permit Special Fire Protection Purposes (as defined under Section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,

- o contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,*
- o contain provisions for adequate water supply for fire-fighting purposes,*
- o minimise the perimeter of the area of land interfacing the hazard which may be developed,*
- o introduce controls on the placement of combustible materials in the Inner Protection Area.*

This Strategic Bushfire Study has been prepared to address the above requirements following the format specified by Section 4.2 of *Planning for Bush Fire Protection 2019* (referred to as 'PBP' throughout this study). The study is to present a landscape assessment of fire behaviour that may impact the subject land and implications for land use, development layout, access and evacuation, and fire-fighting infrastructure.



Legend

-  Watercourse
-  Precinct Boundary
-  Cadastre
-  Vegetation Category 1
-  Vegetation Category 2
-  Vegetation Buffer

Bushfire Prone Land



Date: 14/03/2024

0 100 200 400
Metres

Figure 7: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

2.2 Assessment approach

Table 1 below summarises the process followed to reach the proposed bushfire protection measures and inform the Illustrative Masterplan. This study is the result of a detailed investigation into bushfire behaviour and site constraints including research, field reconnaissance, modelling, and consultation with the planning team.

Table 1: Assessment process

Methodology	Task	Considerations
Desk-top review	A desk-top review of available mapping was undertaken to guide the field work	Familiarisation of terrain and vegetation communities
Field reconnaissance	Inspection of subject land and surrounding bushfire hazard (10 th March 2023)	The inspection ground-truthed the desk top review and gathered site specific data on slope and vegetation
GIS analysis	Review and analysis of GIS mapping layers relevant to bushfire behaviour	Mapping layers include recent aerial imagery from Nearmap, vegetation mapping from OEH, and topographical data
Determination of constraints	Determine requirements of <i>Planning for Bush Fire Protection 2019</i> related to the site and development potential	Primary protection requirements relating to rezoning consist of APZs and access
Consultation with planning team	Liaise with other technical disciplines to ensure bushfire constraints can be integrated into the Illustrative Masterplan	APZ layer and access requirements presented to the team
Consultation with RFS	Consult RFS Coffs Harbour to seek approval to use alternate solution for APZ determination	APZ layer updated to include revised APZ dimension at southern end of project area
Illustrative Masterplan review	The preferred Illustrative Masterplan was finalised through an iterative process	Final adjustments were made on detailed planning matters
Reporting	Preparation of Strategic Bushfire Study	Final report a 'Strategic Bushfire Study' prepared to address EP&A Act s.9.1(2) Direction 4.3

3 Bushfire landscape assessment

An analysis of the bushfire landscape, or parameters that give rise to the bushfire threat, provides the foundation for strategic decision-making on appropriate land use patterns. The parameters to be analysed are discussed in the following subsections and consist of bushfire hazard (comprising vegetation and topography), fire weather, fire history and ignition sources, and fire intensity patterns.

Figure 8 shows the wider landscape influencing a bushfire approaching the subject land. The predominant bushfire landscape features within a 5 km assessment area consist of:

- Less than 50% of the 5 km radius is land, with the majority comprising of ocean.
- Predominantly cleared catchment with mostly development and cleared lands.
- Bushland consists of coastal swamp forest around the airport and Hogbin Drive to the south-west and between Coffs Harbour town centre and Orlando Street to the north-west. Both areas are separated from the forests to the west of Coffs Harbour.
- Narrow vegetation corridors exist such as along the foreshore areas and creek lines.

3.1 Vegetation communities

Bushfire fuel is the vegetative material in the landscape that burns during a bushfire. Bushfire behaviour is significantly influenced by fuel load, driving the intensity of a bushfire.

The vegetation communities within 5 km of the subject land have been mapped by Department of Planning & Environment (State Vegetation Type Map) and this mapping is shown on Figure 9. There are only three vegetation types within the subject land and the 140 m vegetation assessment area surrounding the subject land. These are listed below:

Littoral rainforest

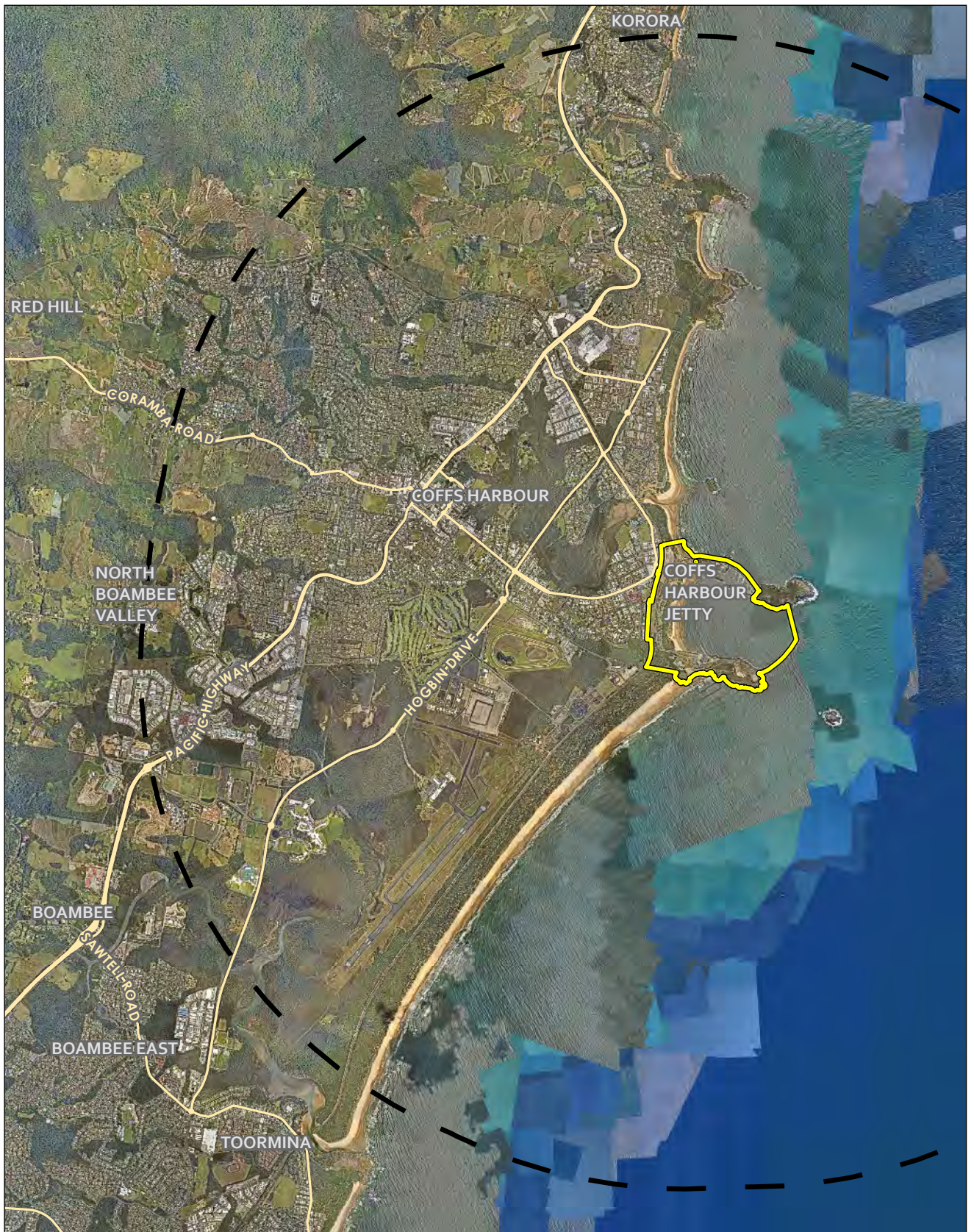
The predominant vegetation type within and adjoining the subject land is littoral rainforest which is a low closed form of rainforest. The canopy is dominated by a wind-swept canopy of Tuckeroo and there is minimal understorey. There are sporadic occurrences of emergent Banksia however these are in relatively low densities and abundance and unlikely to pose a greater fire risk than the rest of the vegetation that is associated with the littoral rainforest.

Coastal headland heath

Coastal heath, both short and tall variations, occur closer to the foredune and form a narrow and constricted corridor between the littoral forest and the beach. These vegetation types are secondary to the littoral vegetation.

Maritime grassland

Small areas of coastal grassland exist along the windswept headlands and dynamic dune areas.



Legend

-  Subject Land Buffer - 5km
-  Precinct Boundary



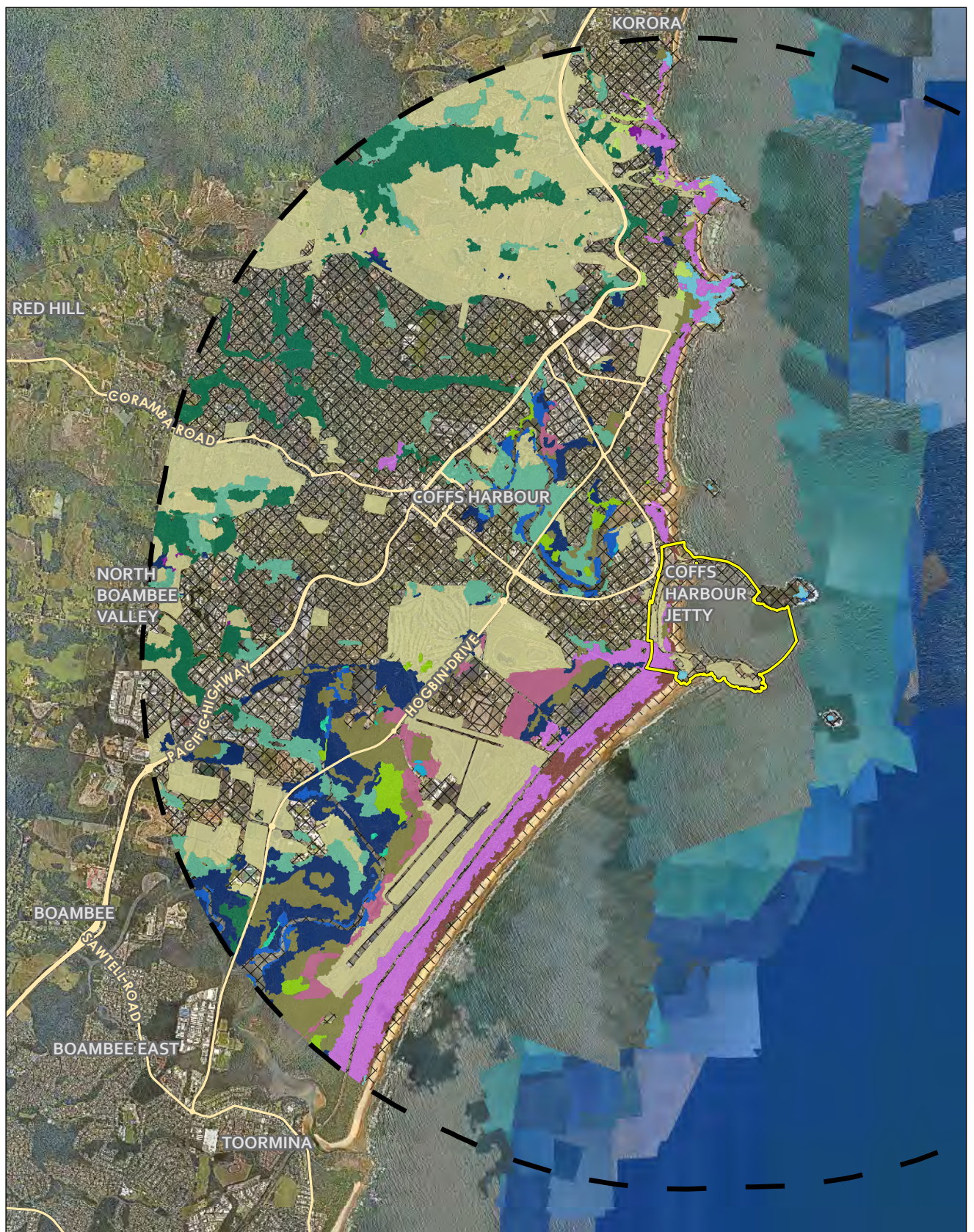
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Date: 14/03/2024

0 1 2 4
Kilometers

Figure 8: Landscape Context

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

Subject Land Buffer - 5km

Precinct Boundary

Vegetation Class

Subtropical Rainforests

Littoral Rainforests

Clarence Dry Sclerophyll Forests

Coastal Dune Dry Sclerophyll Forests

North Coast Wet Sclerophyll Forests

North Coast Dry Sclerophyll Forests

Northern Hinterland Wet Sclerophyll Forests

Coastal Swamp Forests

Coastal Headland Heaths

Wallum Sand Heaths

Coastal Floodplain Wetlands

Coastal Freshwater Lagoons

Coastal Heath Swamps

Mangrove Swamps

Maritime Grasslands

Saltmarshes

Grassland

Cleared



Date: 14/03/2024

0 0.5 1 2
Kilometers

Figure 9: Vegetation Communities

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3.2 Topography

Steeper slopes can significantly increase the rate of spread of fires, and it has been shown that with each 10 degree increase or decrease in slope a corresponding doubling or halving, respectively, in the rate of spread can be expected (McArthur 1962). Slope is a major factor determining the direction and rate of fire spread.

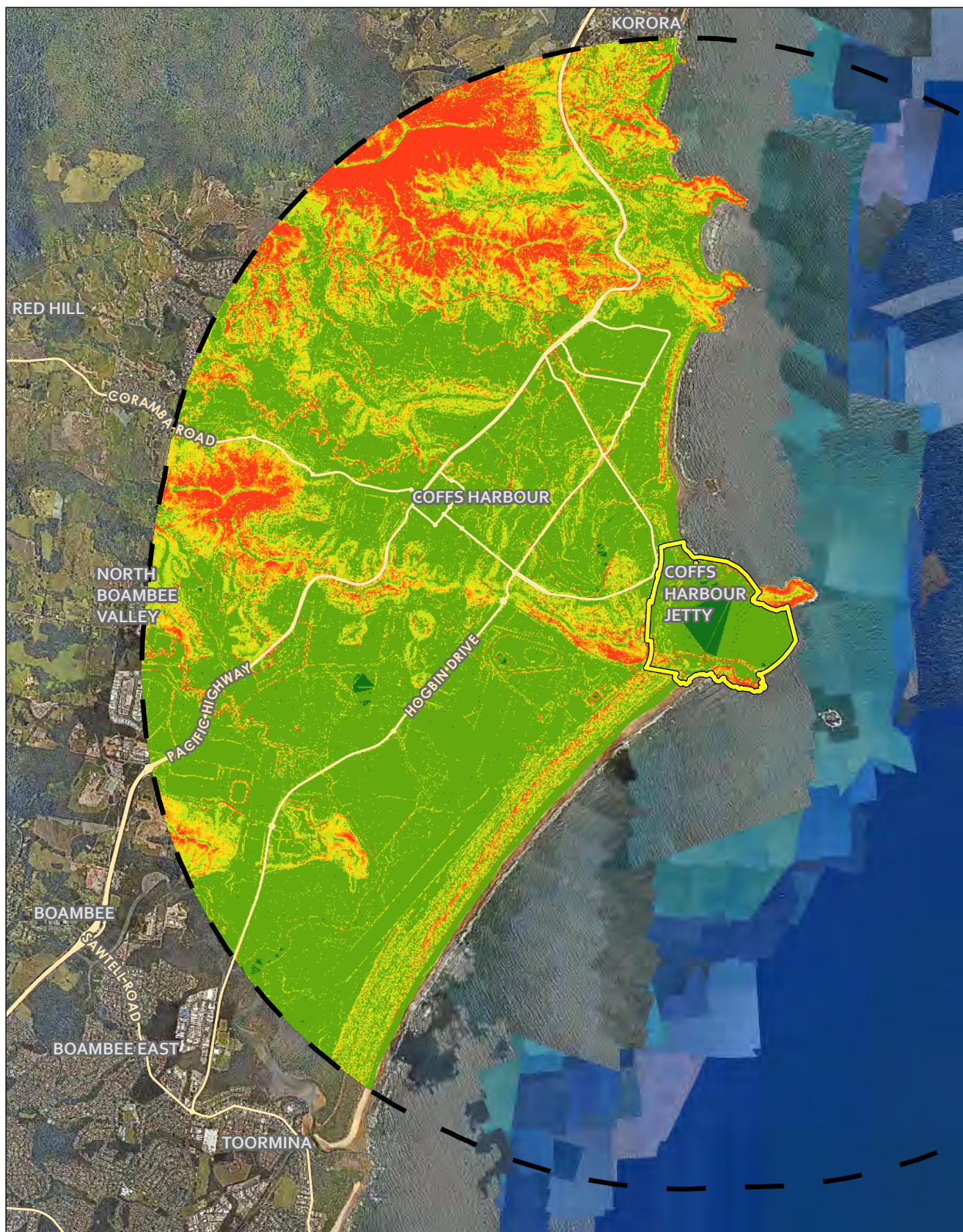
Figure 10 shows the pattern of the terrain across the surrounding landscape (within 5 km of the subject land). The predominant feature is relatively flat terrain (i.e. within the 0-5 degree slope class) across most of the catchment and within and surrounding the subject land. Steeper slopes occur to the north-west and west beyond the coastal plain where the ranges commence.

The 'effective slope' influencing fire behaviour approaching the subject land has also been assessed in accordance with the methodology specified within PBP. The slope was determined using a 2 m contour layer. As demonstrated by Figure 10, the effective slope is predominantly within the PBP slope classes of 'upslope/flat' and 'downslope 0-5 degrees'. There are some areas at the southern end of the subject land that fall within the slope class of 'downslope 5-10 degrees' where there are steeper ridge lines within the dune systems.

3.3 Fire weather

The bushfire season usually runs from October to March when problematic fire weather can occur. Problematic fire weather is a combination of high temperatures and winds from the westerly sector that bring heat and low humidity from the interior. Dangerous bushfire seasons are most commonly associated with a combination of two or more of the following factors:

- Occurrence of an extended drought period;
- Lower than average rainfall through winter and spring;
- Persistent north-west winds; and
- Spring/summer thunderstorm activity ('dry' lightning strikes).



Legend

	Subject Land Buffer - 5km		5-10°
	Precinct Boundary		10-15°
Slope Classes			
	Flat		15-20°
	0-5°		>20°

Figure 10: Slope Classes



Date: 14/03/2024



Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3.4 Fire history

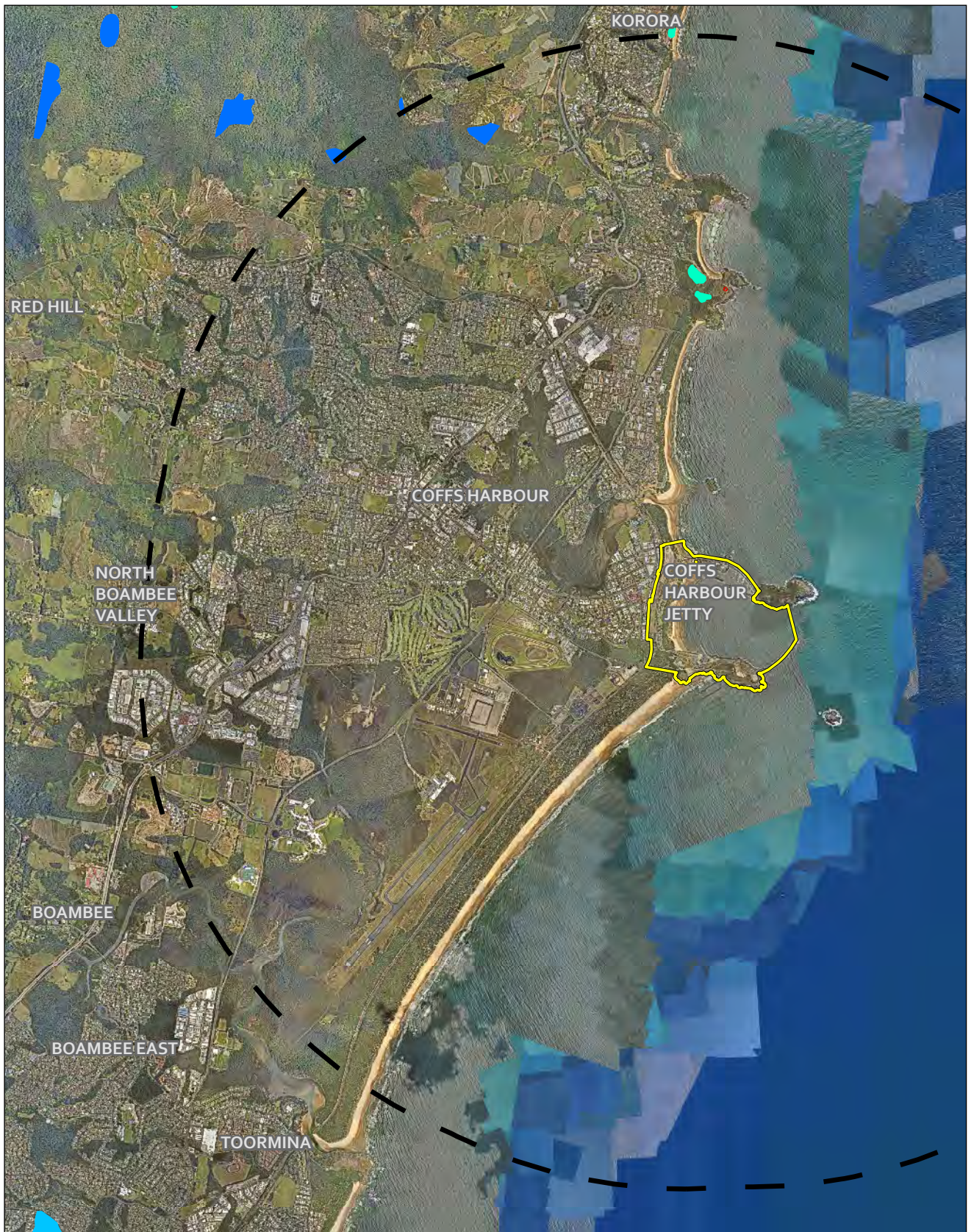
Information on fire history such as temporal and spatial pattern of fire spread is a useful factor in understanding bushfire risk.

Fire history is shown on Figures 11 (time since last fire) and 12 (fire frequency). The fire history mapping shows that the land surrounding the subject land has not been affected by wildfire in decades. The mapping includes data from the 2019-2020 Black Summer fire season which occurred some 10 kms further to the west at the closest point.

The most recent fire occurrence is on Macauleys Headland in the Coffs Coast Regional Park approximately 2.5 kms to the north of the subject land whereby small fires have occurred within the last 1-2 years and more than 10 years ago.

The fire history mapping reveals that although there are significant areas of coastal swamp forest and foreshore vegetation surrounding Coffs Harbour, these areas have not been affected by significant wildfire in recent history. This could be due to the following reasons:

- Less flammable vegetation communities such as rainforest and wetter assemblages such as riparian corridors and swamps reducing ignitions and allowing control of fire and prevention of spread.
- Separation of these areas from the broader landscape further to the west of Coffs Harbour preventing landscape wide fires from the ranges from entering into the remnants on the coastal plain.
- Higher degree of surveillance from the public and proximity of fire stations resulting in quicker response time by fire authorities.



Legend

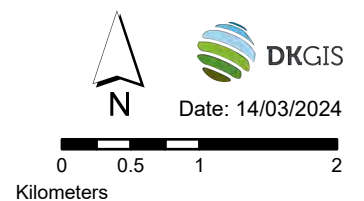
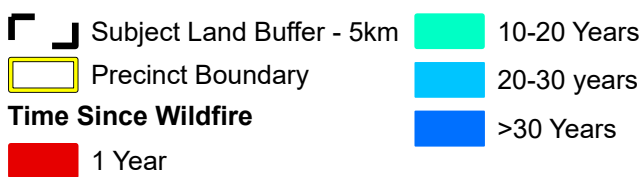
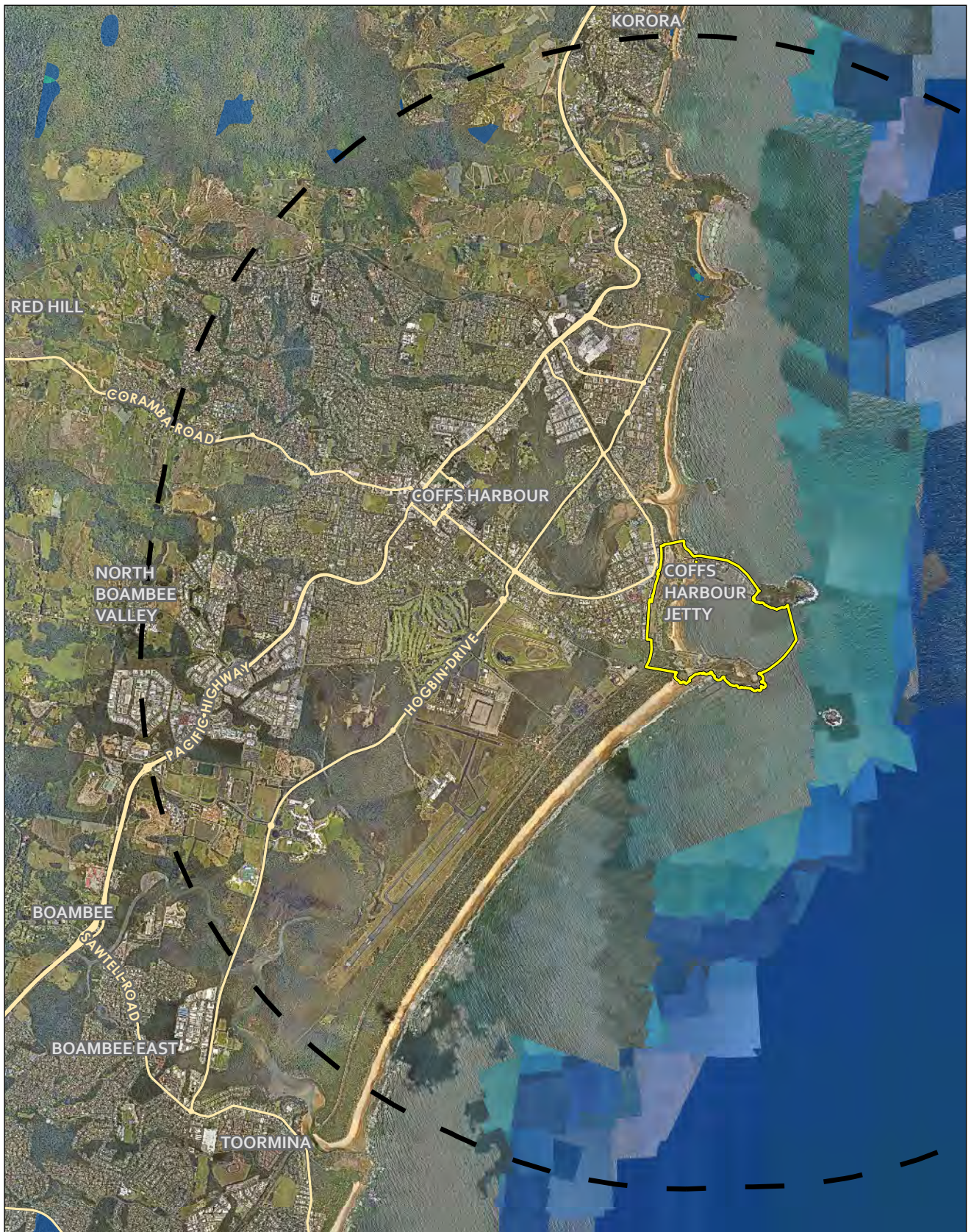


Figure 11: Time Since Last Bushfire

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

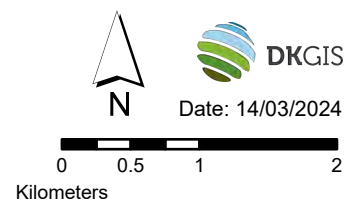
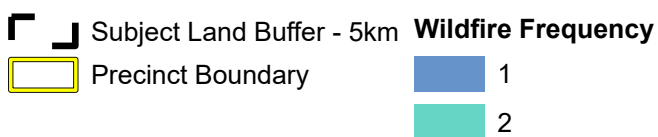


Figure 12: Fire Frequency

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3.5 Fire intensity analysis

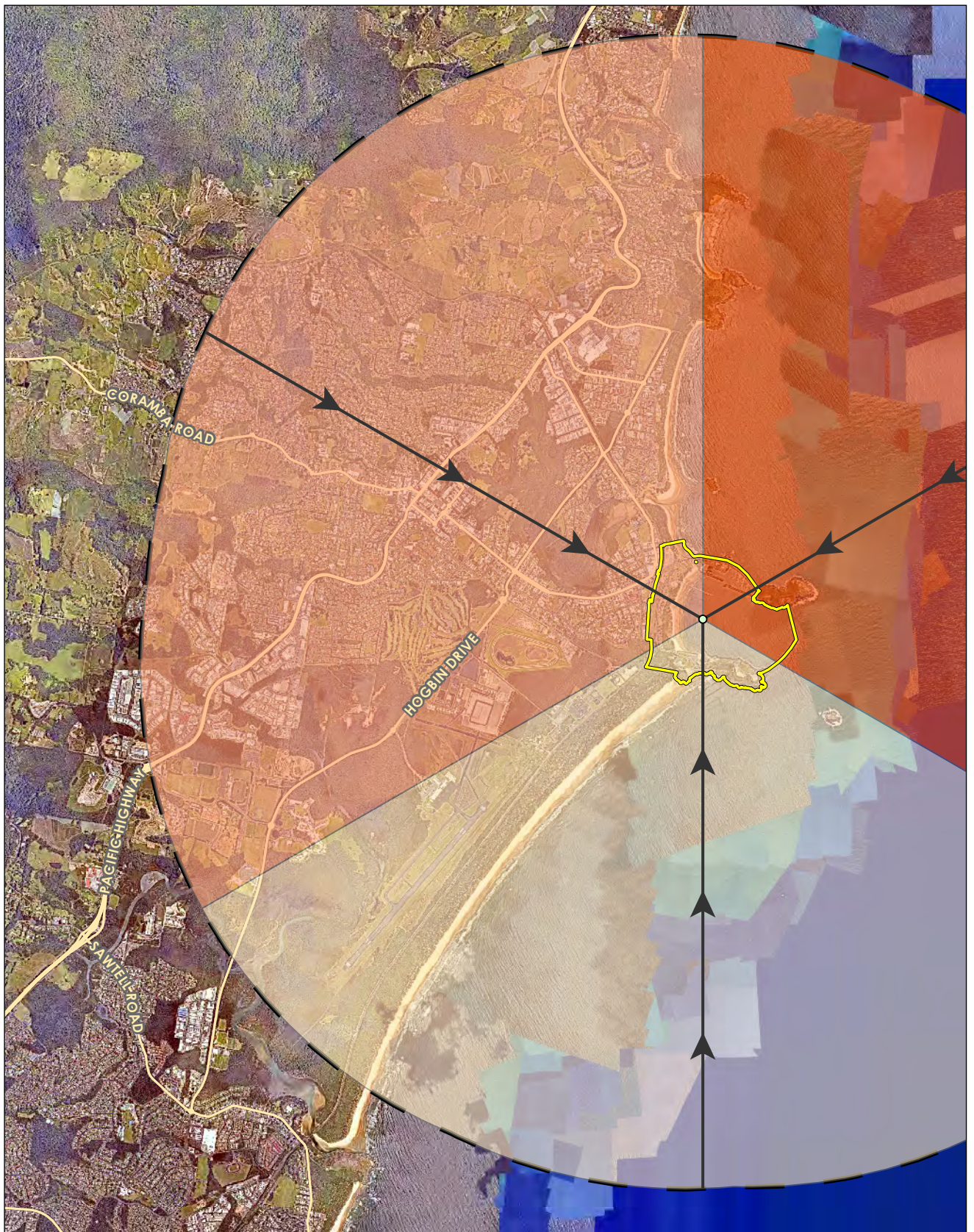
The predicted fire intensity within 5 km of the subject land has been modelled using GIS. The GIS model is based on the fire behaviour formula of McArthur Mk 5 (1962) and utilised inputs of vegetation (fuel load), slope and aspect as summarised below:

- Vegetation (Figure 9) fuel loads (t/ha) based upon likely climax fuel loads as specified by the NSW Rural Fire Service document *Comprehensive Vegetation Fuel Loads* (NSW RFS 2019);
- Slope in degrees (Figure 10);
- Fire weather represented by a Fire Danger Index (FDI) of 80. This is the planning (design) level specified by PBP; and
- A direction of fire spread under the influence of winds from three sectors as follows (refer to Figure 13 for diagrammatic representation of the three sectors):
 - North to south-east (Figure 14);
 - South-east to south-west (Figure 15); and
 - North to south-west (Figure 16).

The fire intensity mapping displays the intensity of a fire travelling under winds from each sector by providing an understanding of rate of spread, risk to fire-fighters, fire control line feasibility and the relative bushfire risk across the landscape.

The mapping of areas into varying degrees of intensity does not indicate how often an area will receive potentially damaging fires, however, it provides a useful comparative ranking across the landscape. Mapping intensity assists in understanding the potential behaviour of bushfires and fire pathways. For example, locations with an expanse of higher bushfire intensity running in a west to east direction may represent a potential fire pathway.

Although there are differences between the fire intensity maps, there is negligible difference within and surrounding the subject land for approximately 3 km. The noticeable differences apply to the steeper lands at the outer limits of the 5 km assessment area whereby aspect influences intensity. However, within and surrounding the subject land, the relatively flat terrain and consistent aspect of the coastal plain coupled with cleared lands and lower fuel loads results in lower predicted fire intensity.



Legend

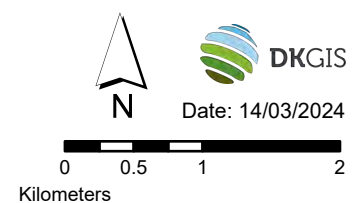
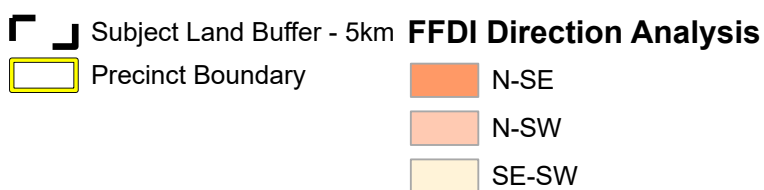
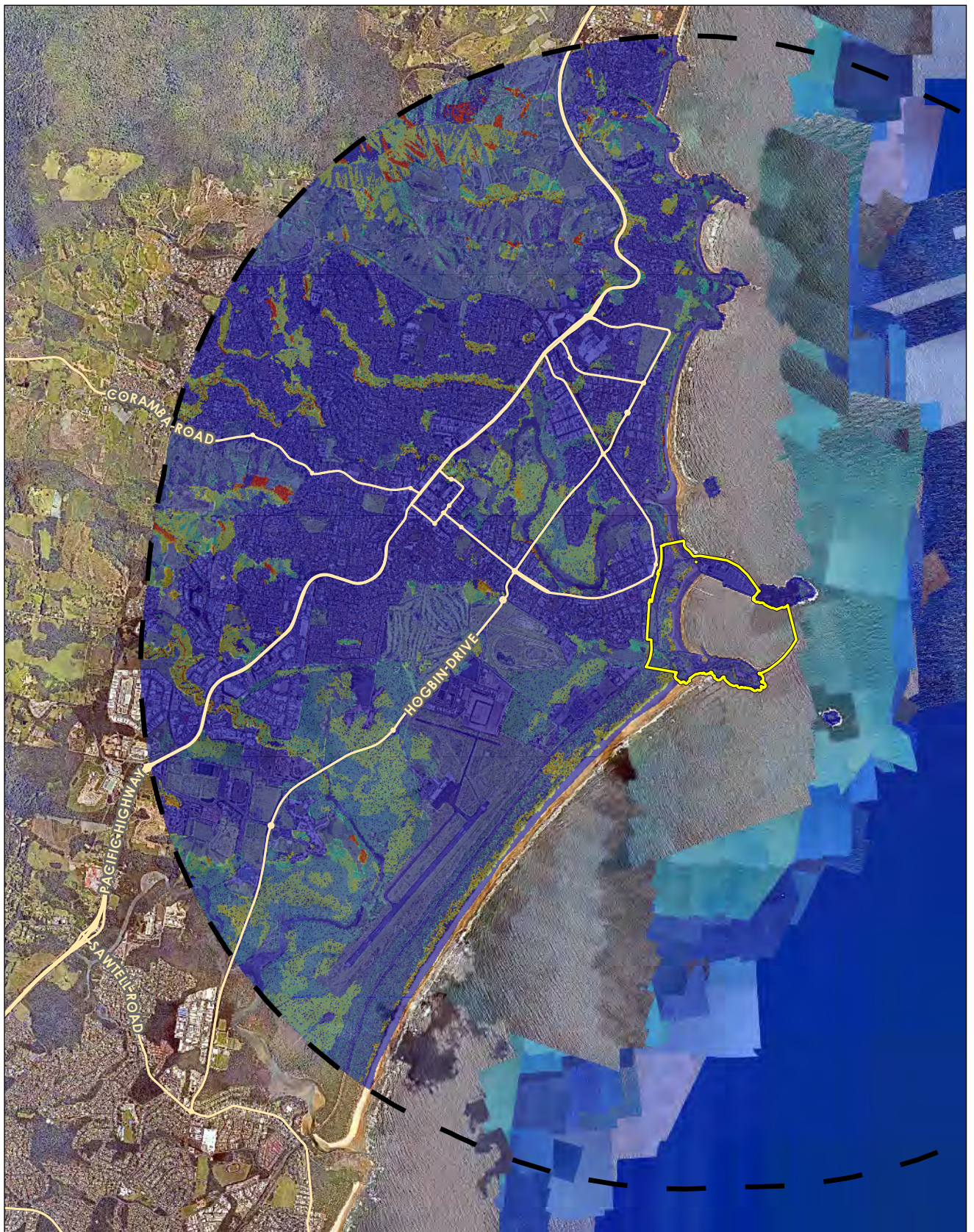


Figure 13: FFDI Direction Analysis

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

	Subject Land Buffer - 5km		15,000 - 30,000		120,000 - 150,000
	Precinct Boundary		30,000 - 60,000		150,000 - 180,000
Fire Intensity N - SE (kW/m)					
	<1,000		60,000 - 90,000		180,000 - 250,000
	1,000 - 15,000		90,000 - 120,000		> 250,000

Figure 14: Fire Intensity N - SE

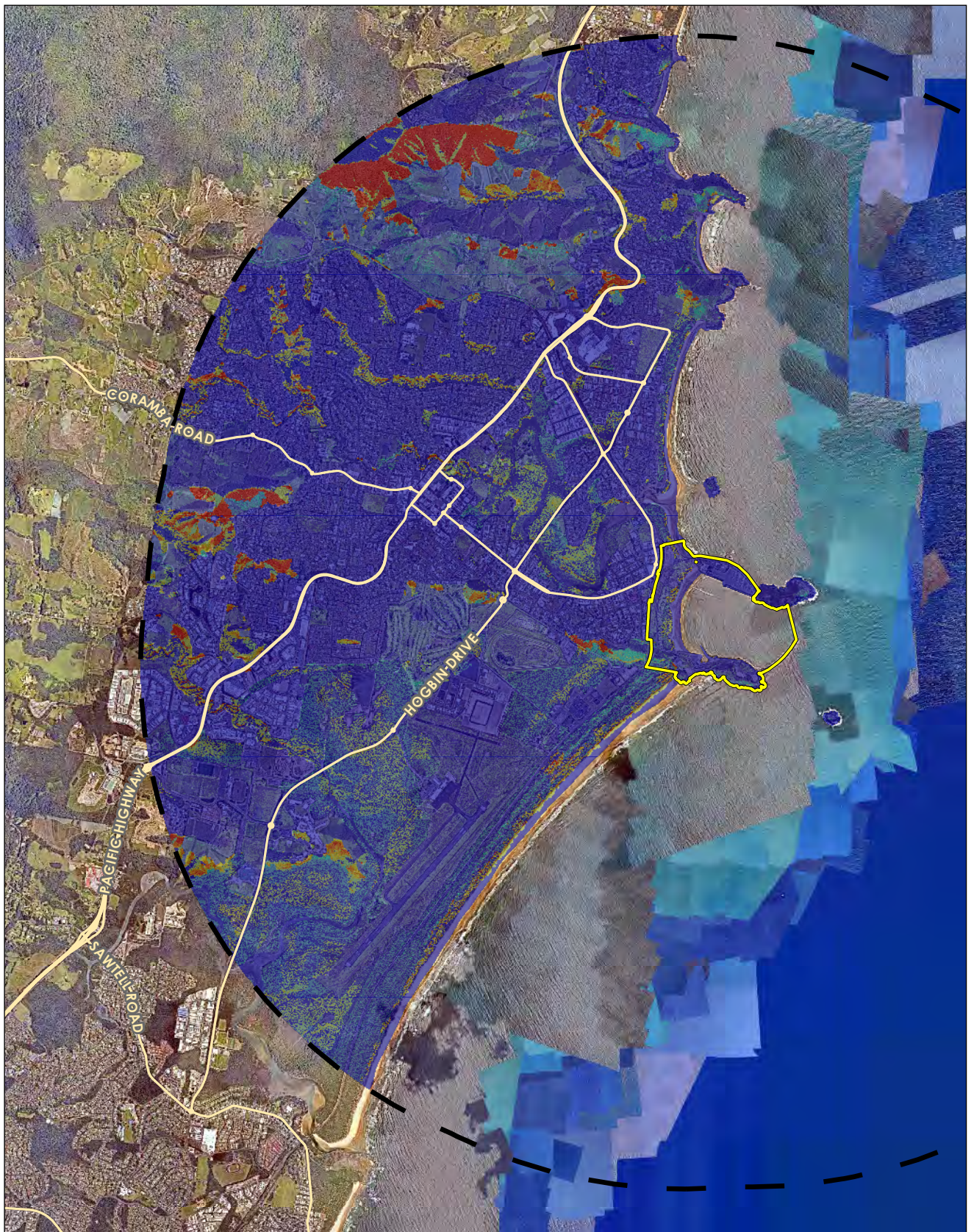


Date: 14/03/2024

0 0.5 1 2
Kilometers

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

Subject Land Buffer - 5km

Roads

Major Road

Precinct Boundary

Fire Intensity SE - SW (kW/m)

<1,000

1,000 - 15,000

15,000 - 30,000

30,000 - 60,000

60,000 - 90,000

90,000 - 120,000

120,000 - 150,000

150,000 - 180,000

180,000 - 250,000

> 250,000



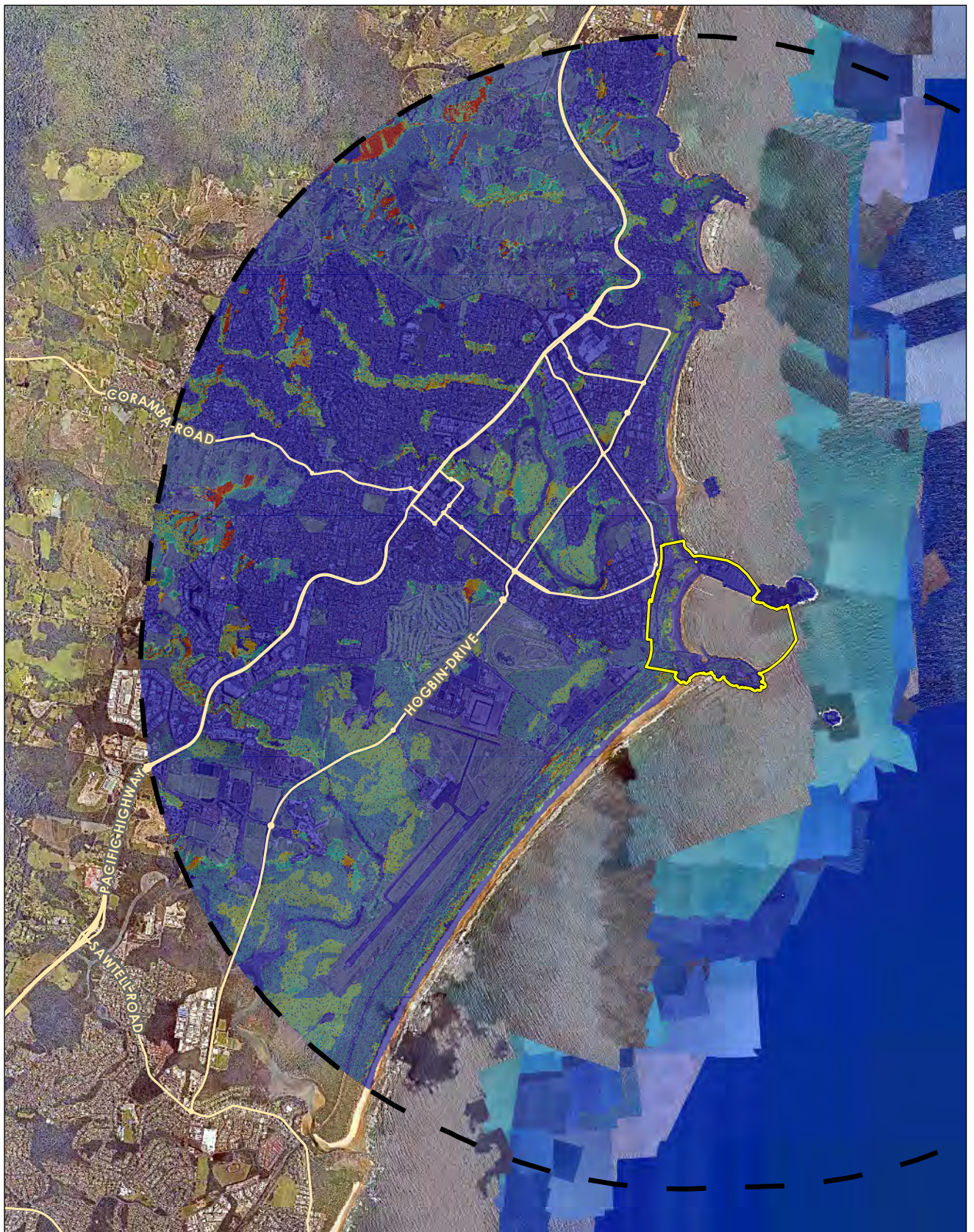
Date: 14/03/2024

0 0.5 1 2
Kilometers

Figure 15: Fire Intensity SE - SW

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

Subject Land Buffer - 5km

Roads

Major Road

Precinct Boundary

Fire Intensity N - SW (kW/m)

<1,000

1,000 - 15,000

15,000 - 30,000

30,000 - 60,000

60,000 - 90,000

90,000 - 120,000

120,000 - 150,000

150,000 - 180,000

180,000 - 250,000

> 250,000



Date: 14/03/2024

0 0.5 1 2
Kilometers

Figure 16: Fire Intensity N- SW

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

4 Land use assessment

The following land use assessment considers the risk profile of the subject land based on the bushfire landscape assessment in the preceding chapter, the suitability of the proposed land use, and the feasibility of the Asset Protection Zone (APZ) requirements.

4.1 Bushfire risk

The risk of a bushfire igniting, spreading and causing damage to future development within the subject land has been assessed following the outcomes of the preceding Section 3 - Bushfire Landscape Assessment. As detailed in Section 3, considerations for the determination of bushfire risk include fire intensity mapping (a product of vegetation, topography and fire weather), fire history and problematic fire attack scenarios.

The risk has been assessed using the same methodology used by NSW Rural Fire Service in developing the *Coffs Coast Bush Fire Risk Management Plan (2023)*. The method follows the procedures and considerations of *AS/NZS ISO 31000:2018 Risk management – Guidelines* and provides a risk classification scheme through qualitative scales to assess the likelihood and consequence of fire impact.

The bushfire risk to the subject land is assessed to be within the risk management planning category of 'lowest risk'. This rating is consistent with the findings of the *Coffs Coast Bush Fire Risk Management Plan* for the locality for residential and Special Fire Protection Purpose (SFPP) uses such as tourist accommodation and places of public assembly. The primary influences on the risk profile of the subject land can be summarised as follows:

- Separation from landscape-wide fires further to the west of Coffs Harbour;
- Lower flammable vegetation communities;
- Gentle terrain;
- Lack of wildfire history;
- Urban environment resulting in higher surveillance and emergency response times;
- Fire intensity modelling demonstrating low predicted fire intensity; and
- Fire attack limited to immediate area only which is predominated by rainforest vegetation and benefitting from multiple control line advantages.

4.2 Suitability of proposed land use

The potential future development falls within the three development classes covered by PBP. These are:

- Residential: Includes all long-term accommodation dwellings with the exception of seniors living and aged care.

- **Special Fire Protection Purpose (SFPP):** Refers to uses involving more vulnerable occupants or having potential evacuation challenges. This development type includes short-term accommodation, seniors living, aged care facilities, child care centres and places of public assembly with a floor area greater than 500 m².
- **Other:** This category includes non-habitable development such as commercial and retail uses.

The subject land already contains an SFPP use being the Jetty Beach House restaurant at the southern end and retail outlets in the marina at the northern end, however the subject land is predominantly open space parkland. The rezoning will attract an intensification of uses and introduction of new uses such as accommodation, as shown on the Illustrative Masterplan.

Although intensification will occur, the subject land will be suitable for the proposed land uses in the context of bushfire risk due to two primary factors. Firstly, the bushfire risk assessed by this study and the recent bushfire risk management plan is of the lowest level. The risk profile does not preclude intensification of the subject land and compliance with the standard suite of bushfire protection measures specified by PBP will suffice. Secondly, the subject land is effectively within the urbanised area of Coffs Harbour and does not involve development of an otherwise unsettled area where a strain on fire-fighting infrastructure or poor emergency management outcomes could result.

The risk profile does not preclude intensification of the subject land. Bushfire protection measures include APZ and adequate access for evacuation and response of emergency authorities. The suitability of the measures is discussed in the following sections.

4.3 Asset Protection Zones (APZ)

The vegetation and slope data presented in Section 3.1 has been refined by the process of field validation and mapped within the subject land and for a distance of 140 m surrounding the subject land. The vegetation and slopes used for APZ determination are mapped on Figure 17.

APZs have been determined and accommodated within the Illustrative Masterplan where required. Two APZ layers have been prepared:

1. Figure 18a shows the recommended APZ for long-term accommodation and commercial/retail developments that are not classified SFPP use.
2. Figure 18b shows the recommended APZ for SFPP uses such as short-term accommodation and places of public assembly exceeding a floor space area of 500 m².

The APZs have been determined in accordance with the PBP Acceptable Solutions (i.e. PBP Table A1.12.1) except for the two most southern APZ sections shown on Figure 18b which are in the Corambirra Point sub-precinct. These two APZs have been reduced from 57 m and 38 m to 51 m and 33 m, respectively. This reduction was based on an alternate solution using the applicable Fire Danger Index (FDI) for the region. The reduced APZ allows the existing function centre building (SFPP use) to be redeveloped for new SFPP uses in the same location without removal of littoral rainforest vegetation as a result of APZ establishment. The alternate solution proposal was discussed with RFS in July 2023 and approval in principle was granted to

determine the APZ based on the proposal to use the local FDI of 80. Redevelopment of the Corambirra Point sub-precinct can occur with compliant APZs. As discussed in Section 4.1, the bushfire risk to the locality is low, and this is due primarily to the lower flammability of the littoral rainforest vegetation.

The APZs have been buffered from the edge of native vegetation where the existing management regime (i.e. mowing) ceases and bushland commences. Therefore, no additional trees or vegetation require removal in order to maintain the APZs as mapped. Figure 18c shows both APZs (i.e. the long-term accommodation and commercial/retail APZ and SFPP APZ) overlayed onto the Illustrative Masterplan. As demonstrated by Figure 18c, the Illustrative Masterplan can accommodate the required APZ between the existing vegetation and the proposed uses.



Legend

- Contour - 2m
- Watercourse
- Precinct Boundary
- Cadastre

Vegetation Assessment Area

Vegetation Formation

- Tall Heath
- Rainforest



Date: 14/03/2024

0 50 100 200
Metres

Figure 17: Bushfire Hazard Analysis for APZ Determination

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

- Contour - 2m
- Precinct Boundary
- Cadastre
- Vegetation Formation**
- Tall Heath

- Rainforest
- Asset Protection Zone (Residential)**
- Asset Protection Zone - 9m
- Asset Protection Zone - 12m

- Asset Protection Zone - 15m
- Asset Protection Zone - 16m
- Asset Protection Zone - 18m



Date: 14/03/2024

0 25 50 100
Metres

Figure 18a: Residential Asset Protection Zone (APZ)

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

- Contour - 2m
- Precinct Boundary
- Cadastre
- Vegetation Formation**
- Tall Heath

- Rainforest
- Asset Protection Zone (SFPP)**
- Asset Protection Zone - 33m
- Asset Protection Zone - 38m

- Asset Protection Zone - 47m
- Asset Protection Zone - 50m
- Asset Protection Zone - 51m
- Asset Protection Zone - 56m



Date: 14/03/2024

0 25 50 100
Metres

Figure 18b: SFPP Asset Protection Zone (APZ)

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Figure 18c: APZ overlayed onto Illustrative Masterplan

4.4 Landscaping within Asset Protection Zones (APZ)

The APZs identified in the mapping (Figures 18a and 18b) require mowing only to ensure maintenance into the future. The APZs have been buffered from the edge of native vegetation, such as littoral rainforest and dune vegetation, therefore vegetation removal should not be required.

Proposed landscaping is to achieve the standard of an Inner Protection Area (IPA) as described within Appendix A4.1.1 of PBP. The IPA requirements stated within PBP are repeated below:

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

- **Trees**
 - o *tree canopy cover should be less than 15% at maturity;*
 - o *trees at maturity should not touch or overhang the building;*
 - o *lower limbs should be removed up to a height of 2m above the ground;*
 - o *tree canopies should be separated by 2 to 5m; and*
 - o *preference should be given to smooth barked and evergreen trees.*
- **Shrubs**
 - o *create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;*
 - o *shrubs should not be located under trees;*
 - o *shrubs should not form more than 10% ground cover; and*
 - o *clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.*
- **Grass**
 - o *grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and*
 - o *leaves and vegetation debris should be removed.*

5 Access and emergency services

The proposed rezoning will facilitate an intensification of uses and introduction of new uses within the subject land. The access arrangements will remain the same which provide an adequate level of bushfire protection for future development as explained below.

5.1 Access and evacuation

PBP requires an access layout that enables safe evacuation away from an area whilst facilitating adequate emergency and operational response. All bushfire prone areas should have an alternate access or egress option depending on the bushfire risk, the density of the development, and the chances of the road being severed by fire for a prolonged period.

Access into and egress out of the subject site is available at the northern end via Marine Drive and at the southern end via Camperdown Street as shown on Figure 19. The available road layout allows alternate access options and in different directions. The layout will provide future developments an access arrangement compliant with PBP.

It is noted that the length of road through the bushfire hazard along Jordan Esplanade between the intersection with Camperdown Street (Activity Hub sub-precinct) and the function centre site (Corambirra Point sub-precinct) at the southern end of the subject land is approximately 250 m. This distance exceeds the PBP Acceptable Solution distance of 200 m, however this is acceptable in this instance due to the low bushfire risk (refer to Section 4.1) and the fact that the hazard is littoral rainforest only.



Legend

- Precinct Boundary
- Evacuation route



 **DKGIS**
Date: 14/03/2024

0 200 400 800
Meters

Figure 19: Access and evacuation routes

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

5.2 Road design

The road design is to comply with the PBP Acceptable Solutions for public roads in bushfire prone areas as required by PBP Table 5.3b. The requirements are repeated below.

PBP design standards for roads servicing residential subdivision:

- *Property access roads are two-wheel drive, all weather roads.*
- *Perimeter roads are provided for residential subdivisions of three or more allotments.*
- *Subdivisions of three or more allotments have more than one access in an out of the development.*
- *Traffic management devices are constructed to not prohibit access by emergency service vehicles.*
- *Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.*
- *All roads are through roads;*
- *Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end.*
- *Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.*
- *Where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.*
- *One way public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.*
- *The capacity of perimeter and non-perimeter road surfaces and any bridges and causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); Bridges/causeways to clearly indicate load rating.*
- *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 – Fire hydrant installations: System design, installation and commissioning.*
- *There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.*
- *Perimeter roads:*
 - o *are two-way sealed roads;*

- o *8 m carriageway width kerb to kerb;*
- o *parking is provided outside of the carriageway width;*
- o *hydrants are located clear of parking reserves;*
- o *are through roads, and these are linked to the internal road system at an internal of no greater than 500 m;*
- o *curves of roads have a minimum inner radius of 6 m;*
- o *the maximum road grade is 15° and average grade of not more than 10°;*
- o *the road crossfall does not exceed 3°;*
- o *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*
- *Non-perimeter roads:*
 - o *Minimum 5.5 m carriageway width kerb to kerb;*
 - o *parking is provided outside of the carriageway width;*
 - o *hydrants are located clear of parking areas;*
 - o *roads are through roads, and these are linked to the internal road system at an internal of no greater than 500 m;*
 - o *curves of roads have a minimum inner radius of 6 m;*
 - o *the road crossfall does not exceed 3°;*
 - o *a minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.*

5.3 Emergency services

Intensification of the subject land will increase demand on emergency services, fire-fighting infrastructure and operational capability. Regarding demand for emergency services, a review of the existing fire-fighting services revealed that there is both the Coffs Harbour RFS Fire Control Centre and Coffs Harbour Fire & Rescue Station within 3 km of the subject land by road. The location of these are mapped on Figure 20.

It is considered that the proximity of the two stations and the town centre of Coffs Harbour will be suitable for intensification of the subject land created by the Planning Proposal.

5.4 Fire-fighting infrastructure

The subject site is to be supplied with a reticulated water system with hydrants installed to comply with the spacing and pressure requirements of Australian Standard AS 2419 *Fire hydrant installations - System design, installation and commissioning*.



Legend

-  Fire Station
-  Precinct Boundary



 **DKGIS**
Date: 14/03/2024

Kilometers

Figure 20: Fire Stations within Vicinity

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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6 Ministerial directions compliance

This section summarises how compliance with Section 9.2 Direction 4.3 – ‘Planning for Bush Fire Protection’ (*Environmental Planning and Assessment Act 1979*) is achieved. The response to requirements is set out below following the structure of Direction 4.3.

6.1 Direction 4.4 Objectives

Objective 1

“To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas”

The intention of the objective is to avoid a development outcome that is faced by or poses a risk that cannot be managed to an acceptable level. The land use assessment at Section 4 demonstrates that future development at the site will be faced by a risk that can be managed to an acceptable level by implementing the Acceptable Solutions of PBP therefore making it compatible with the surrounding environment.

It is concluded that the proposed land use is not considered incompatible with the surrounding bushfire prone area. Compliant APZs coupled with adequate access designed to address the bushfire risk produces a use not incompatible with the surrounding environment.

Objective 2

“To encourage sound management of bushfire prone areas”

The bushfire protection measures recommended throughout this report demonstrate sound management of the subject land for residential use.

6.2 Direction 4.4 Provisions

Provision 1

“have regard to the document Planning for Bush Fire Protection 2019”

Sections 4 and 5 address the provisions of *Planning for Bush Fire Protection 2019* relating to rezoning proposals.

Provision 2

“introduce controls that avoid placing inappropriate developments in hazardous areas”

The proposed rezoning is not considered inappropriate for the level of bushfire hazard in the area (refer to Section 4.1 and 4.2). Controls (bushfire protection measures) will be set in place to ensure compliance with PBP (refer to Section 4.3 and 5).

Provision 3

“ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ)”

Proposed APZs will be contained wholly within road reserves and private lots that will be routinely managed. APZs will not be placed into environmentally sensitive lands such as littoral rainforest.

Provision 4

“provide an Asset Protection Zone (APZ) incorporating at a minimum:

- an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and,
- an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road”

APZs will be provided to comply with the distances prescribed by PBP as detailed in Section 4.3.

Provision 5

“for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined under Section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with”

The proposal does not involve infill development. Section 4.3 details APZs compliant with the Acceptable Solutions of *Planning for Bush Fire Protection 2019*.

Provision 6

“contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks”

The Illustrative Masterplan features two-way roads and a compliant road layout. More detail on the proposed access is detailed in Sections 5.1 and 5.2.

Provision 7

“contain provisions for adequate water supply for fire-fighting purposes”

Section 5.4 states the requirements for a reticulated water supply and hydrant installation.

Provision 8

“minimise the perimeter of the area of land interfacing the hazard which may be developed”

The perimeter of the subject site is uniform in nature with no significant ‘pinch-points’, intrusions or otherwise extended hazard interface areas that could become problematic for evacuation or operational response.

Provision 9

“introduce controls on the placement of combustible materials in the Inner Protection Area”

Section 4.3 states that APZs are to be maintained to comply with Appendix 4 of PBP.

7 Conclusion

The Coffs Harbour Jetty Foreshore state assessed planning proposal and Illustrative Masterplan has been developed via an iterative process involving strategic analysis, constraints assessment and consultation with bushfire protection requirements in mind.

This Strategic Bushfire Study has been prepared in accordance with Section 4.2 of the RFS document *Planning for Bush Fire Protection 2019* (NSW RFS 2019) and addresses the requirements for assessment of rezoning proposals involving bushfire prone land, namely Section 4.4 of *Planning for Bush Fire Protection 2019* and the *Environmental Planning and Assessment Act 1979* Section 9.1(2) Ministerial Direction 4.3 – ‘Planning for Bush Fire Protection’.

The landscape and site assessment has resulted in a low bushfire risk rating which is consistent with the *Coffs Coast Bush Fire Risk Management Plan (2023)*. The subject land is deemed suitable for intensification in the context of bushfire risk. The Illustrative Masterplan has been prepared to accommodate the bushfire protection measures required to achieve compliance with *Planning for Bush Fire Protection 2019*.

Measures include APZs and adequate access for evacuation and emergency response, among others. The APZs have been identified and designed to avoid removal of native vegetation. APZ design includes an alternate solution to allow the redevelopment of a function centre at Corambirra Point whilst ensuring no impact to the surrounding littoral rainforest. The low bushfire risk and ability to accommodate compliant APZs enables redevelopment of the site.

As demonstrated by this study, the proposal to rezone the subject land satisfies EP&A Act s.9.2 Direction 4.3 – ‘Planning for Bush Fire Protection’ and *Planning for Bush Fire Protection 2019*. The proposal is not considered incompatible with the surrounding environment and bushfire risk. With sound bushfire management, the proposal can exist within the adjacent bushfire prone land.



David Peterson
Director



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