



KINGS FOREST

PRECINCTS 6-14 BUFFER MANAGEMENT PLAN

A Report Prepared for
Project 28 Pty Ltd

DECEMBER 2020

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1 INTRODUCTION

1.1 Background

JWA Pty Ltd (JWA) has been engaged by Project 28 Pty Ltd (Project 28) to prepare a Buffer Management Plan (BMP) for Precincts 6 - 14 of the Kings Forest project site. The Kings Forest site is 846 hectares in area and is located in the coastal zone of the Tweed Shire Local Government Area (LGA). The Kings Forest site was zoned for residential and commercial development in the early 1990s and has been subject to a lengthy Commonwealth, State and Council approval process. Numerous ecological studies have been completed on the site over the last 30 years including detailed flora, fauna and hydrological surveys.

State Environmental Planning Policy (Major Projects) 2005 (Amendment No 10) was gazetted in November 2006, resolving the zonings of the Kings Forest site. Threatened flora, habitat for threatened fauna, Endangered Ecological Communities (EECs) and State Environmental Planning Policy (SEPP) 14 Wetlands are protected within Environmental Protection Zones (EPZs). Provision was made for a 50 m ecological buffer to these areas. Subsequent to gazettal of the SEPP Amendment, a Concept Plan for Kings Forest was prepared and lodged with NSW Department of Planning (DoP). The objectives of ecological buffers at the Kings Forest site were originally discussed in the BMP (JWA 2009) that accompanied the Concept Plan Application. The 2009 BMP (JWA 2009) included a literature review on the types and purposes of environmental buffers.

This BMP provides specific measures for mitigating and/or minimising the potential impacts on vegetation within Precincts 6 - 14 Environmental Management Areas (EMAs) as a result of development activities through management and maintenance of ecological buffers at the outer edge of these EMAs. Specific management actions discussed in this BMP will be triggered and completed on a pre-construction, construction and operational phase basis.

It is also noted that Concept Plan (06_0318) Approval Condition C2 requires management plan updates (where necessary) to accompany future development applications. As a consequence, there may be changes arising from these updates to specific management provisions contained in this plan.

1.2 Aim and Objectives

This BMP is intended to assist Project 28 in managing the ecological values of buffers associated with development Precincts 6 - 14 on the Kings Forest site before, during and after development.

The aim of this BMP is to provide guidelines, strategies and methods for the treatment and management of ecological buffers to Cudgen Nature Reserve and EMAs associated with Precincts 6 - 14 of the Kings Forest development.

Implementation of this BMP will ensure ongoing sustainable management of native vegetation and habitat within buffers and that land clearing and land modification activities associated with the development are effectively remediated.

This BMP has been prepared with consideration of the objectives of ecological buffers under the SEPP (Major Projects) 2005 (Amendment No 10). Clause 7(2) of the SEPP (Major Projects) Amendment states that the objectives of the ecological buffers are:

- a) To protect wetlands or areas of particular habitat significance;
- b) To restrict development so that, as far as practicable, it does not occur within ecological buffers;
- c) To help ensure that development is designed, sited and managed so as to minimise its impact on the ecological and hydrological functions of the ecological buffers; and
- d) To encourage the restoration and maintenance of the native vegetation and ecological processes of the land within and adjacent to wetlands or areas of particular habitat significance.

Clause 7(3) of the SEPP (Major Projects) Amendment requires that development on land within an ecological buffer is to:

- a) incorporate effective measures to manage wetlands or areas of particular habitat significance, and
- b) be designed and sited to maintain connectivity of vegetation and minimise vegetation clearing, soil disturbance and alterations to the rate, volume or quality of surface and ground-water flows, and
- c) retain and maintain all existing native vegetation outside the area immediately required for the development, and
- d) incorporate measures to regenerate native vegetation for all disturbed areas within the buffer, and
- e) incorporate appropriate stormwater and erosion control measures to protect the buffer from surface water run-off or other disturbance.

1.3 Compliance with Relevant Approval Conditions

On the 19th January 2007, the NSW Minister for Planning authorised a Concept Plan (06_0318) for a proposed residential community at Kings Forest. The Minister for Planning granted part 3A approval (with conditions) for the Concept Plan for Kings Forest in August 2010. A Precincts 2-4 and 6-14 BMP was prepared in accordance with the Concept Plan approval conditions.

The Kings Forest Stage 1 Project Application No. MP 08_0194 was lodged in November 2011. The Project Application was approved (with conditions) on the 11th August 2013. Conditions of this approval required that all environmental management plans be revised.

On the 21st May 2015, the Commonwealth Department of Environment approved (with conditions) the Kings Forest residential development (EPBC 2012/6328). The Commonwealth approval is confined to the mitigation of impacts of the proposed development on the koala and wallum sedge frog, both of which are listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). There are no specific EPBC Act approval conditions relating to ecological buffers on the Kings Forest development site,

however it is noted that the ecological buffers are used extensively for the retention, management and offsetting of koala and wallum sedge frog habitat.

Since the Commonwealth approval decision Project 28 have been liaising with Tweed Shire Council and the NSW Department of Planning, Industry and Environment (DPI&E) to reconcile all approval conditions.

The Precincts 6 - 14 BMP has been prepared to comply with all relevant Commonwealth, State and Local Government approval conditions. **APPENDIX 1** contains the details of the following relevant Consolidated Approval Conditions and also notes where they are addressed in this BMP:

- Concept Plan 06_0318 Consolidated Approval Conditions incorporating the following:
 - Modification No. 1, approved on 22 December 2010;
 - Modification No. 2, approved on 11 August 2013;
 - Modification No. 3, approved on 16 May 2014;
 - Modification No. 4, approved on 20 November 2014;
 - Modification No. 5, approved on 10 November 2015;
 - Modification No. 8, approved on 24 May 2018;
- Project Approval 08_0194 Consolidated Approval Conditions incorporating the following:
 - Modification No. 1, approved on 16 May 2014;
 - Modification No. 2, approved on 20 November 2014;
 - Modification No. 3, approved on 20 February 2017;
 - Modification No. 6, approved on 21 December 2017; and
 - Modification No. 7, approved 24 May 2018.

JWA hereby certify that this BMP has been prepared in accordance with the requirements of Condition C2 of Concept Plan Approval No. CP06_0318 (as modified) and generally in accordance with the requirements of Conditions 39 and 41 of Major Project Approval No. MP08_0194 (as modified) for Kings Forest Stage 1.

1.4 Related Management Plans Prepared for the Kings Forest Site

A number of management plans were completed for the Kings Forest Stage 1 Project Application and approved under Project Approval 08_0194. Subsequent to their approval, significant work has been completed on the site. Several of these management plans have therefore been amended (and others will need to be amended) as required by Condition 39 of MP 08_0194.

This BMP should be read in conjunction with the following documents prepared for the Kings Forest development:

- Kings Forest Koala Plan of Management (KPoM) (JWA 2019);
- Kings Forest Wallum Sedge Frog Management Plan (WSFMP) (JWA 2020a);

- Kings Forest Precincts 6 - 11 Vegetation and Weed Management Plan (VWMP) (JWA 2020b);
- Kings Forest Precincts 12 - 14 Vegetation and Weed Management Plan (VWMP) (JWA 2020c);
- Kings Forest Precincts 6 - 11 Threatened Species Management Plan (TSMP) (JWA 2020d);
- Kings Forest Precincts 12 - 14 Threatened Species Management Plan (TSMP) (JWA 2020e);
- Kings Forest Flora and Fauna Monitoring Report (FFMR) (JWA 2020f);
- Kings Forest Feral Animal Management Plan (FAMP) (JWA 2020g);
- Kings Forest Stage 1 Bushfire Risk Management Plan (BushfireSafe 2020);
- Kings Forest Koala Fire Management Plan (Wildsite 2020);
- Construction Environmental Management Plan (MUS 2020);
- Kings Forest Summary of Management Plans (G&S 2020a); and
- Kings Forest Overall Water Management Plan (OWMP) (G&S 2020b).

APPENDIX 2 provides further details of these management plans and details of their relationship to the BMP.

2 SITE DESCRIPTION

2.1 Location

Kings Forest is located on the far north coast of NSW in the Tweed local government area (LGA) approximately 20 km south of the Queensland/NSW border, 5 km north-west of the village of Bogangar and 4 km south-west of Kingscliff (**FIGURE 1**).

2.2 Site Description

The Kings Forest site is comprised of fourteen (14) land parcels with a total area of 846 hectares:

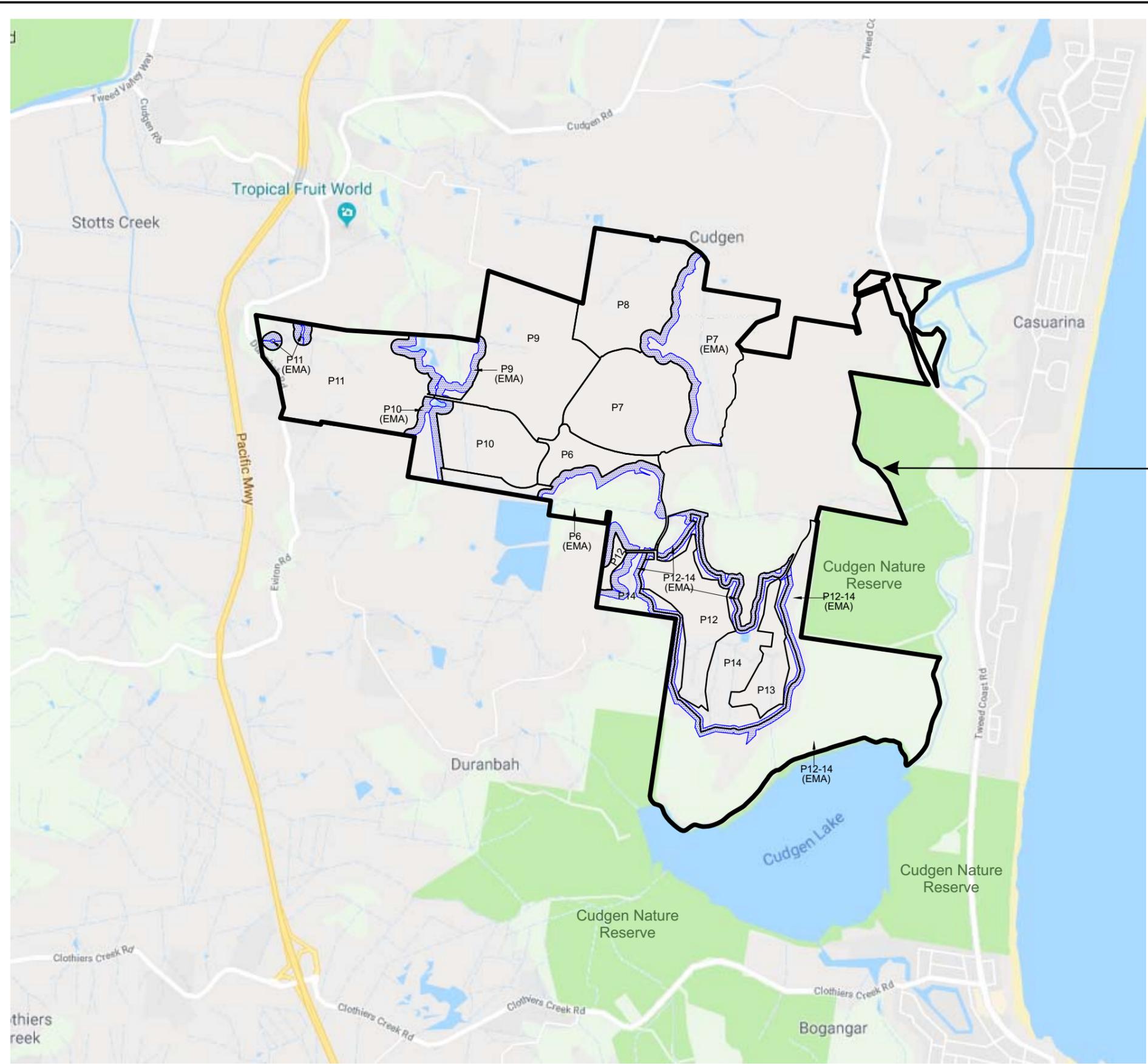
- Lot 76, 272, 323 and 326 in DP 755701;
- Lot 6 in DP 875446;
- Lot 2 in DP 819015;
- Lot 1 in DP 706497;
- Lot 40 in DP 7482;
- Lot 37A in DP 13727;
- Lot 38A in DP 13727;
- Lot 38B in DP 13727;
- Lot 1 in DP 129737;
- Lot 1 in DP 781633; and
- Lot 7 in DP 875447.

Project 28 Pty Ltd owns and manages the site which is currently used for cattle grazing and silviculture. The site consists of a mosaic of natural, partially natural, modified and regenerating plant communities including Heathland, Swamp sclerophyll (Paperbark) forest, Woodland, Pine plantation, Freshwater wetland and Pasture. The majority of the site is maintained as pasture for cattle grazing.

The Kings Forest site abuts agricultural and rural lands to the north, west and south west. Cudgen Nature Reserve (including Cudgen Lake and Cudgen Creek) abuts the site boundaries to the south and east. There are a small number of residential properties along Tweed Coast Road to the north of the site.

2.3 Conservation Reserves/Ecologically Significant Areas in the Locality

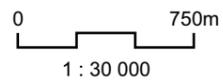
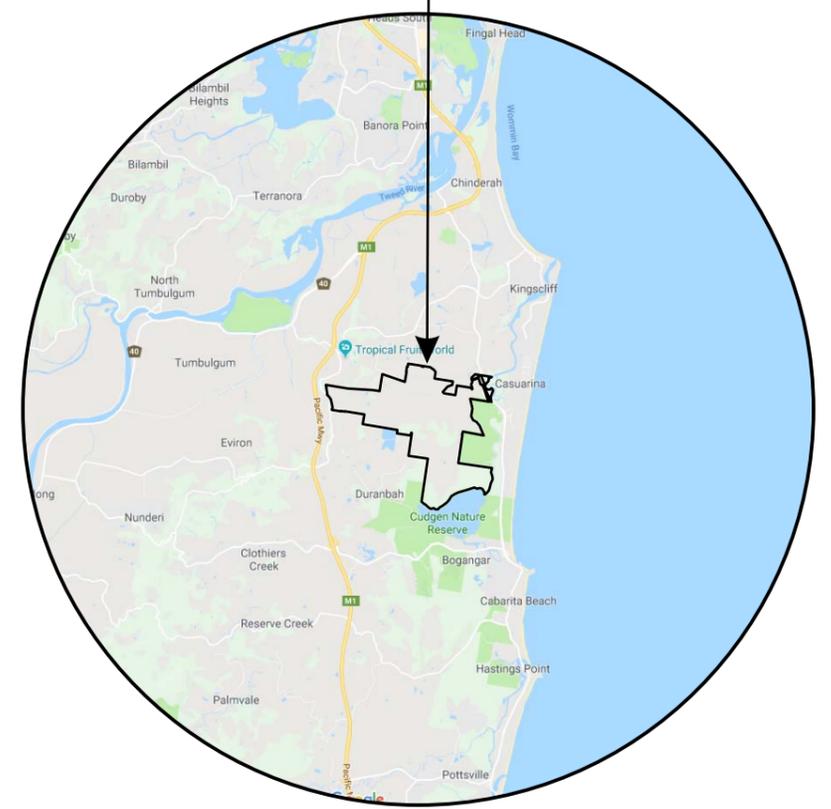
The Cudgen Nature Reserve adjoins the southern and (in part) eastern boundaries of the subject site (**FIGURE 2**). Stotts Island Nature Reserve is situated approximately 2 km to the north-west of the site.



LEGEND

-  Precincts 6 - 14 Ecological Buffers
-  Kings Forest Boundary

SUBJECT SITE



SOURCE: Google Maps
 SCALE: 1 : 30 000 @ A3
JWA PTY LTD
Ecological Consultants

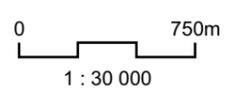
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 Buffer Management Plan
 Precincts 6 - 14 Kings Forest
 Melaleuca Drive, Duranbah, NSW
 Shire of Tweed

FIGURE 1
 PREPARED: BW
 DATE: 16 November 2020
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TITLE
LOCALITY PLAN



- LEGEND**
- Cudgen Nature Reserve
 - Precincts 6 - 14 Ecological Buffers
 - Kings Forest Boundary

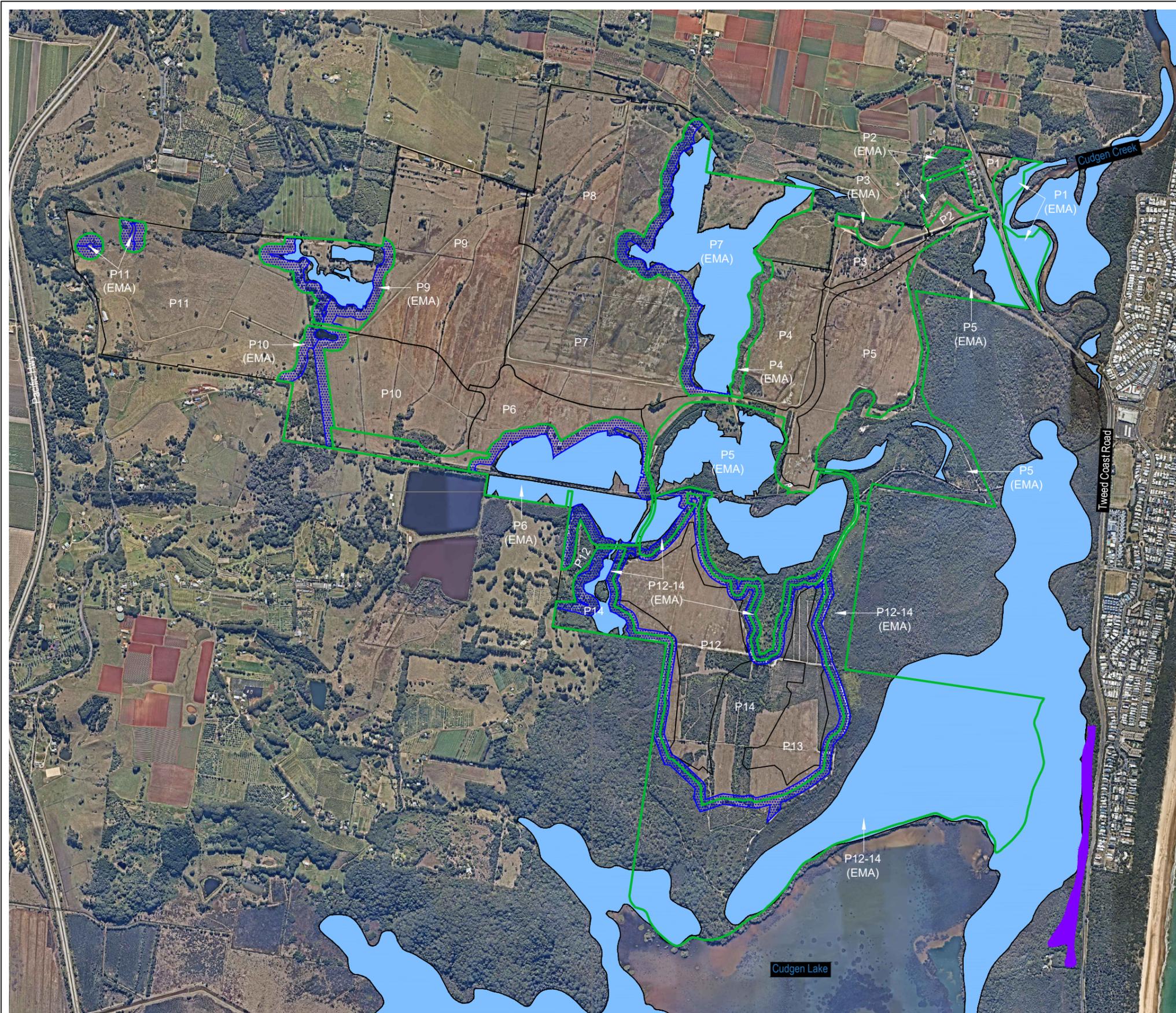


| | | | |
|--|---|--|--|
| <p>SOURCE: NSW DPI Cadastre Google Earth Apr 2017 Aerial SCALE: 1 : 30 000 @ A3</p> <p style="text-align: center;">JWA PTY LTD Ecological Consultants</p> | <p>CLIENT Project 28 Pty Ltd PROJECT Buffer Management Plan Precincts 6 - 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed</p> | <p style="text-align: center;">FIGURE 2</p> <p>PREPARED: BW DATE: 16 November 2020 FILE: N97017_Cudgen NR.cdr</p> | <p>TITLE</p> <p style="text-align: center;">CUDGEN NATURE RESERVE</p> |
|--|---|--|--|

Several Freshwater wetland and Littoral Rainforest areas protected under the (superseded) State Environmental Planning Policy (SEPP) 14 (Coastal Wetlands) and SEPP26 (Littoral Rainforests) exist within and near the site (**FIGURE 3**). These SEPP's have been superseded by State Environmental Planning Policy (SEPP) Coastal Management (2018). Whilst there are areas of discrepancy between the superseded and current SEPP wetland mapping on site, the wetlands generally occur in areas zoned for Environmental Protection on the NSW Planning SEPP Major Development 2005 - Kings Forest land zoning map (**FIGURE 4**). As all relevant approvals were granted prior to the gazettal of the Coastal Management SEPP reference to this mapping has not been shown to avoid confusion.

2.4 Land Use Zones

Land use zones over the Kings Forest development site are identified on the NSW Planning SEPP Major Development 2005 - Kings Forest land zoning map (**FIGURE 4**). SEPP 14 wetland areas, as well as a number of smaller wetland and Littoral rainforest parcels have been designated Environmental Protection (Wetlands and Littoral Rainforests) (7a) zones. Substantial buffer zones occur wherever the 2(c) lands abut neighbouring agricultural land (150 metres) and Environmental Protection zones (50 metre). Lands in the far south of the property are subject to clause 50b of the Tweed LEP, committing them to conservation. Apart from other smaller areas of Environmental Protection (Habitat) (7I), the remainder of the property is zoned Urban Expansion (2c).



LEGEND

- SEPP 14 Coastal Wetlands (#1)
- SEPP 26 Littoral Rainforest (#1)
- Precincts 6 - 14 Ecological Buffers
- Environmental Management Area (EMA) Boundary (#2)
- Precinct Boundary
- Kings Forest Boundary

Note 1:

These SEPP's have been superseded by State Environmental Planning Policy (SEPP) Coastal Management (2018). As all relevant approvals were granted prior to the gazettal of the Coastal Management SEPP, reference to the revised mapping has not been shown to avoid confusion.

Note 2:

To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).



SOURCE: Landpartners - SEPP14 Wetlands (Amendment 15) & SEPP26 Littoral Rainforest; Near Map 08/08/18 Aerial

SCALE: 1 : 20 000 @ A3

JWA PTY LTD
Ecological Consultants

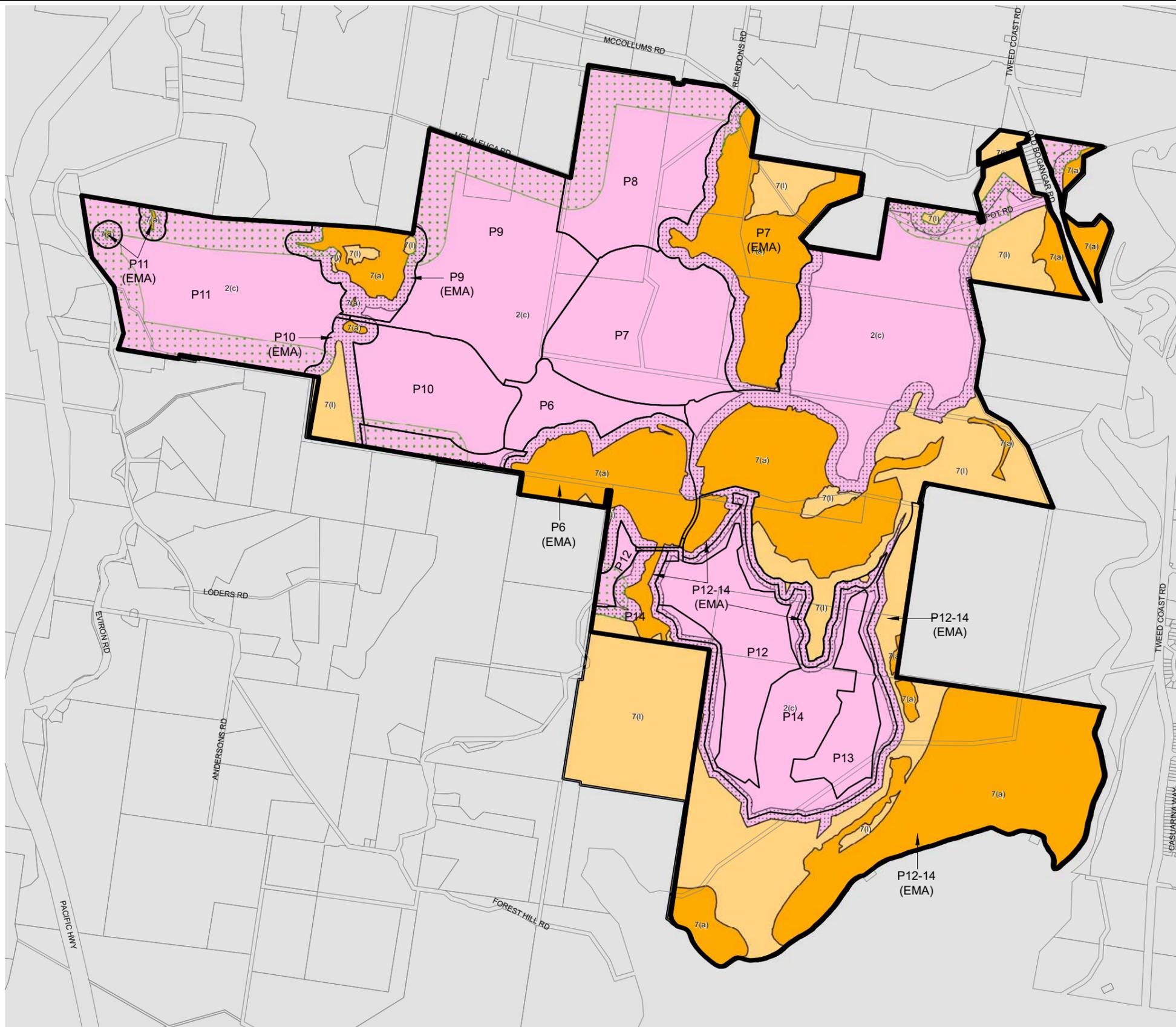
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Buffer Management Plan
Precincts 6- 14 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 3

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DATE: 17 November 2020
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TITLE
SEPP No. 14
COASTAL WETLANDS
& SEPP No. 26
LITTORAL RAINFOREST



LEGEND

□ Kings Forest Boundary

ZONING

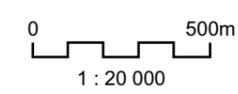
2(c) Urban Expansion

7(a) Environmental Protection (Wetlands & Littoral Rainforests)

7(l) Environmental Protection (Habitat)

••••• Agricultural Buffer (150m)

••••• Ecological Buffer (50m)



| | | | |
|---|--|---|-----------------------------|
| SOURCE: NSW Planning SEPP (Major Development) 2005 - Kings Forest Land Zoning Map (Ref: SEPP_MD_KIF_LZN_001_20100201) SCALE: 1 : 20 000 @ A3 JWA PTY LTD Ecological Consultants | CLIENT Project 28 Pty Ltd PROJECT Buffer Management Plan Precincts 6 - 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed | FIGURE 4 | TITLE ZONING PLAN |
| | | PREPARED: BW DATE: 16 November 2020 FILE: N97017_Zoning.cdr | |

3 PROPOSED DEVELOPMENT

3.1 Background

The Kings Forest project is a master planned residential community. The total area of the proposed development is 422.32 ha and will include the following in accordance with the Concept Plan Approval (as modified Mods 1 to 5):

- Residential development for approximately 4,500 dwellings;
- Town centre and neighbourhood centre for future retail and commercial uses;
- Community and education facilities;
- Employment land;
- 18 hole Golf Course;
- Open space;
- Wildlife corridors;
- Protection and rehabilitation of environmentally sensitive land;
- Utility services infrastructure;
- Water management areas and lake; and
- Roads and pedestrian and bicycle paths.

The proposed development comprises a total of fourteen (14) separate precincts (**FIGURE 5**) and development of the site will be completed on a precinct-by-precinct basis.

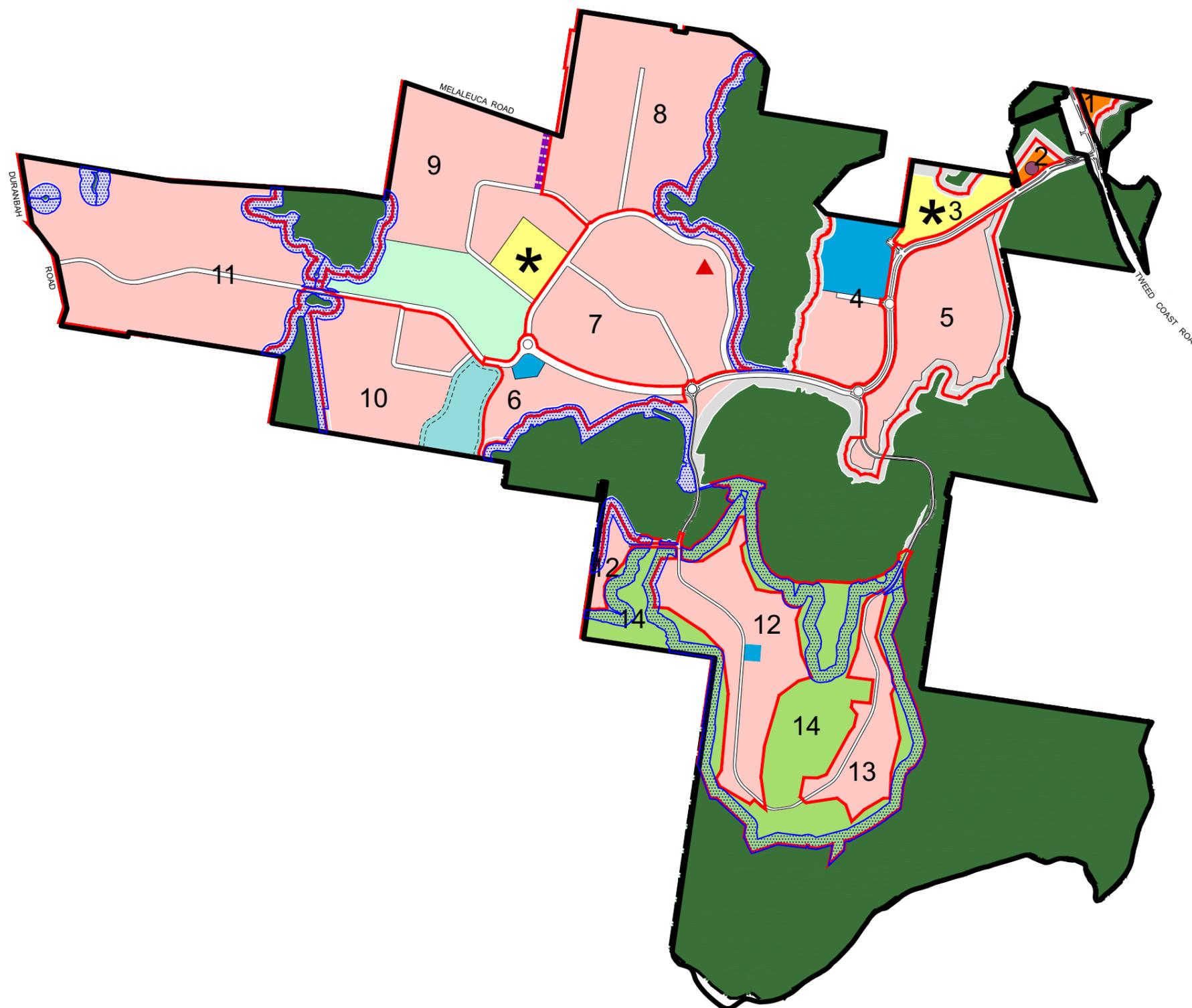
Retained vegetation and habitat areas across the site generally occur within Environmental Protection Zones (EPZs) and associated buffers. To assist in identifying the staging of rehabilitation and management actions, these EPZ and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs). Works within EMAs will be completed in accordance with the staging of the associated Precinct.

3.2 Ecological Buffers

The ecological buffers associated with the Precincts 6 - 14 are the subject of this BMP. Precincts 6 - 14 occur in the western and southern portions of the Kings Forest development site.

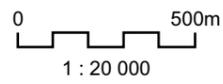
The location and extent of ecological buffers was resolved by SEPP (Major Projects) 2005 (Amendment No 10). Provision was made for 50 m ecological buffers between the Urban Expansion zones and the 7a and 7l lands, and other ecologically significant areas. The 50 m ecological buffer zones are comprised of a 20 m Inner Protection Zone (IPZ) (adjacent to development) and a 30 m Outer Protection Zone (OPZ).

TABLE 1 provides the details of ecological buffers associated with each relevant Precinct/EMA.



- LEGEND**
- Precincts 6 - 14 Ecological Buffers
 - Precinct Boundary
 - Kings Forest Boundary
- PRECINCT PLAN**
- Town Centre / Neighbourhood Centre
 - Residential
 - Community Facilities / Education
 - Employment Land
 - Structured Open Space (Active)
(Passive open space to council standards, location subject to urban design)
 - Environmental Protection Area
 - 50m Ecological Buffer
(Includes APZs & roads where approved)
 - State School Site
 - Proposed Zone Substation
(Subject to Country Energy final approval)
 - Potential Affordable Housing Location
 - Potential Road Connection to Melaleuca Road
 - Private Open Space
 - Golf Course Area
(Encompassing ecological buffers where indicated)
 - Private Open Space including lake

IMPORTANT NOTE
 This plan was prepared as a preliminary concept plan for planning purposes only. As such all particulars, including lot design, areas and densities, are subject to detailed survey, site investigations and to the requirements of council and any other authority which may have requirements under any relevant legislation.
 This note is an integral part of this plan.



SOURCE: RPS Precinct Plan Rev B
 dated 05/12/13 (Ref: 113691-PSP-4b(PRECINCT PLAN).dwg)
 SCALE: 1 : 20 000 @ A3
JWA PTY LTD
 Ecological Consultants

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 PROJECT
 Buffer Management Plan
 Precincts 6 - 14 Kings Forest
 Melaleuca Drive, Durambah, NSW
 Shire of Tweed

FIGURE 5
 PREPARED: BW
 DATE: 16 November 2020
 FILE: N97017_Precinct Plan.cdr

TITLE
PRECINCT PLAN

TABLE 1
DETAILS OF BUFFERS ASSOCIATED WITH EACH RELEVANT PRECINCT/EMA

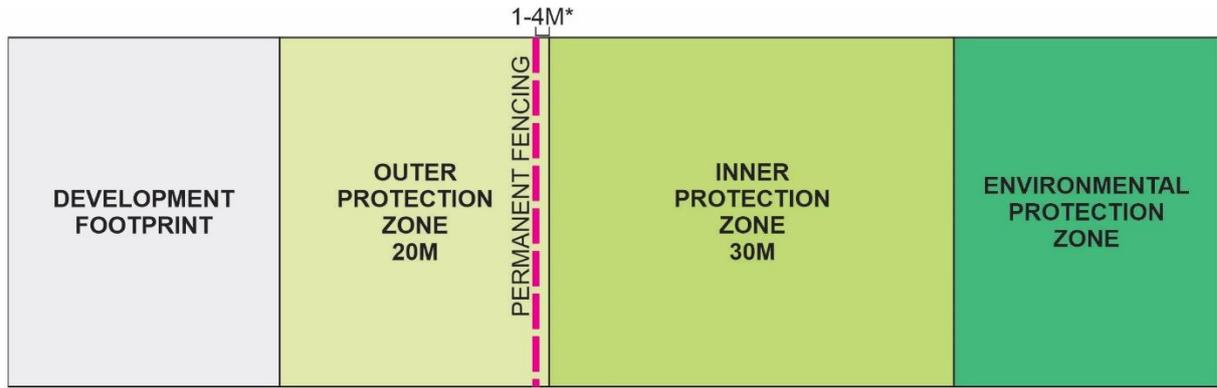
| Precinct/EMA | Buffer Area |
|---|-------------|
| Precinct 6 | 9.11 ha |
| Precinct 7 | 9.89 ha |
| Precinct 8* | - |
| Precinct 9 | 7.43 ha |
| Precinct 10 | 5.08 ha |
| Precinct 11 | 2.88 ha |
| Precinct 12^ | 31.05 ha |
| Precinct 13^ | |
| Precinct 14^ | |
| * the 50 m ecological buffer to the east of Precinct 8 is included in an EMA associated with Precinct 7 | |
| ^ The 50 m ecological buffers to Precincts 12 & 13 are generally incorporated into the Golf Course (i.e. Precinct 14) | |

3.3 Precinct Descriptions

3.3.1 Precinct 6

Precinct 6 occurs in the central portion of the Kings Forest site at the western end of the proposed Kings Forest Parkway. A small area in the north of Precinct 6 is proposed to be developed as a Town/Neighbourhood Centre whilst the remainder of the precinct is proposed to be developed as a residential precinct. An EPZ and associated 50m buffer zone occur to the south of Precinct 6 (collectively referred to as the Precinct 6 EMA) in which no development works are proposed. An indicative cross-section of the Precinct 6 ecological buffer is provided in **PLATE 1**. Works within the Precinct 6 ecological buffer will include:

- Protection and maintenance of retained vegetation within the IPZ and OPZ in accordance with this BMP and the following documents where applicable:
 - Kings Forest KPoM (JWA 2019) - Section 7.5;
 - Kings Forest WSFMP (JWA 2020a) - Section 7.7;
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.7; and
- Regeneration/revegetation works (including compensatory koala and WSF habitat creation and regeneration/revegetation of heath communities) within the IPZ and OPZ in accordance with this BMP and the following documents where applicable:
 - Kings Forest KPoM (JWA 2019) - Section 7.6;
 - Kings Forest WSFMP (JWA 2020a) - Section 7.8; and
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.9.



*Note: Minimum setback for fence location shown. Final location of fence subject to locations of retained and compensatory WSF habitat (refer to WSFMP (JWA 2020b), access and bushfire considerations).

PLATE 1 - INDICATIVE BUFFER ARRANGEMENT FOR PRECINCTS 6 - 11

3.3.2 Precinct 7

Precinct 7 is located in the central portion of the Kings Forest site, to the west of the northern SEPP wetland. Precinct 7 is proposed to be developed as a residential precinct. An EPZ and associated 50 m buffer zone occur to the east of Precinct 7 (containing the northern SEPP wetland and collectively referred to as the Precinct 7 EMA) within in which no development works are proposed. An indicative cross-section of the Precinct 7 ecological buffer is provided in **PLATE 1**. Works within the Precinct 7 ecological buffer will include:

- Protection and maintenance of retained vegetation within the IPZ and OPZ in accordance with this BMP and the following documents where applicable:
 - Kings Forest KPoM (JWA 2019) - Section 7.5;
 - Kings Forest WSFMP (JWA 2020a) - Section 7.7;
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.7; and
- Regeneration/revegetation works (including compensatory koala and WSF habitat creation and regeneration/revegetation of heath communities) within the IPZ and OPZ in accordance with this BMP and the following documents where appropriate:
 - Kings Forest KPoM (JWA 2019) - Section 7.6;
 - Kings Forest WSFMP (JWA 2020a) - Section 7.8; and
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.9.

3.3.3 Precinct 8

Precinct 8 is located in the central northern portion of the Kings Forest site, to the west of the northern SEPP wetlands. Precinct 8 is proposed to be developed as a residential precinct. A large EPZ and associated 50m buffer occurs to the east of Precinct 8 in which no development works are proposed.

It is noted that the 50m ecological buffer to the east of Precinct 8 is included in an EMA associated with Precinct 7 in accordance with the approved Kings Forest KPoM (JWA 2019). Rehabilitation and associated habitat management actions within the IPZ and OPZ of this

ecological buffer are discussed for Precinct 7 above. An indicative cross-section of the Precinct 8 ecological buffer is provided in **PLATE 1**.

3.3.4 Precinct 9

Precinct 9 occurs in the north-western portion of the Kings Forest site. The northern portion of Precinct 9 is proposed to be developed as a residential precinct while the southern portion is proposed to be developed as a Community Facility/Education precinct and Structure Open Space (Active) area. An EPZ and associated 50 m buffer zone occur to the west of Precinct 9 (collectively referred to as the Precinct 9 EMA) in which no development works are proposed. An indicative cross-section of the Precinct 9 ecological buffer is provided in **PLATE 1**. Works within the Precinct 9 ecological buffer will include:

- Protection and maintenance of retained vegetation within the IPZ and OPZ in accordance with this BMP and the following documents where applicable:
 - Kings Forest KPoM (JWA 2019) - Section 7.5;
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.7; and
- Regeneration/revegetation works (including compensatory koala habitat creation and regeneration/revegetation of heath communities) within the IPZ and OPZ in accordance with this BMP and the following documents where appropriate:
 - Kings Forest KPoM (JWA 2019) - Section 7.6;
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.9.

3.3.5 Precinct 10

Precinct 10 is located in the western portion of the Kings Forest site. The western portion of Precinct 10 is proposed to be developed as a residential precinct whilst the eastern portion will contain a Private Open Space area including a lake. An EPZ and associated 50 m buffer zone occur to the west of Precinct 10 (collectively referred to as the Precinct 10 EMA) in which no development works are proposed. An indicative cross-section of the Precinct 10 ecological buffer is provided in **PLATE 1**. Works within the Precinct 10 ecological buffer will include:

- Protection and maintenance of retained vegetation within the IPZ and OPZ in accordance with this BMP and the following documents where applicable:
 - Kings Forest KPoM (JWA 2019) - Section 7.5;
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.7; and
- Regeneration/revegetation works (including compensatory koala habitat creation and regeneration/revegetation of heath communities) within the IPZ and OPZ in accordance with this BMP and the following documents where appropriate:
 - Kings Forest KPoM (JWA 2019) - Section 7.6; and
 - Precincts 6 - 11 VWMP (JWA 2020b) - Section 6.9.

It should be noted that an area to the immediate south of Precinct 10 has been allocated to the proposed East-West Corridor which will link the Precincts 6 and 10 EPZs and bolster

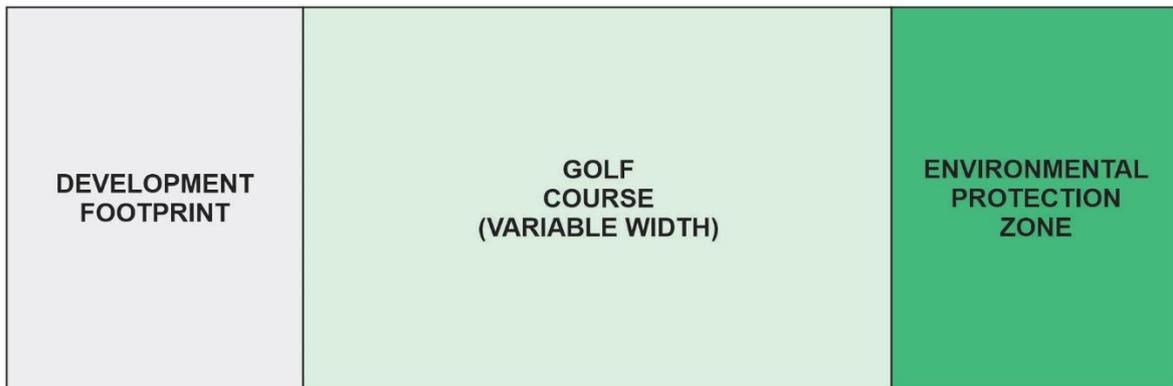
movement/dispersal corridors in this portion of the Kings Forest site. The proposed East-West Corridor is designated as a koala compensatory habitat area. This area is outside the scope of this BMP and is covered separately as part of the Precincts 1 - 5 BMP (JWA 2020h).

3.3.6 Precinct 11

Precinct 11 occurs in the far west of the Kings Forest site and is proposed to be developed as a residential precinct. Two (2) small EPZs and associated 50 m buffer zones occur in the north west of the precinct (collectively referred to as the Precinct 11 EMAs) in which no development works are proposed. An indicative cross-section of the Precinct 11 ecological buffer is provided in **PLATE 1**. Works within the Precinct 10 ecological buffers will include wetland regeneration/revegetation works within the IPZ and OPZ in accordance with this BMP and Section 6.9 of the Precincts 6 - 11 VWMP (JWA 2020b).

3.3.7 Precincts 12 - 14

Precincts 12 - 14 occur in the southern portion of the Kings Forest site. Precincts 12 and 13 and are proposed to be developed as residential precincts. Precinct 14 contains the proposed Golf Course and will also act as an ecological buffer (minimum 50 m in width) between the residential precincts and retained and compensatory habitat areas. An indicative cross-section of the Precinct 12 - 14 ecological buffer is provided in **PLATE 2**.



*Note: Location of fencing to be determined at detailed design stage.

PLATE 2 - INDICATIVE BUFFER ARRANGEMENT FOR PRECINCTS 12 - 14

3.4 Development Staging

The Kings Forest project will likely proceed over many years. The length of time will be dependent, to a certain degree, on the demand for land over time. The development of the site will be completed on a precinct-by-precinct basis in accordance with approved Precinct Plan (**FIGURE 5**), however this may be subject change. In relation to Precincts 6 - 14 (i.e. the subject of this BMP), indicative staging is shown in **TABLE 2**.

TABLE 2
INDICATIVE DEVELOPMENT STAGING

| Development Stage | Precinct |
|--------------------------|-------------------|
| Stage 3 | Precinct 6 |
| Stage 4 | Precinct 7 |
| Stage 5 | Precinct 8 |
| Stage 6 | Precinct 9 |
| Stage 7 | Precinct 10 |
| Stage 8 | Precinct 11 |
| Stage 9 | Precincts 12 - 14 |

4 EXISTING SITE VALUES

4.1 Introduction

The following sections detail the existing ecological values contained within Precincts 6 - 14 and associated EMAs. An aerial photograph of these areas is shown in **FIGURE 6**.

4.2 Vegetation Description

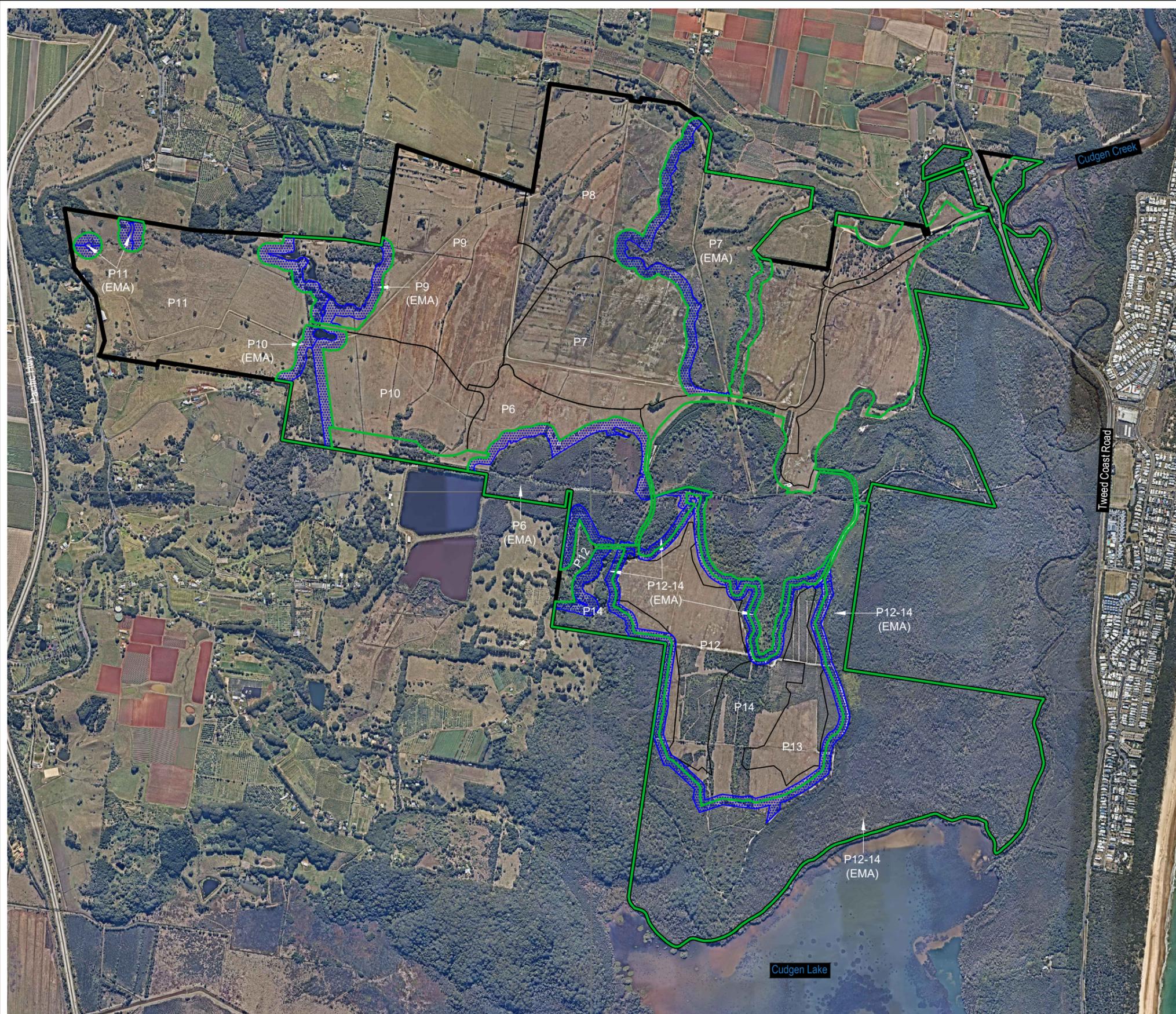
The Kings Forest site has a decades-long history of various land uses and land management practices, including pine plantation, sand mining, pasture improvement and turf production, dairy farming, small cropping and sugar cane production. It is presently used generally for cattle grazing. Over many years the land has been extensively cleared for these activities. There remain, however, large areas of undisturbed vegetation in the eastern and south-eastern portions of the property and within wetland areas throughout. These areas of the site are generally zoned for Environment Protection.

Vegetation at the subject site has been described in varying degrees of detail (Warren 2000, Kingston *et al.* 2004, Callaghan *et al.* 2005). The most comprehensive vegetation mapping over the Kings Forest site was completed by the Australian Koala Foundation (Callaghan *et al.* 2005). However, harvesting of areas of pine plantation, continued infestation of native vegetation with slash pine (*Pinus elliotii*) wildings and areas of natural heath regeneration has occurred since the preparation of this map.

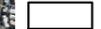
FIGURE 7 shows the vegetation communities occurring over Precincts 6 - 14 and associated EMAs (as at July 2019) and has been adapted from the Callaghan *et al.* (2005) mapping combined with detailed remapping/ ground-truthing surveys completed by JWA between 2010 - 2019. In total, six (6) broad vegetation types have been mapped within Precincts 6 - 14 and associated EMAs:

- Highly modified vegetation communities;
- Freshwater wetlands;
- Heathland and shrublands;
- Swamp sclerophyll floodplain forests;
- Dry to moist open forests; and
- Rainforest.

Vegetation community descriptions in this BMP, including proposed offset/compensatory habitat areas, are discussed in relation to their closest Plant Community Type (PCT) descriptions which were accessed via the Biodiversity and Conservation Division (BCD) (formerly OEH) of the Environment, Energy and Science Group in the NSW DPI&E database (i.e. the BioNet Vegetation Classification System). PCTs are classified based on vegetation types occurring within the Interim Biogeographic Regionalisation for Australia (IBRA) subregions, as developed by the Commonwealth government. The IBRA framework divides Australia landscapes into bioregions and subsequently subregions based on common features such as climate, geology, landform, and vegetation.

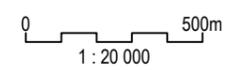


LEGEND

-  Precincts 6 - 14 Ecological Buffers
-  Environmental Management Area (EMA) Boundary (#)
-  Precinct Boundary
-  Kings Forest Boundary

Note:

To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).



SOURCE: Near Map 08/08/18 Aerial

SCALE: 1 : 20 000 @ A3

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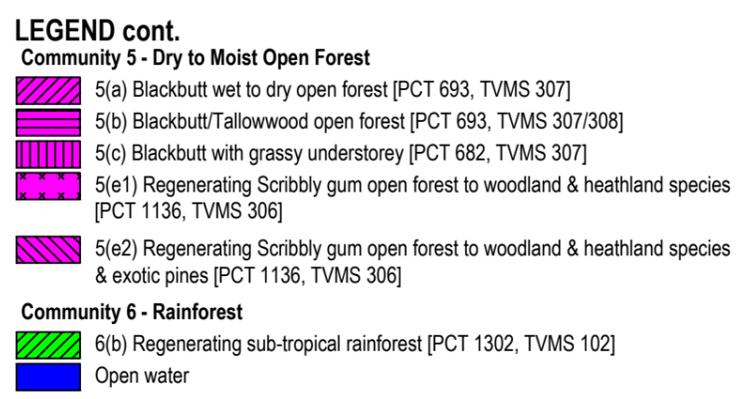
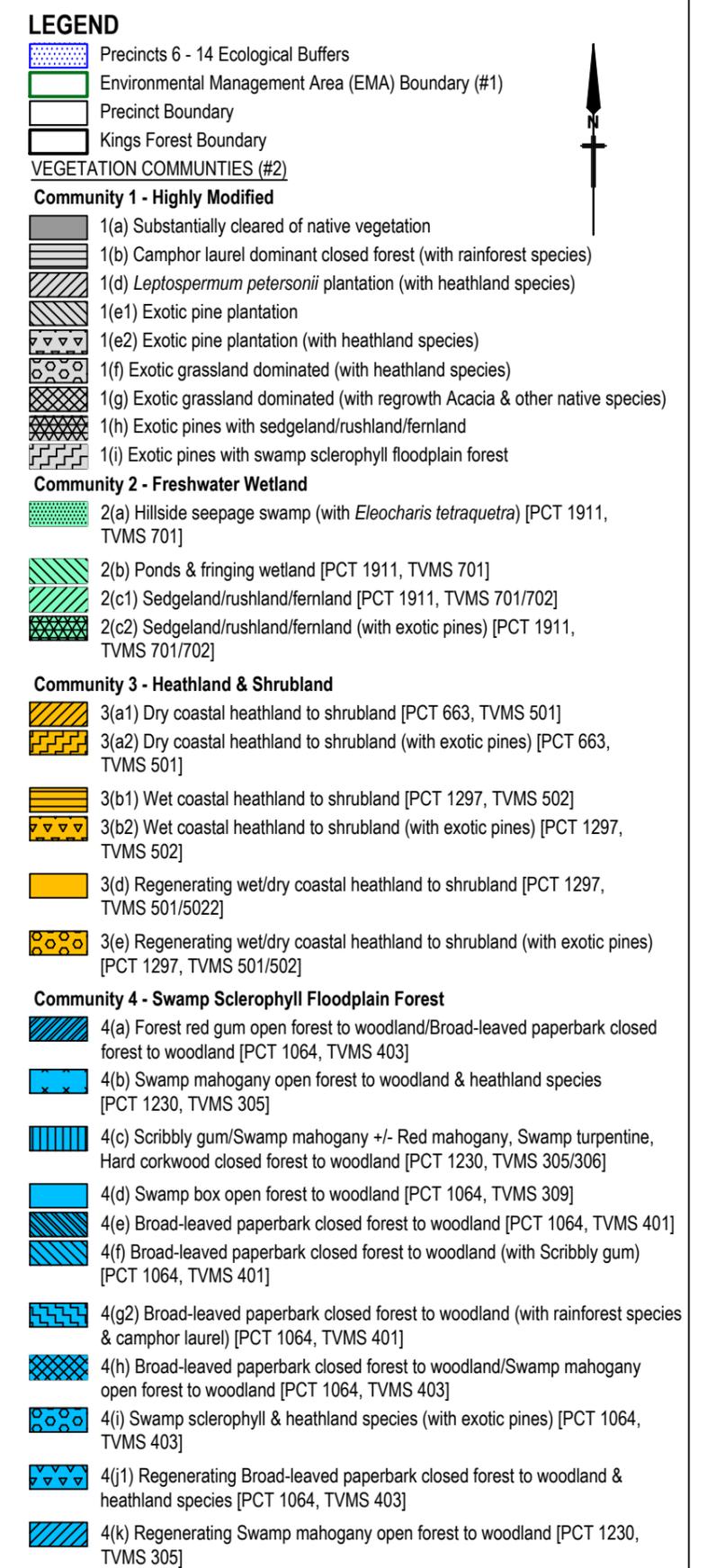
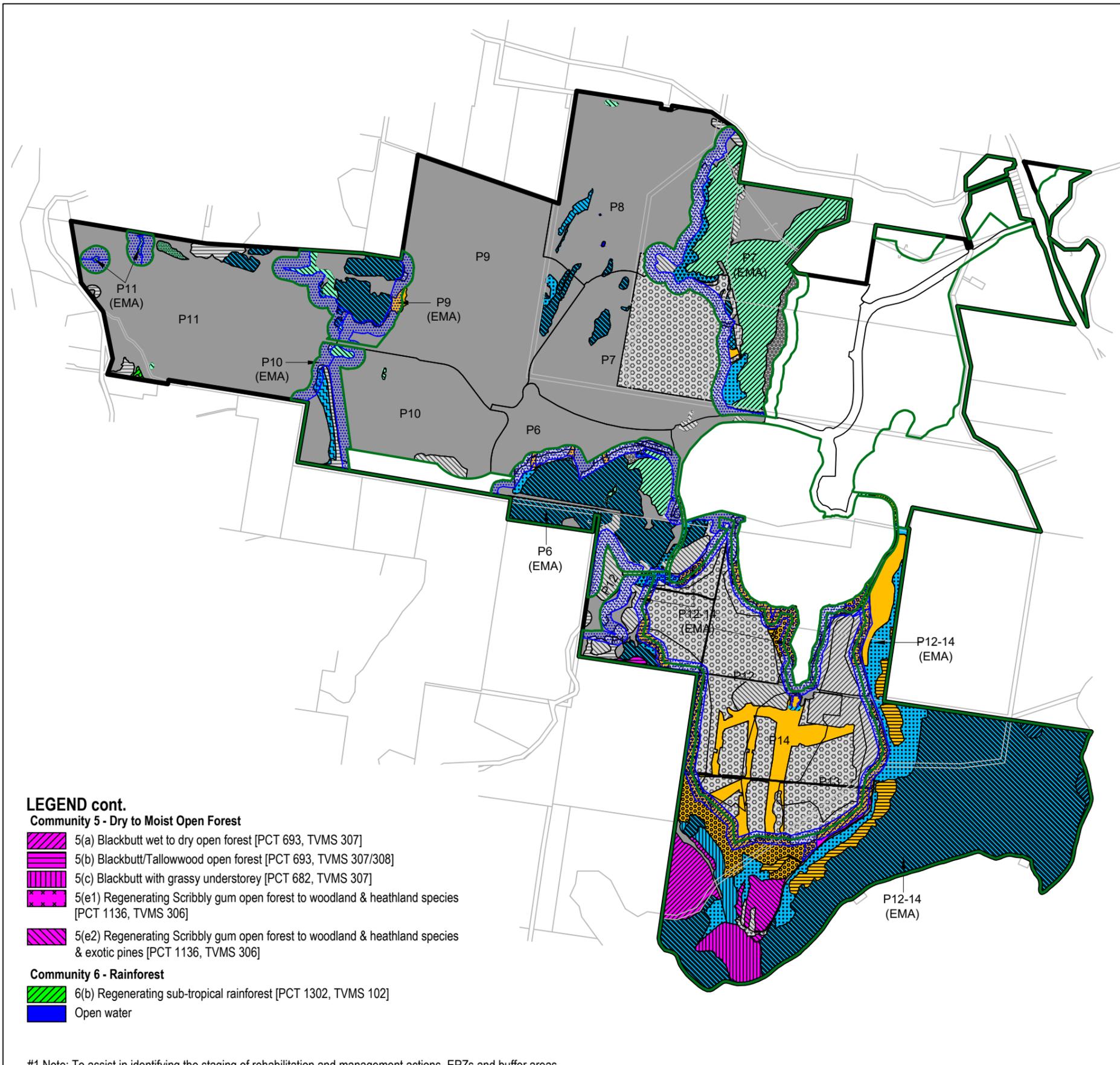
CLIENT
Project 28 Pty Ltd
PROJECT
Buffer Management Plan
Precincts 6- 14 Kings Forest
Melaleuca Drive, Durambah, NSW
Shire of Tweed

FIGURE 6

PREPARED: BW
DATE: 17 November 2020
FILE: N97017_BMP_20201116.dwg

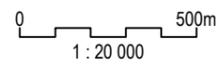
TITLE

**AERIAL
PHOTOGRAPH**



#1 Note: To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).

#2 Note: Vegetation mapping has been adapted from the Australian Koala Foundation (Callaghan *et al.* 2005) mapping combined with detailed re-mapping/ground-truthing surveys completed by JWA between 2010 - 2018.



| | | | |
|--|---|---|-------------------------------------|
| SOURCE: JWA Site Investigations 2018; Near Map 08/08/18 Aerial | CLIENT Project 28 Pty Ltd | FIGURE 7 | TITLE VEGETATION COMMUNITIES |
| SCALE: 1 : 20 000 @ A3 | PROJECT Buffer Management Plan Precincts 6- 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed | | |
| JWA PTY LTD Ecological Consultants | | PREPARED: BW DATE: 17 November 2020 FILE: N97017_BMP_20201116.dwg | |

It is noted however that PCT descriptions are still undergoing revision and many remain undescribed for the SEQ03 - Burringbar-Conondale Ranges IBRA subregion. Therefore, corresponding Tweed Vegetation Management Strategy 2004 (TVMS) codes have also been provided.

4.3 Endangered Ecological Communities

Two (2) Endangered Ecological Communities (EECs) as defined by the NSW *Biodiversity Conservation Act 2016* (BC Act) have been mapped within Precincts 6 - 14 EMAs (**FIGURE 8**):

- Freshwater wetlands on coastal floodplains of the NSW North Coast; and
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast.

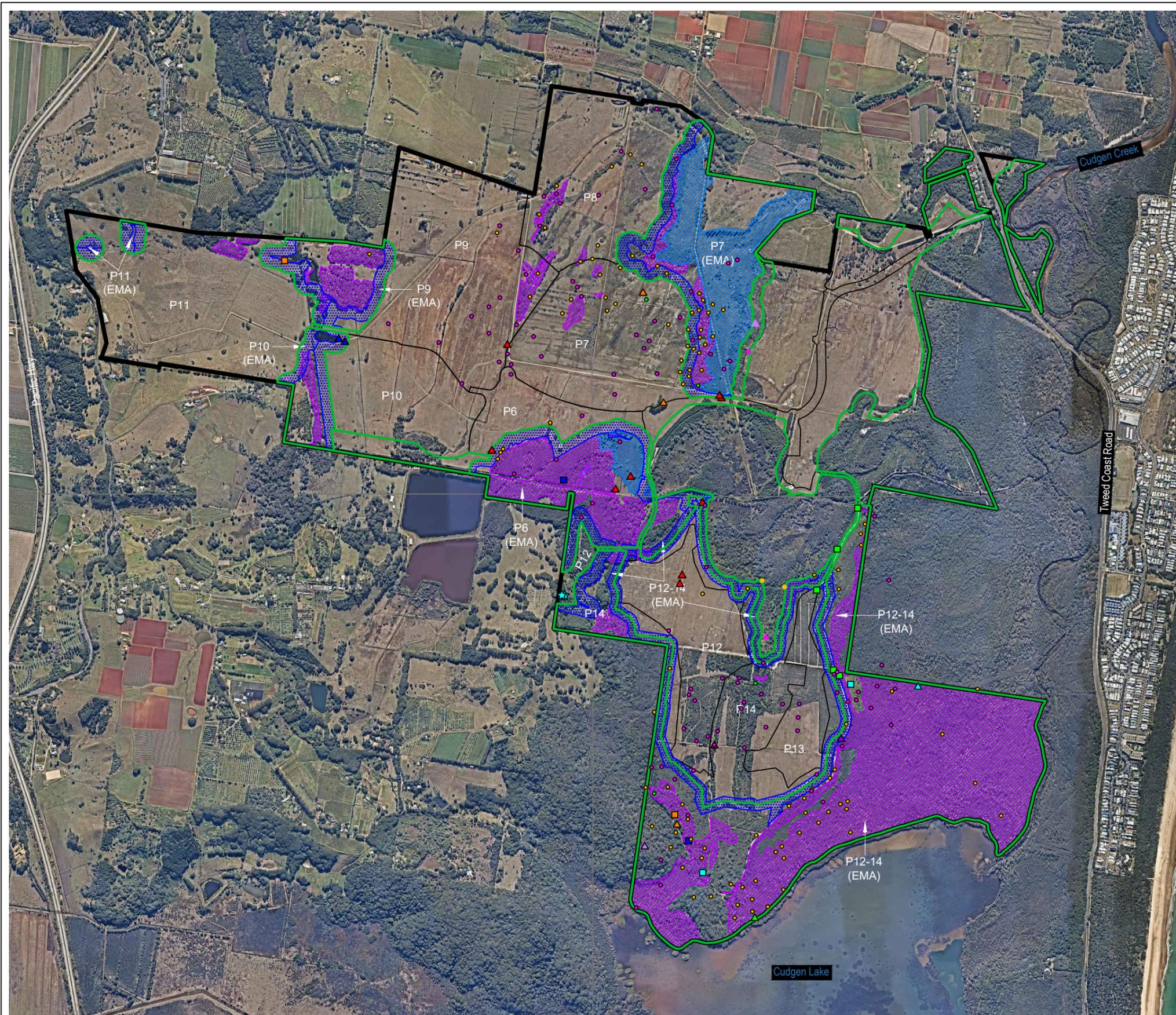
4.4 Threatened Flora and Fauna

A number of threatened flora and fauna species have been recorded within Precincts 6 - 14 and associated EMAs over the last 30 years. These threatened species are listed in **TABLE 3** and their locations shown in **FIGURE 8**. The conservation status of each species listed in **TABLE 3** is shown in accordance with the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the NSW *BC Act (2016)*.

TABLE 3
THREATENED SPECIES RECORDED WITHIN PRECINCTS 6 - 14 AND ASSOCIATED EMAS

| Scientific Name | Common Name | BC Act* | EPBC Act# |
|--|---------------------------------|---------|-----------|
| Threatened flora species | | | |
| <i>Grevillea hilliana</i> | White yiel yiel | - | E |
| Threatened fauna species | | | |
| <i>Ixobrychus flavicollis</i> | Black bittern | V | - |
| <i>Burhinus grallarius</i> | Bush stone-curlew | V | - |
| <i>Syconycteris australis</i> | Common blossom bat | V | - |
| <i>Pteropus poliocephalus</i> | Grey-headed flying fox** | V | V |
| <i>Planigale maculata</i> | Common planigale | V | - |
| <i>Phascolarctos cinereus</i> [^] | Koala | V | V |
| <i>Tyto novaehollandiae</i> | Masked owl | V | - |
| <i>Tyto longimembris</i> | Grass owl | V | - |
| <i>Calyptorhynchus lathami</i> | Glossy black cockatoo | V | - |
| <i>Ephippiorhynchus asiaticus</i> | Black-necked stork | V | - |
| <i>Amauronis moluccana</i> | Pale-vented bush hen | V | - |
| <i>Miniopterus australis</i> | Little bent-wing bat** | V | - |
| <i>Saccolaimus flaviventris</i> | Yellow-bellied sheathtail bat** | V | - |
| <i>Ptilinopus regina</i> | Rose-crowned fruit-dove** | V | - |
| <i>Crinia tinnula</i> | Wallum froglet | V | - |

| Scientific Name | Common Name | BC Act* | EPBC Act# |
|--|-----------------------------|---------|-----------|
| <i>Litoria olongburensis</i> | Wallum sedge frog | V | V |
| <i>Falsistrellus tasmaniensis</i> | Eastern false pipistrelle** | V | - |
| <i>Myotis macropus</i> | Southern myotis** | V | - |
| <p>* E1 - Endangered, E2 - Endangered Population, E4 - Critically Endangered, PE - Presumed Extinct as listed within schedules of the NSW BC Act (2016).</p> <p># E - Endangered and V - Vulnerable as listed within schedules of the Commonwealth EPBC Act (1999).</p> <p>** These species are highly mobile and were generally recorded foraging opportunistically over the site and are not included in FIGURE 8.</p> <p>^ The koala (combined population in Queensland, New South Wales and the Australian Capital Territory) is listed as a vulnerable species within schedules of the EPBC Act. The koala, between the Tweed and Brunswick Rivers east of the Pacific Highway, is listed as an endangered population within schedules of the NSW BC Act (2016).</p> | | | |



LEGEND

- Precincts 6 - 14 Ecological Buffers
- Environmental Management Area (EMA) Boundary (#)
- Precinct Boundary
- Kings Forest Boundary

THREATENED FLORA RECORDS

- White yiel yiel (*Grevillea hilliana*) - Endangered (EPBC Act 1999)

THREATENED FAUNA RECORDS

Birds

- Black bittern (*Ixobrychus flavicollis*) - Vulnerable (BC Act 2016)
- Black-necked stork (*Ephippiorhynchus asiaticus*) - Endangered (BC Act 2016)
- Bush stone-curlew (*Burhinus grallarius*) - Endangered (BC Act 2016)
- Glossy-black cockatoo (*Calyptorhynchus lathami*) - Vulnerable (BC Act 2016)
- Grass owl (*Tyto longimembris*) - Vulnerable (BC Act 2016)
- Masked owl (*Tyto novaehollandiae*) - Vulnerable (BC Act 2016)
- Pale-vented bush hen (*Amaurionis moluccana*) - Vulnerable (BC Act 2016)

Mammals

- Common blossom bat (*Syconycteris australis*) - Vulnerable (BC Act 2016)
- Common planigale (*Planigale maculate*) - Vulnerable (BC Act 2016)
- Grey-headed flying-fox (*Pteropus poliocephalus*) - Vulnerable (BC Act 2016 & EPBC Act 1999)
- Koala (*Phascolarctos cinereus*) - Vulnerable (BC Act 2016 & EPBC Act 1999)
- Yellow-bellied sheath-tail bat (*Saccolaimus flaviventris*) - Vulnerable (BC Act 2016)

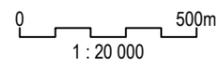
Amphibians

- Wallum froglet (*Crinia tinnula*) - Vulnerable (BC Act 2016)
- Wallum sedge frog (*Litoria olongburensis*) - Vulnerable (BC Act 2016 & EPBC Act 1999)

ENDANGERED ECOLOGICAL COMMUNITIES

- Freshwater wetlands on coastal floodplains of the NSW North Coast
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast

Note:
To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).



| | | | |
|---|---|-----------------|--|
| SOURCE: Landpartners - SEPP14 Wetlands (Amendment 15) & SEPP26 Littoral Rainforest; Near Map 08/08/18 Aerial SCALE: 1 : 20 000 @ A3 JWA PTY LTD Ecological Consultants | CLIENT Project 28 Pty Ltd PROJECT Buffer Management Plan Precincts 6- 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed | FIGURE 8 | TITLE THREATENED FLORA & FAUNA RECORDS & ENDANGERED ECOLOGICAL COMMUNITIES |
| | PREPARED: BW DATE: 17 November 2020 FILE: N97017_BMP_20201116.dwg | | |

5 MANAGEMENT ZONES

5.1 Identification of Management Zones

The Kings Forest site has been divided into nine (9) zones based on the management intent for each area. These management zones are:

- Zone 1 - Construction zone;
- Zone 2 - Retained koala habitat;
- Zone 3 - Retained wallum Sedge Frog (WSF) habitat;
- Zone 4 - Koala compensatory habitat;
- Zone 5 - WSF compensatory habitat;
- Zone 6 - Heath regeneration/revegetation;
- Zone 7 - Littoral rainforest regeneration/revegetation (Precinct 1);
- Zone 8 - Wetland regeneration; and
- Zone 9 - Residual lands e.g. tracks and easements.

FIGURE 9 shows the location of each of the management zones within Precincts 6 - 14 and how they relate to Precincts 6 - 14 ecological buffers. A brief description of each management zone and details of the proposed management intent is provided in the sections below. Specific management actions for each zone are addressed in **SECTION 6**. Monitoring and reporting requirements are detailed in **SECTION 7**.

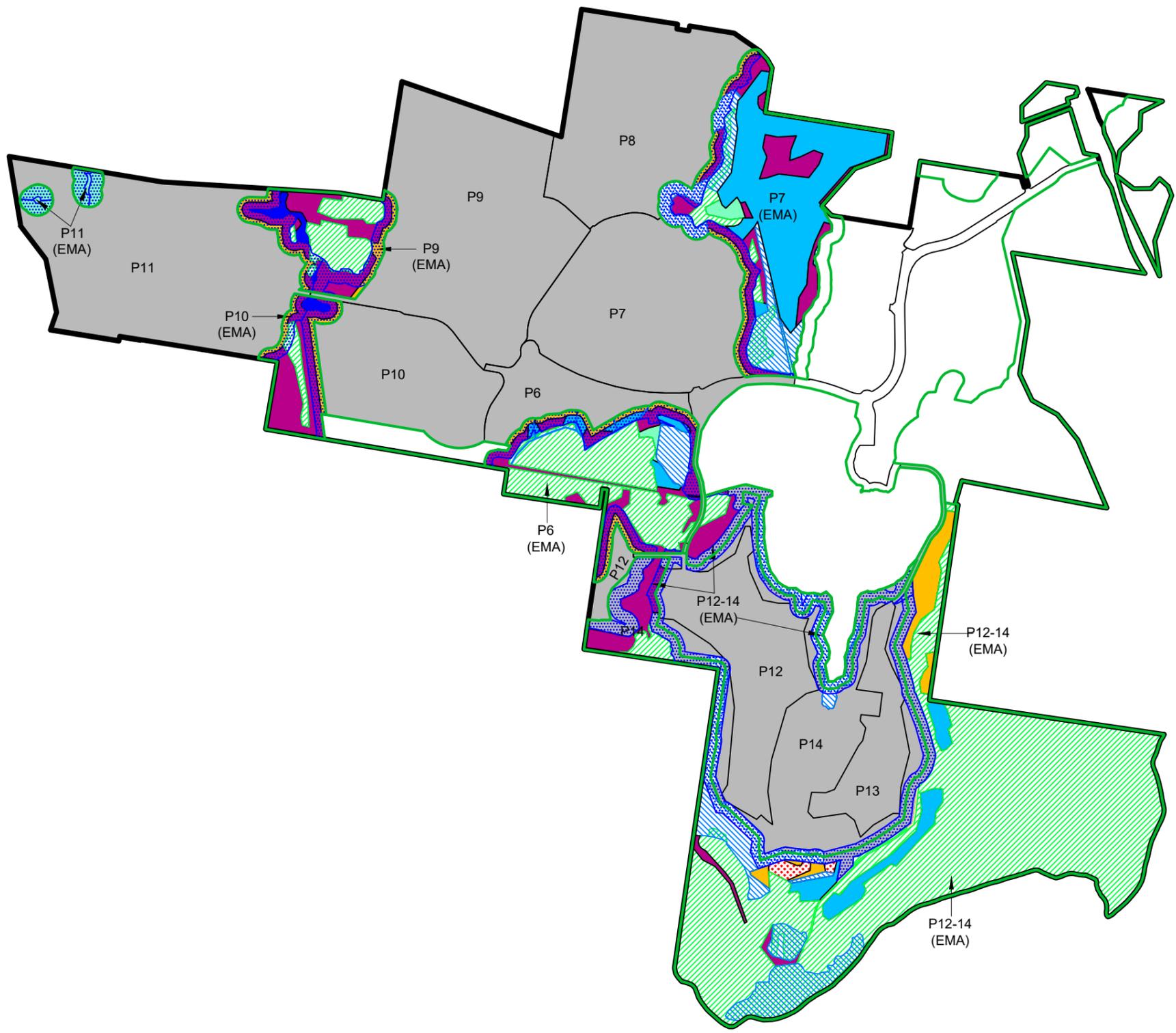
5.2 Zone 1 - Construction Zone

The construction zone consists of the development footprint of Precincts 6 - 14. The management intent of this zone is:

- To remove all existing vegetation within the Construction Zone (consistent with the conditions of approval) prior to bulk earthworks and disposal of cleared vegetation in an environmentally responsible manner;
- To undertake vegetation removal operations in a manner that provides maximum protection of the health and livelihood of native fauna;
- To limit human impacts on retained and compensatory habitat, threatened flora and fauna species or ecological communities; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

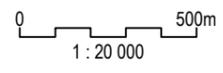
5.3 Zone 2 - Retained Koala Habitat

Management Zone 2 consists of existing Koala habitat to be retained within the Precincts 6 - 14 EMAs (including relevant ecological buffers) in accordance with the Kings Forest KPOM (JWA 2019) (**FIGURE 9**). The management intent of this zone is:



- LEGEND**
- Precincts 6 - 14 Ecological Buffers
 - Environmental Management Area (EMA) Boundary (#2)
 - Precinct Boundary
 - Kings Forest Boundary
 - Cobaki Scribbly Gum Offset Area
 - Waterbodies & Drainage Lines
- MANAGEMENT ZONES**
- Zone 1 - Construction zone
 - Zone 2 - Retained Koala habitat
 - Zone 3 - Retained WSF habitat
 - Zone 4 - Koala compensatory habitat
 - Zone 5 - WSF compensatory habitat
 - Zone 6 - Heath regeneration/revegetation
 - Zone 8 - Wetland Regeneration

Note:
To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).



| | | | |
|--|---|----------|---------------------------|
| SOURCE: JWA Site Investigations 2018, Near Map 08/08/18 Aerial | CLIENT Project 28 Pty Ltd | FIGURE 9 | TITLE MANAGEMENT ZONES |
| SCALE: 1 : 20 000 @ A3 | PROJECT Buffer Management Plan Precincts 6- 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed | | |
| JWA PTY LTD Ecological Consultants | | | |

- To protect, restore (through assisted natural regeneration) and provide for the ongoing maintenance of retained koala habitat;
- To limit human impacts on retained koala habitat; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

5.4 Zone 3 - Retained WSF Habitat

Management Zone 3 consists of existing WSF habitat to be retained within the Precincts 6 - 14 EMAs (including relevant ecological buffers) in accordance with the Kings Forest WSFMP (JWA 2020a) (FIGURE 9). The management intent of this zone is:

- To protect, restore (through assisted natural regeneration) and provide for ongoing maintenance of retained WSF habitat;
- To limit human impacts on retained WSF habitat;
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable; and
- To ensure the ongoing protection of water quality within retained WSF habitat.

5.5 Zone 4 - Koala Compensatory Habitat

Management Zone 4 consists of koala compensatory habitat areas within Precincts 6 - 14 EMAs (including relevant ecological buffers) in accordance with the Kings Forest KPOM (JWA 2019) (FIGURE 9). The management intent of this zone is:

- To create additional koala habitat through assisted regeneration and revegetation works;
- To limit human impacts on future koala habitat; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

5.6 Zone 5 - WSF Compensatory Habitat

Management Zone 5 consists of WSF compensatory habitat areas within Precincts 6 - 14 EMAs (including relevant ecological buffers) in accordance with the Kings Forest WSFMP (JWA 2020a) (FIGURE 9). The management intent of this zone is:

- To create additional WSF habitat through assisted regeneration and revegetation works;
- To limit human impacts on future WSF habitat; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

5.7 Zone 6 - Heath Regeneration

Management Zone 6 consists of heath regeneration areas within the Precincts 6 - 14 EMAs (including relevant ecological buffers) in accordance with the Precincts 6 - 11 VWMP (JWA 2020b) and Precincts 12 - 14 VWMP (JWA 2020c) (**FIGURE 9**). The management intent of this zone is:

- To protect and provide for ongoing maintenance of retained heath;
- To restore existing heath areas through assisted natural regeneration works;
- Revegetation utilising heath species and including re-use of topsoil (where appropriate) likely to contain a suitable seedbank. A specific methodology for the re-use of topsoil has been prepared for the Kings Forest site and is detailed in Section 6.6 of the Precinct 6 - 11 VWMP (JWA 2020b);
- To limit human impacts on retained and restored heath areas; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

5.8 Zone 7 - Littoral Rainforest Regeneration/Revegetation

Management Zone 7 consists of a littoral rainforest regeneration and revegetation area within the Precinct 1 EMAs (including relevant ecological buffers) in accordance with the Precincts 1 - 5 VWMP (JWA 2020i). The management intent of this zone is:

- To protect, restore (through assisted natural regeneration) and provide for ongoing maintenance of retained littoral rainforest;
- To create additional littoral rainforest areas through assisted regeneration and revegetation works;
- To limit human impacts on retained and future littoral rainforest areas; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

This Management Zone does not occur within the area subject to this BMP.

5.1 Zone 8 - Wetland Regeneration

Management Zone 8 consists of areas of wetland vegetation to be retained and restored within the Precinct 6 - 14 EMAs (including relevant ecological buffers) in accordance with the Precincts 6 - 11 VWMP (JWA 2020b) and Precincts 12 - 14 VWMP (JWA 2020c) (**FIGURE 9**). The management intent of this zone is:

- To protect, restore (through assisted natural regeneration) and provide for ongoing maintenance of retained wetlands;
- To limit human impacts on retained wetlands;
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable; and

- To ensure the ongoing protection of water quality within retained wetlands.

5.2 Zone 9 - Residual Lands

Management Zone 9 consists of residual lands within the Precinct 6 - 14 EMAs (including relevant ecological buffers) (FIGURE 9). These areas include fire trails throughout relevant EMAs. The management intent of this zone is:

- To maintain the areas in a serviceable condition for their intended purpose; and
- To remove all noxious and environmental weeds in a manner that is environmentally sustainable.

6 MANAGEMENT STRATEGIES

6.1 Introduction

The following sections detail the management strategies to be implemented within buffers as part of this BMP and include:

- Education of site personnel;
- Construction phase management measures;
- Pre-clearing fauna trapping and fauna spotter catcher;
- Exclusion fencing and other infrastructure;
- Re-use of topsoil;
- Management of retained vegetation;
- Weed management;
- Regeneration and revegetation;
- Transfer of land to public ownership;
- Fire management;
- Feral animal management;
- Bond for Environmental Restoration and Maintenance Works;
- Environmental and Community Liaison Officer(s); and
- Adaptive management.

These management strategies are apportioned to pre-construction, construction and operational phases of the development in the Implementation Schedules (**SECTION 8**). The applicable management zones for each specific management strategy is outlined in **TABLE 4**.

**TABLE 4
MANAGEMENT STRATEGIES**

| Section | Management Strategy | Applicable Management Zone/s |
|---------|---|------------------------------|
| 6.2 | Education of site personnel | 1 |
| 6.3 | Construction phase management measures | All |
| 6.4 | Pre-clearing fauna trapping and fauna spotter catcher | 1 |
| 6.5 | Exclusion fencing and other infrastructure | All |
| 6.6 | Re-use of topsoil | 1 and 6 |
| 6.7 | Management of retained vegetation | 2 - 8 |
| 6.8 | Weed management | All |
| 6.9 | Regeneration and revegetation | 2 - 8 |
| 6.10 | Transfer of land to public ownership | 2 - 8 |
| 6.11 | Fire management | All |
| 6.12 | Feral animal management | All |

| Section | Management Strategy | Applicable Management Zone/s |
|---------|--|------------------------------|
| 6.13 | Bond for environmental restoration and maintenance works | 2 - 8 |
| 6.14 | Environmental and Community Liaison Officer(s) | All |
| 6.15 | Adaptive management | All |

6.2 Education of Site Personnel

A key action to be implemented in accordance with the approved Kings Forest KPoM (JWA 2019, Section 7.2.1) is the development of a construction personnel induction program. The program shall be developed by the Proponent and in addition to koala related issues, should highlight the significance of threatened species and EEC's on the site and include a discussion of the management requirements for native vegetation and fauna, threatened species, feral animals and weeds.

The induction program is to be approved by a suitably qualified person prior to construction commencing and all construction personnel, and any other persons/contractors completing works within or adjacent to Precincts 6 - 14 need to complete the induction prior to starting work on the site.

The general induction of all construction personnel will aim to ensure the awareness of environmental-related issues and of responsibilities and procedures in relation thereto, covering such matters as:

- Areas of the site in which significant threatened species (including koalas and wallum sedge frogs) are most likely to be encountered;
- Areas of the site in which significant vegetation will be encountered;
- Threats to threatened species, vegetation and fauna associated with construction activities;
- Requirement to report any incidents, and actions required;
- Requirement to report *any* koala sightings or incidents on or near the site, and actions required;
- Prohibition on construction personnel bringing dogs onto the site;
- Requirement to report any evidence of feral animals, particularly dogs within buffers (sightings, footprints, droppings);
- Requirements of the Precincts 6 - 11 VWMP and TSMP, and the Precincts 12 - 14 VWMP and TSMP, particularly protocols for vegetation clearing and measures to protect native vegetation and fauna; and
- Requirements of the Kings Forest KPoM and WSFMP.

Specific detail in relation to education protocols will be located in the Kings Forest Stage 1 Construction and Environment Management Plan (CEMP).

6.3 Construction Phase Management Measures

The following vegetation protection strategies will be implemented during the construction phase of the development.

1. All areas to be cleared and retained will be identified on construction plans and in the field prior to the commencement of clearing. No clearing shall occur outside nominated clearing zones.
2. Within the EMA's the following activities will not be permitted:
 - Storage and mixing of materials;
 - Vehicle parking;
 - Liquid disposal;
 - Machinery repairs and/or refuelling;
 - Construction site office or shed;
 - Combustion of any material;
 - Stockpiling of soil, rubble and debris, cleared vegetation and site mulch;
 - Any filling or excavation including trench line, topsoil skimming and/or surface excavation (with the exception of the Precinct 5 outer 20 m zone which will be utilised for stormwater conveyance and ancillary structures such as fauna exclusion fencing); and
 - Unauthorised pesticide, herbicide or chemical applications.
3. All activities in an area adjacent to any retained tree or area are to be carried out in such a manner as to minimise any damage to trees. Trees to be removed will be felled in a direction away from trees to be retained. Where an individual tree to be retained may be impacted by the removal of another tree located at close proximity, the roots of the tree to be disturbed (and the tree to be retained, where required) are to be severed cleanly by a qualified Arborist. All roots are to be exposed first and then cut cleanly with a sharp saw or loppers.
4. Site works shall occur in the following sequence: cutting, shearing of felled vegetation and tub grinding. Where vegetation is cleared or removed, vegetation waste shall be mulched and retained on site for re-use in landscape works. Each area is to be mulched immediately upon completion of clearing and grubbing works. Any vegetation not suitable for mulching (i.e. fertile material from weed species) will not be mulched and will be transported to an appropriate facility.
5. Hollow logs shall not be mulched. If any hollow logs are located on site, they will be relocated to areas proposed for rehabilitation works.
6. Erosion and sedimentation control fencing is to be provided on site in accordance with the Erosion and Sediment Control Plan (G&S 2020c). This will prevent the movement of sediment into ecologically sensitive areas as well prevent the dispersal of weed seeds and vegetative material. All sediment fencing is in place prior to the commencement of construction. Prior to any site preparation operations, the Project Manager (or other suitably qualified personnel) shall undertake an inspection of all sediment fencing. The

erosion and sediment control measures are to be maintained throughout construction and are not to be dismantled until the works on site have been completed and disturbed areas have been covered by mulch to a minimum depth of 100 mm.

7. The applicant is responsible for the restoration of the site and any adjoining affected lands where sediment deposition has occurred as a consequence of construction activity associated with the development for the duration of works and until the site has been stabilised. Such restoration must be completed in a reasonable timeframe.
8. No soil disturbance is to occur within areas of retained vegetation. Soil disturbance within any areas to be landscaped shall be kept to a minimum to avoid weed recruitment. Areas to be landscaped shall be completed under supervision to avoid unnecessary soil disturbance.
9. Weed or potential weed species shall not be planted during landscaping operations. All nursery stock for landscaping purposes shall be weed, pest and disease free and certified as such by the supplier where feasible. The certificates are to be obtained prior to the commencement of any regeneration/revegetation works on site.
10. Clearing operations are to ensure that propagative material from cleared weeds does not spread across the site. The earthworks machinery must not introduce weed material to the site or spread such material throughout the site.
11. Weeds on the subject site will be managed using suitable control measures (i.e. chemical and/or physical control) in accordance with Section 6.8 of the Precincts 6 - 11 VWMP (JWA 2020b) and with Section 6.7 of the Precincts 12 - 14 VWMP (JWA 2020c).
12. Vehicles shall be restricted to a maximum speed of 50 kph and shall operate only in daylight hours for the duration of the construction phase. Where roads traverse the environmental protection areas vehicles shall be restricted to a maximum speed of 40 kph to minimise the risk of vehicle strike.

6.4 Pre-clearing Fauna Trapping and Fauna Spotter Catcher

6.4.1 Background

The following fauna management measures will generally only be applicable where native vegetation is proposed to be cleared from ecological buffers associated with the Precincts 6 - 14 EMAs (i.e. Precinct 14).

6.4.2 Pre-Clearing Fauna Trapping

The following fauna protection strategies will be implemented prior to commencement of any vegetation clearing works.

1. Prior to clearing operations, a suitably qualified ecologist will inspect the site for habitat trees or other habitat features. Habitat trees are defined as those trees that provide suitable refuge and nesting resources for arboreal and avian fauna. These include hollow-bearing trees and trees with fissures, termitaria, etc. Larger, old growth trees are also considered to be habitat trees as they are likely to provide greater amounts of foraging resources, cover, and a high number of potential tree hollows. Dead

(stag) trees are also regarded as important habitat trees as they provide roosting and nesting resources.

2. Any habitat trees or habitat features identified on site will be identified using flagging tape or similar method and shown on appropriately scaled plans. A pre-clearing report shall be prepared prior to clearing which will detail any relevant observations made on site including the presence of habitat trees.

Subsequent to the site inspection, and immediately prior to commencement of site clearing works, a pre-clearing trapping program will be completed within any areas of relatively intact vegetation to be cleared as follows.

1. The trapping program will target threatened species, in accordance with Section 6.4 of the Precincts 6 - 11 TSMP (JWA 2020d) and Section 6.4 of the Precincts 12 - 14 TSMP (JWA 2020e), as well as any other native ground-dwelling and arboreal species. The program will utilise the following trapping methodologies:
 - Pitfall traps/funnel traps;
 - Small (Type A) Elliott traps - installed both on the ground and on platforms on the trunks of trees;
 - Medium (Type B) Elliott traps - installed both on the ground and on platforms on the trunks of trees;
 - Cage traps; and
 - Active searches.
2. All traps will be baited with the universal mixture of peanut butter, honey and rolled oats. Each precinct will be trapped for a minimum of four (4) nights, and any animals captured will be relocated the same day of capture to suitable areas of retained habitat on or adjacent to the site.

6.4.3 Provision of Spotter Catcher and Pre-clearing inspections

The proponent will appoint a suitably qualified fauna spotter catcher to conduct pre-clearing site inspections and to be present during all clearing activities to rescue and relocate any native fauna species as necessary. The spotter catcher is also to direct the civil works contractor in relation to any fauna issues. The contractor will provide access to equipment that may be required by the spotter-catcher (e.g. cherry picker, chainsaw) as well as qualified operators.

The pre-clearance surveys for will commence no more than one (1) day prior to commencement of bulk earth moving activities within each precinct. Specific requirements for the appointment of spotter catchers and pre-clearing koala surveys are outlined in Section 7.2.2 of the Kings Forest KPOM (JWA 2019). Specific requirements for pre-clearing WSF surveys are outlined in Section 7.2.3 of the Kings Forest WSFMP (JWA 2020a).

6.4.4 Under Scrubbing

Immediately after each precinct has been trapped, and the extent of the trapped area clearly identified, the groundcover and midstorey will be cleared utilising a slasher with a mulching

head attachment or similar. Any hollow-bearing trees and/or other significant habitat features identified during the initial site inspection will be retained. All under scrubbing works will be completed with a suitably qualified fauna spotter/catcher in attendance.

6.4.5 Clearing Non-habitat Trees

Immediately after under scrubbing of each area is complete, non-habitat trees (i.e. trees other than those identified as habitat trees) will be cleared and stockpiled for mulching. Clearing of non-habitat trees will only occur where their removal will not impact on identified habitat trees (e.g. canopies do not interconnect with habitat trees). All clearing works will be completed with a suitably qualified fauna spotter/catcher in attendance.

6.4.6 Tree Hollow Inspection and Removal

After under scrubbing and clearing of non-habitat trees, the following tree hollow inspection and removal protocols will be implemented.

1. An elevated work platform or cherry-picker will be used in conjunction with a chainsaw operator and suitably qualified fauna spotter/catcher to inspect and remove tree hollows as necessary prior to habitat tree felling. This method involves the fauna spotter/catcher inspecting each of the potential habitat features (usually tree hollows, dreys and arboreal termite nests) to determine the presence of arboreal fauna. This process is detailed following the step by step basis below:
 - a. The fauna spotter/catcher (with arborist unless the fauna spotter/catcher is a qualified chainsaw operator) will inspect each visible tree hollow or potential habitat resource (i.e. ringtail possum drey) identified in each tree using the cherry-picker. This is usually carried out by simply looking into tree hollows with the assistance of a small torch, however, burrow and bore-scopes can also be useful for deep tree hollows.
 - b. If fauna is located within a tree hollow, a piece of towel or rag will be firmly placed in the entrance to prevent the wildlife from escaping as in most cases arboreal fauna become aware of the presence of the fauna spotter/catcher and may attempt to flee the nesting/denning tree hollow due to a perceived threat. If an occupied ringtail possum drey is encountered, the fauna spotter/catcher should quietly approach (i.e. avoid contacting other branches) the drey in the cherry-picker bucket and physically capture the possum by placing the entire drey in a catch bag or only the possum if it emerges from the drey. If arboreal fauna are captured, or able to be easily removed from tree hollows, they will be relocated to a suitable retained habitat area/s on or adjacent to the site the same day of capture.
 - c. Once the tree hollow entrance has been secured the arborist or fauna spotter/catcher will cut the entire hollow tree limb off below the cavity where the branch remains solid. In circumstances where a tree hollow continues into the main stem of the tree, a small window will be carefully cut into the tree hollow, allowing the fauna spotter/catcher to plug the tree hollow above and below the window, then the hollow tree limb removed and lowered to the ground in sections.

- d. When the fauna has been safely secured within its tree hollow, the entire limb can then be placed in the cherry-picker bucket or lowered to the ground using ropes depending on the size of the limb.
 - e. This limb will then be placed in a cool, quiet location until translocation to a suitable donor site the same day of capture, when at dusk the tree hollow entrance is re-opened to allow the fauna to emerge of its own accord.
 2. Once all tree hollows within the habitat trees have been inspected and cleared, the tree may be removed. All clearing works will be completed with a suitably qualified fauna spotter/catcher in attendance.
 3. Where possible, the actual felling of the habitat trees shall be conducted in a manner that will maximize the chances of survival for any fauna remaining within the tree. This shall involve pushing rather than cutting, and cushioning the tree fall with other felled timber and foliage. Following felling, a second inspection of the relevant trees shall be carried out to relocate fauna disturbed by the clearing process or remaining within the felled timber to a suitable location.
 4. Any fauna captured on site during clearing works will be relocated/translocated by the spotter catcher to a suitable habitat area/s on or adjacent to the site the same day of capture. Any injured animals requiring treatment or euthanasia shall be immediately removed and taken to an appropriately qualified veterinary surgeon. Any animals requiring support or rehabilitation other than vet assistance will be taken to a qualified wildlife carer or centre.
 5. A post clearing Fauna Spotter Report will be provided to the clearing contractor and Council Ecologist within two (2) weeks of completion of clearing activities.

6.4.7 Fauna Incident Reporting Protocols

Any threatened species observation or incident during the construction phase will result in an observation/incident report.

Requirements for koala or WSF incident reports are outlined in Section 7.2.6 of the Kings Forest KPOM (JWA 2019) and 7.2.5 of the Kings Forest WSFMP (JWA 2020a) respectively.

For all other threatened species, the report should contain as a minimum, the date, time and location (grid references) and nature of the incident. Where appropriate, cause (or likely cause) of the incident, sex of animal, age (teeth wear or other evidence) and any other information such as presence of ear tags, general condition (evidence of disease, weight, etc.) should be collected. The report should also describe what action has been taken to date, and any proposed measures to address the incident. This information should be forwarded to BCD and/or TSC. All Fauna Incident reports (excluding those related to koalas and WSF) will be included in the Annual Threatened Species Monitoring Report in accordance with Section 8.7.2 of the Precincts 6 - 11 TSMP (JWA 2020d) and Section 8.7.2 of the Precincts 12 - 14 TSMP (JWA 2020e).

6.5 Exclusion Fencing and Other Infrastructure

6.5.1 Fauna Exclusion Fencing

Exclusion fencing will be utilised where necessary to effectively separate retained vegetation and compensatory habitat from the development and its related threats. Exclusion fencing will be installed in accordance with the requirements of the Kings Forest KPoM (JWA 2019) and WSFMP (JWA 2020a) and will consist of both temporary and/or permanent fencing during construction and permanent fencing during the operational phase.

Detailed specifications for the design of the temporary and permanent exclusion fencing (including associated koala escape mechanism, gates and signage) to be utilised over the entire Kings Forest site are provided in Section 7.3.2 of the Kings Forest KPoM (JWA 2019) and Section 7.6.2 of the Kings Forest WSFMP (JWA 2020a).

Temporary fencing will be utilised during the construction phase of the development of Precincts 6 - 14 to exclude construction activities from retained vegetation and compensatory habitat areas. Temporary fencing will be comprised of 1.5 m high wire mesh held upright by star pickets (PLATE 3).



PLATE 3 - EXAMPLE OF TEMPORARY FENCING

Permanent koala exclusion fencing will be constructed at the end of the construction phase of the development of each applicable Precinct. In some areas temporary fencing will not be

required as permanent fencing will be installed prior to commencement of construction activities on site.

The location of exclusion fencing in Precincts 6 - 14 is shown in **FIGURE 10** and will be installed as follows:

- Where the development abuts the EPZ, fencing will be located within the 20 m Outer Protection Zone, a minimum of 1 - 4 m to the development side of the boundary between the 30 m Inner Protection Zone and 20 m Outer Protection Zone. The final location of the fence will be subject to the locations of retained and compensatory WSF habitat within the buffer zone (refer to the Kings Forest WSFMP [JWA 2020a]), access and bushfire considerations etc.
- Where the proposed East-West Corridor it abuts development Precincts 6 and 10, fencing will be located along the outer edge of the proposed East-West Corridor;
- Along the outer Kings Forest boundary of Precincts 8, 9 and 11;
- Temporarily along the boundary of each precinct where it abuts the adjacent precinct until fencing in the adjacent precinct is installed.

All exclusion fencing will be in place prior to the commencement of construction in each relevant Precinct. Temporary fencing will only be removed once fencing in the adjacent precinct is erected.

6.5.2 Access Management

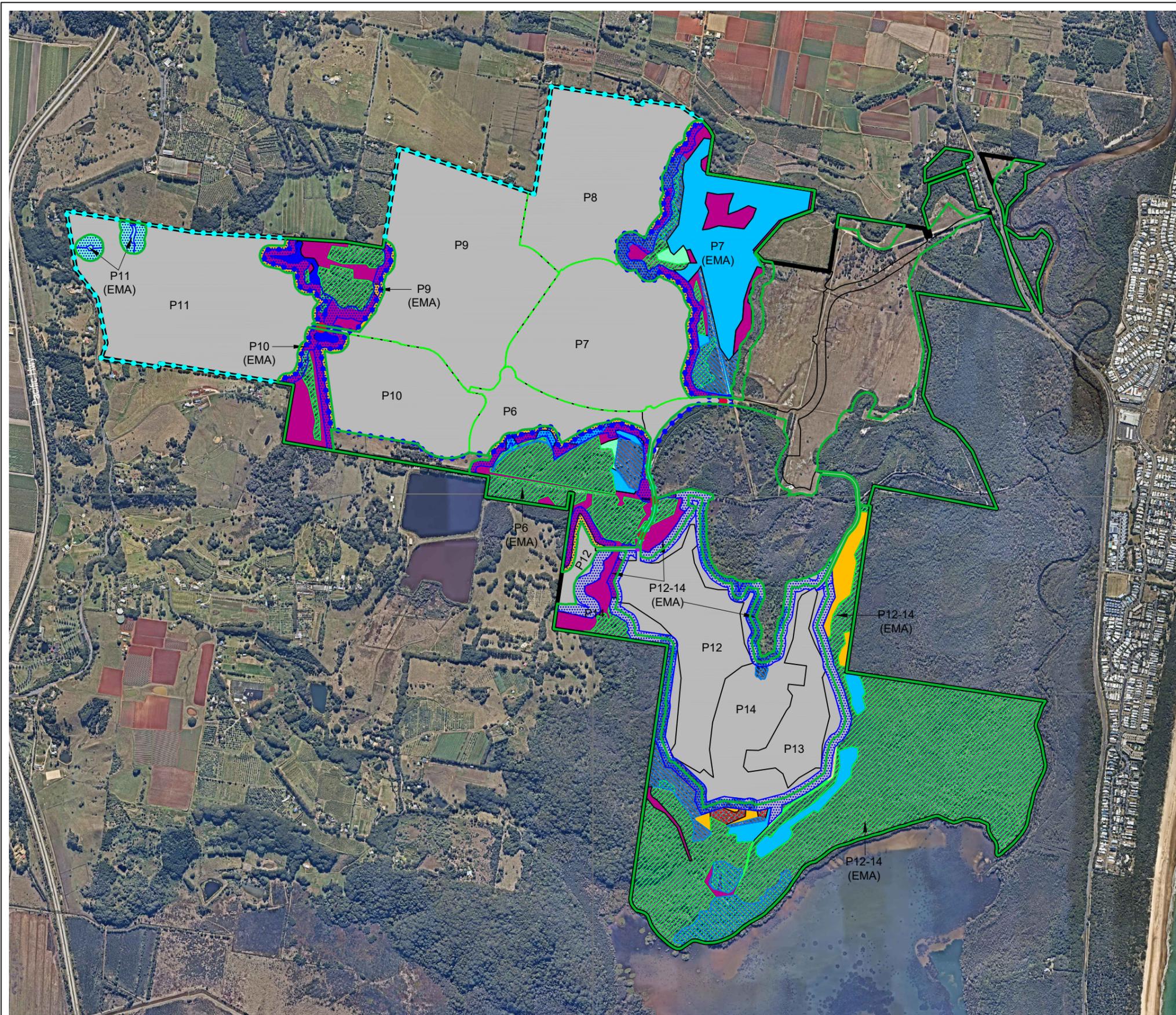
Where the length of fencing (permanent or temporary) in buffer zones is greater than 100 m, a gate will be provided to allow access for routine rehabilitation work and monitoring. Given the number of gates that may be provided on the entire site, no locks on the gates will be required for the duration of the site development. Secure fastening structures must, however, be provided for each gate. At the completion of the monitoring program locks will be provided to all gates. Keys will be held by TSC and BCD (NPWS) where appropriate. Locked gates may be opened in the event of bushfire to allow fauna to escape.

6.5.3 Signage

Temporary signage (during construction phases) will be installed where appropriate in accordance with Section 7.3.6 of the Kings Forest KPoM (JWA 2019). This will include the following types of temporary signage:

- At appropriate and highly visible locations noting the total prohibition of dogs on the site;
- Beside temporary roads/haul routes noting a 50 km/hr speed limit, or 40 km/hr speed limit where roads traverse the environmental protection areas; and
- At approximately 100 m intervals along all fencing stating “Environmental Protection Zone - No Unauthorised Entry”.

Permanent signage will be installed in conjunction with the permanent fencing at intervals of no more than 100 m to be installed during the operational phase in accordance with Section



LEGEND

- Precincts 6 - 14 Ecological Buffers
- Environmental Management Area (EMA) Boundary (#2)
- Precinct Boundary
- Kings Forest Boundary
- Cobaki Scribbly Gum Offset Area
- Waterbodies & Drainage Lines

PROPOSED FENCING PLAN (#2)

- Permanent Koala exclusion fencing
- Temporary Koala exclusion fencing to be replaced with permanent Koala exclusion fencing at the end of the construction phase of the Precinct
- Indicative location of temporary Koala exclusion fencing between Precincts to be removed once fencing in adjacent precinct is installed
- Indicative underpass location
- Temporary grid

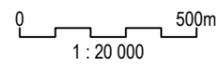
MANAGEMENT ZONES

- Zone 1 - Construction zone
- Zone 2 - Retained Koala habitat
- Zone 3 - Retained WSF habitat
- Zone 4 - Koala compensatory habitat
- Zone 5 - WSF compensatory habitat
- Zone 6 - Heath regeneration/revegetation
- Zone 8 - Wetland Regeneration

Note 1:
To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).

Note 2:
The locations of temporary fencing between precincts and any additional temporary fencing will be determined at the detailed design stage for each precinct and will be addressed in revised versions of the VMP and KPoM.

The locations of permanent fencing within Precincts 12-14 will be determined at the detailed design stage and will be addressed in revised versions of the VMP and KPoM.



| | | | |
|--|---|--|---|
| SOURCE: JWA Site Investigations 2018, Near Map 08/08/18 Aerial | CLIENT Project 28 Pty Ltd | FIGURE 10 | TITLE FENCING PLAN - PRE & POST CONSTRUCTION |
| SCALE: 1 : 20 000 @ A3 | PROJECT Buffer Management Plan Precincts 6- 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed | | |
| JWA PTY LTD Ecological Consultants | | PREPARED: BW DATE: 24 April 2020 FILE: N97017_BMP_20201116.dwg | |