



KINGS FOREST

PRECINCTS 1 - 5 VEGETATION & WEED MANAGEMENT PLAN

A Report Prepared for
Project 28 Pty Ltd

DECEMBER 2020

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1 INTRODUCTION

1.1 Background

JWA Pty Ltd have been engaged by Project 28 Pty Ltd (Project 28) to prepare a Vegetation and Weed Management Plan (VWMP) for Precincts 1 - 5 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 site was zoned for residential and commercial development in the early 1990's 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.

This VWMP provides specific measures for mitigating and/or minimising the potential impacts on vegetation within Precincts 1 - 5 and associated Environmental Management Areas (EMAs), and the proposed East-West Corridor as a result of development activities. Specific management actions discussed in this VWMP will be triggered and completed on a pre-construction, construction and operational phase basis.

Weed control strategies and the regeneration/revegetation of heath, wetland and Littoral rainforest communities are the focus of this VWMP. Strategies for the management of native vegetation (including retained habitat) and fauna pre and post construction are also included. The Koala Plan of Management (KPoM) (JWA 2019) and Wallum Sedge Frog Management Plan (WSFMP) (JWA 2020a) provide specific management strategies for the koala and the wallum sedge frog respectively including details of compensatory habitat creation.

It should be noted that within Precincts 1 - 5, the weed control strategies outlined in this VWMP will only apply to land zoned as Environmental Protection and associated ecological buffers, and adjacent portions of the Cudgen Nature Reserve. For other parts of the site, the control of weeds is the responsibility of landowners, or where they occur on public land, the responsibility of Tweed Shire Council (TSC).

1.2 Aim and Objectives

This VWMP is intended to assist Project 28 in managing existing native vegetation and other environmentally sensitive areas within Precincts 1 - 5 and associated EMAs, and the proposed East-West Corridor before, during and after development.

The aim of this VWMP is to develop a comprehensive and integrated approach to guide the immediate and long-term management of retained and rehabilitated native vegetation and to ensure its protection and enhancement. Implementation of this VWMP will ensure ongoing sustainable management of native vegetation within EMAs associated with Precincts 1 - 5 and the proposed East-West Corridor on the Kings Forest site, and that land clearing and land modification activities associated with the development are effectively remediated.

Specific objectives of this VWMP are to:

- Protect the environmentally significant site values of areas associated with Precincts 1 - 5 from bulk earthworks and construction activities;
- Remove vegetation from the development footprint in a controlled and an environmentally sustainable way;
- Provide permanent protection for the environmentally significant values within EMAs associated with Precincts 1 - 5 and the proposed East-West Corridor (i.e. threatened flora and fauna species, endangered ecological communities, and wetlands);
- Manage noxious and environmental weeds in an environmentally sustainable manner and prevent the further spread of weeds resulting from the development of Precincts 1 - 5;
- Utilise assisted natural regeneration where appropriate;
- Restore, enhance and manage the retained and protected vegetation including providing guidelines for the revegetation of EMAs and the Cudgen Nature Reserve where required; and
- Monitor the condition of retained and rehabilitated vegetation to assess if the project completion criteria have been met and report where appropriate.

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. Separate Precincts 1 and 5 Vegetation Management Plan and Precincts 1 and 5 Weed Management Plan were prepared in accordance with the Concept Plan approval conditions.

The Kings Forest Stage 1 Project Application (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 EPBC Act approval conditions specifically relating to vegetation or weed management on the Kings Forest development site, however it is noted that the Precinct 1 - 5 EMAs and the proposed East-West Corridor 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 TSC and the NSW Department of Planning, Industry and Environment (DPI&E) to reconcile all approval conditions.

The Precincts 1 - 5 VWMP 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 VWMP:

- 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 VWMP 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, 40 and 42 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

Various 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 VWMP 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 1 - 5 Buffer Management Plan (BMP) (JWA 2020b);
- Kings Forest Precincts 1 - 5 Threatened Species Management Plan (TSMP) (JWA 2020c);
- Kings Forest Flora and Fauna Monitoring Report (FFMR) (JWA 2020d);
- Kings Forest Feral Animal Management Plan (FAMP) (JWA 2020e);
- Kings Forest Stage 1 Bushfire Management Plan (BushfireSafe 2020);

- Kings Forest Koala Fire Management Plan (Wildsite 2020);
- Construction Environmental Management Plan (CEMP) (MUS 2020);
- Kings Forest Summary of Management Plans (SOMP) (G&S 2020a);
- Kings Forest Overall Water Management Plan (OWMP) (G&S 2020b); and
- Kings Forest Drainage Maintenance Management Plan (DMMP) (G&S 2020c).

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

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 Subject Site

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

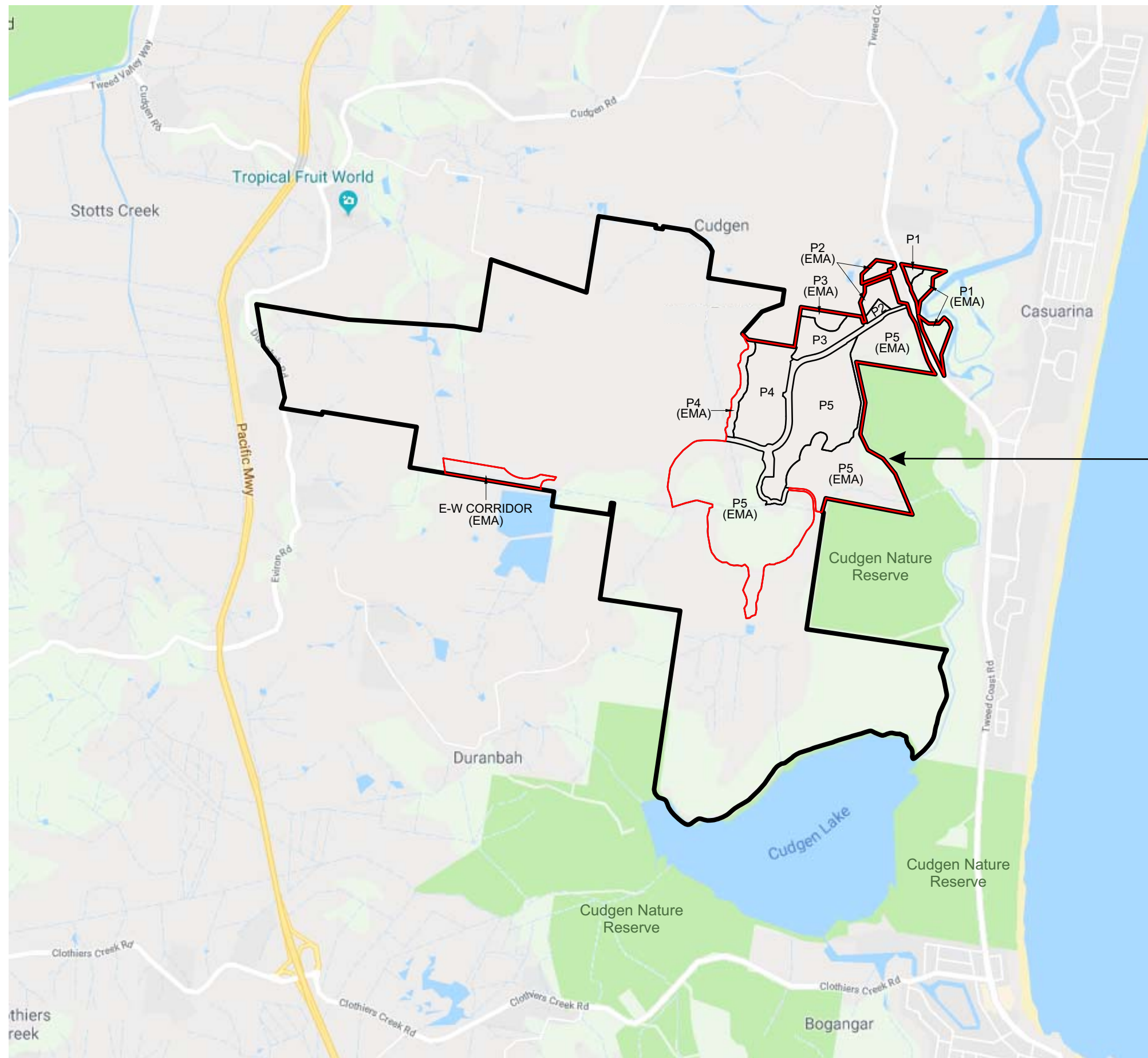
- Lot 76, 272, 323 and 326 in DP 755701;
- Lot 6 in DP 875446;
- Lot 2 in DP 819015;
- Lot 1 in DP 706497;
- Lot 40 in DP 7482;
- Lot 37A in DP 13727;
- Lot 38A in DP 13727;
- Lot 38B in DP 13727;
- Lot 1 in DP 129737;
- Lot 1 in DP 781633; and
- Lot 7 in DP 875447.

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.

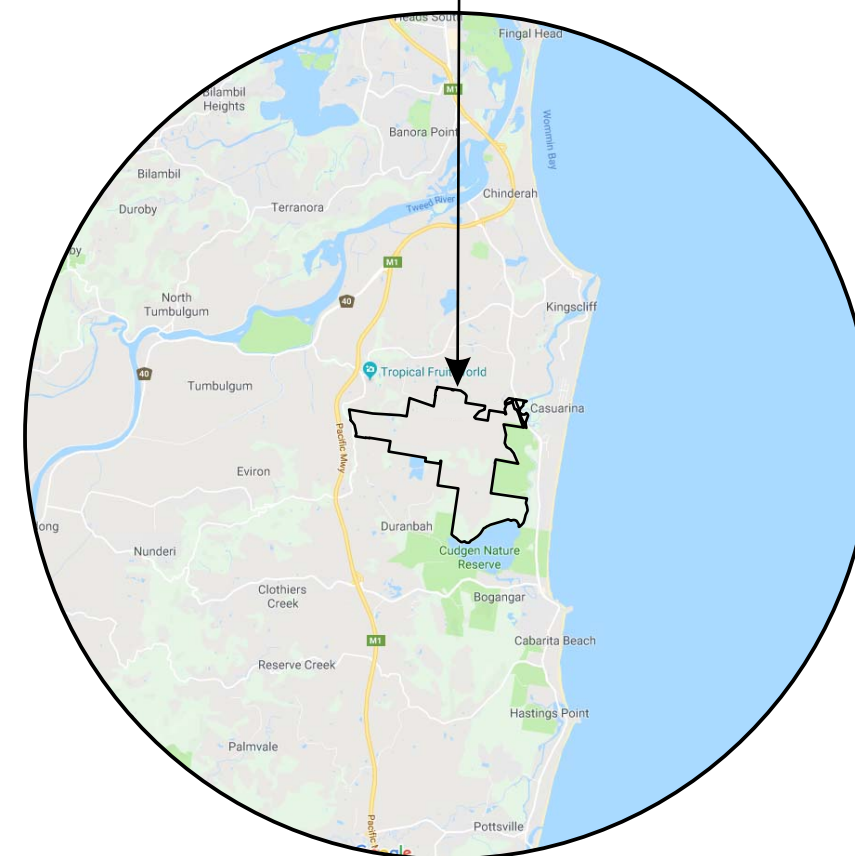
2.3 Conservation Reserves/Ecologically Significant Areas in the Locality

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
 [Red Outline] Area Subject to this Management Plan
 [Black Outline] Kings Forest Boundary

SUBJECT SITE



0 750m
 1 : 30 000

SOURCE: Google Maps

SCALE: 1 : 30 000 @ A3

JWA PTY LTD
 Ecological Consultants

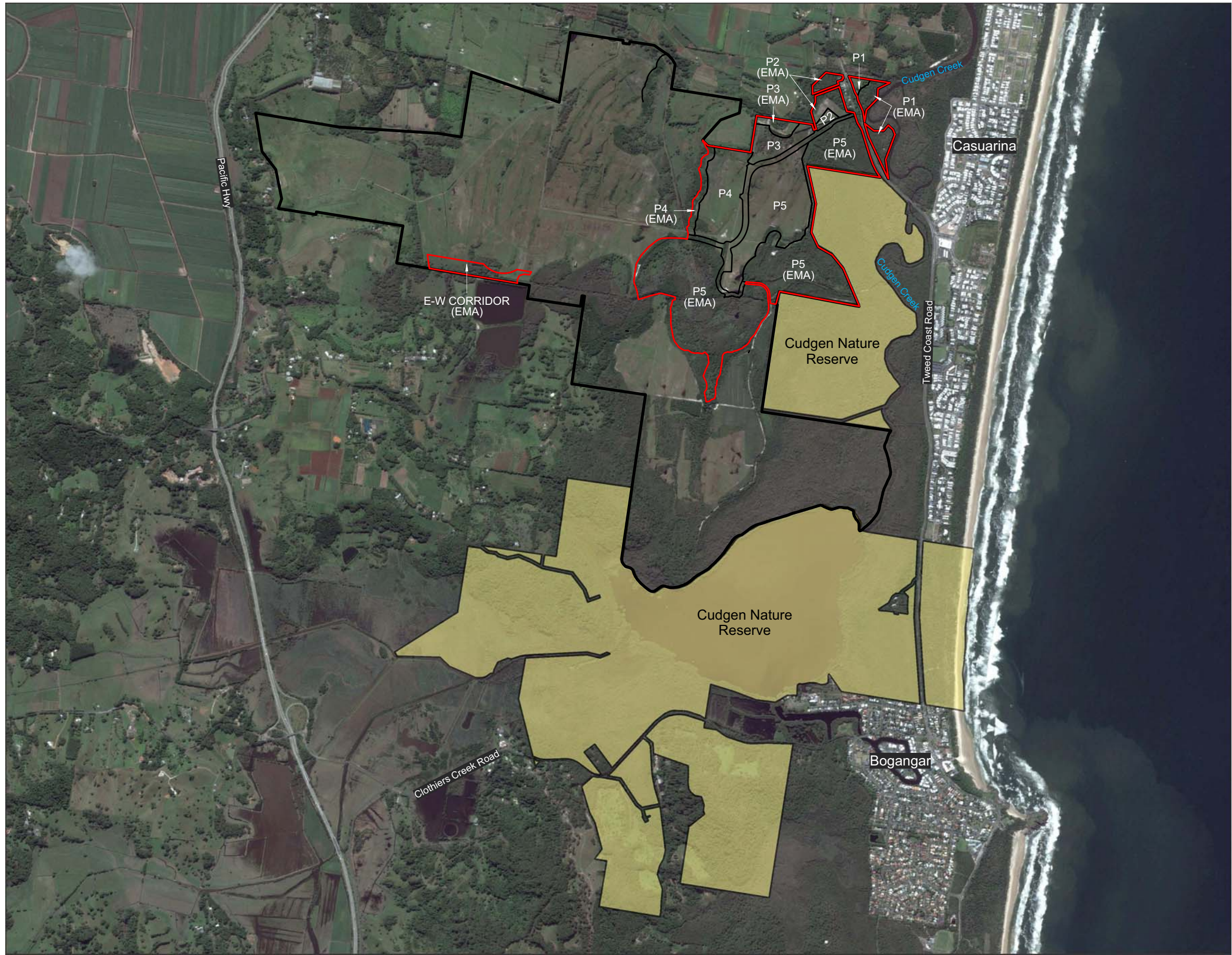
CLIENT
 Project 28 Pty Ltd
 PROJECT
 Vegetation & Weed Management Plan
 Precincts 1 - 5 Kings Forest
 Melaleuca Drive, Duranbah, NSW
 Shire of Tweed

FIGURE 1

PREPARED: BW
 DATE: 13 October 2020
 FILE: N97017_Locality.cdr

TITLE

LOCALITY PLAN



- LEGEND**
- Cudgen Nature Reserve
 - Area Subject to this Management Plan
 - Kings Forest Boundary

0 750m
1 : 30 000

SOURCE: NSW DPI Cadastre
Google Earth Apr 2017 Aerial
SCALE: 1 : 30 000 @ A3

JWA PTY LTD
Ecological Consultants

CLIENT
Project 28 Pty Ltd
PROJECT
Vegetation & Weed Management Plan
Precincts 1 - 5 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 2

PREPARED: BW
DATE: 13 October 2020
FILE: N97017_Cudgen NR.cdr

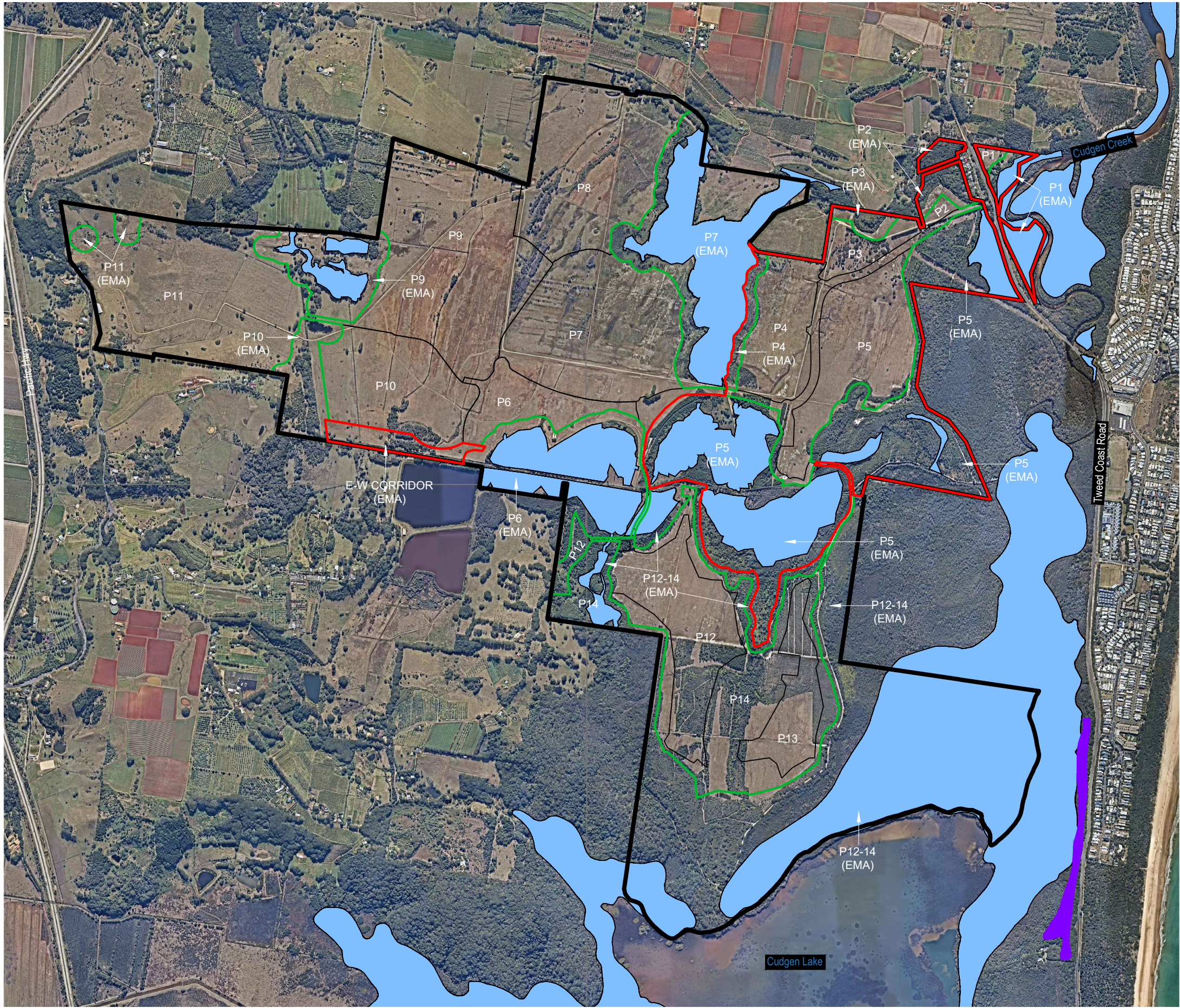
TITLE

**CUDGEN
NATURE
RESERVE**

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)
 - Area Subject to this Management Plan
 - 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.

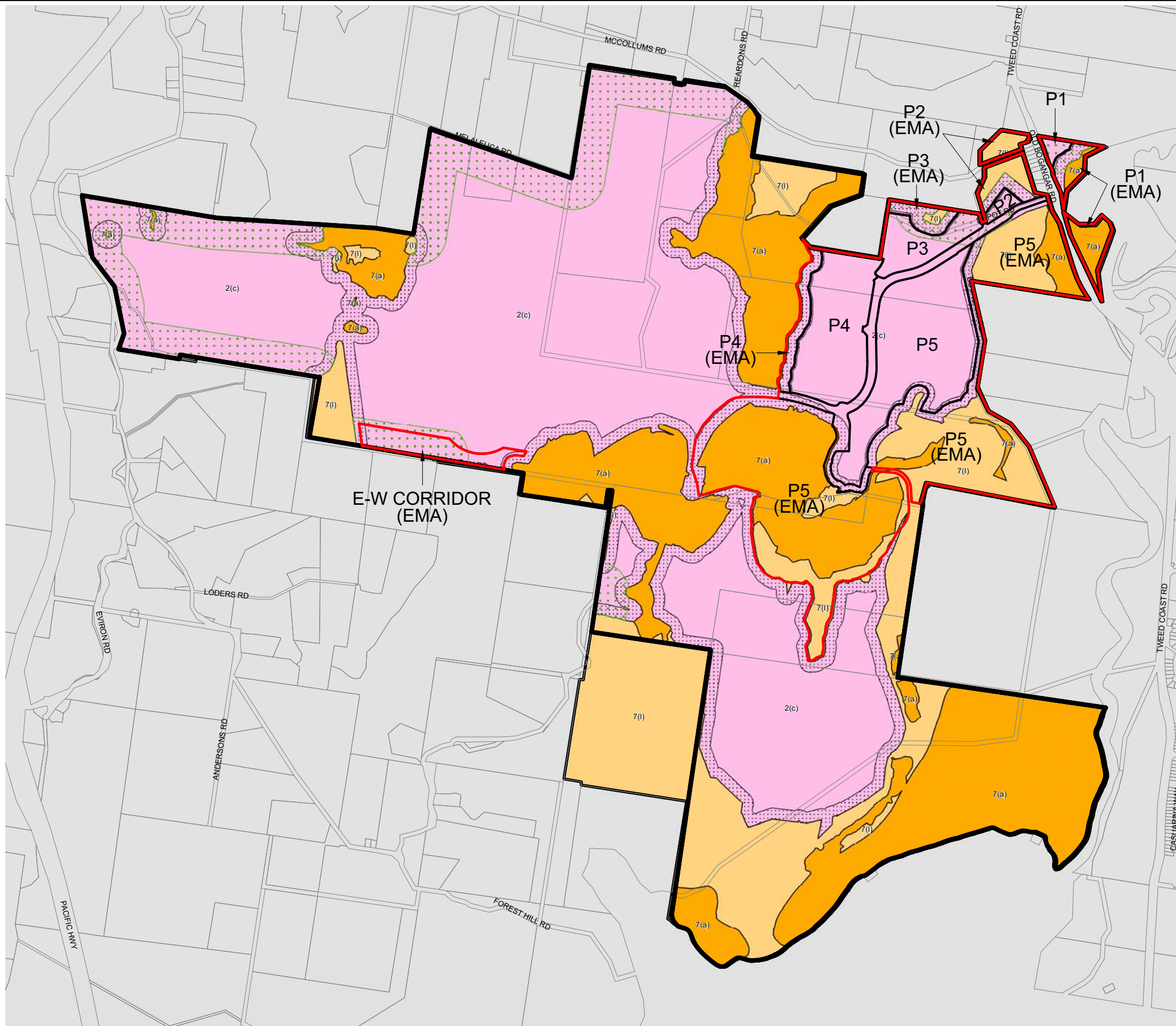
Note 2:
To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).

0 500m
1 : 20 000

SOURCE: Landpartners - SEPP14 Wetlands
(Amendment 15) & SEPP26 Littoral Rainforest;
Near Map 08/08/18 Aerial
SCALE: 1 : 20 000 @ A3
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Ecological Consultants

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Project 28 Pty Ltd
PROJECT
Vegetation & Weed Management Plan
Precincts 1 - 5 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 3	TITLE SEPP No. 14 COASTAL WETLANDS & SEPP No. 26 LITTORAL RAINFOREST
	PREPARED: BW DATE: 14 October 2020 FILE: N97017_MP 1-5_20201013.dwg



LEGEND

Area Subject to this Management Plan

Kings Forest Boundary

ZONING

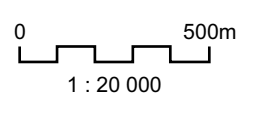
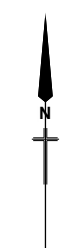
2(c) Urban Expansion

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 Vegetation & Weed Management Plan Precincts 1 - 5 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed	FIGURE 4 PREPARED: BW DATE: 13 October 2020 FILE: N97017_Zoning.cdr	TITLE ZONING PLAN
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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 4500 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.

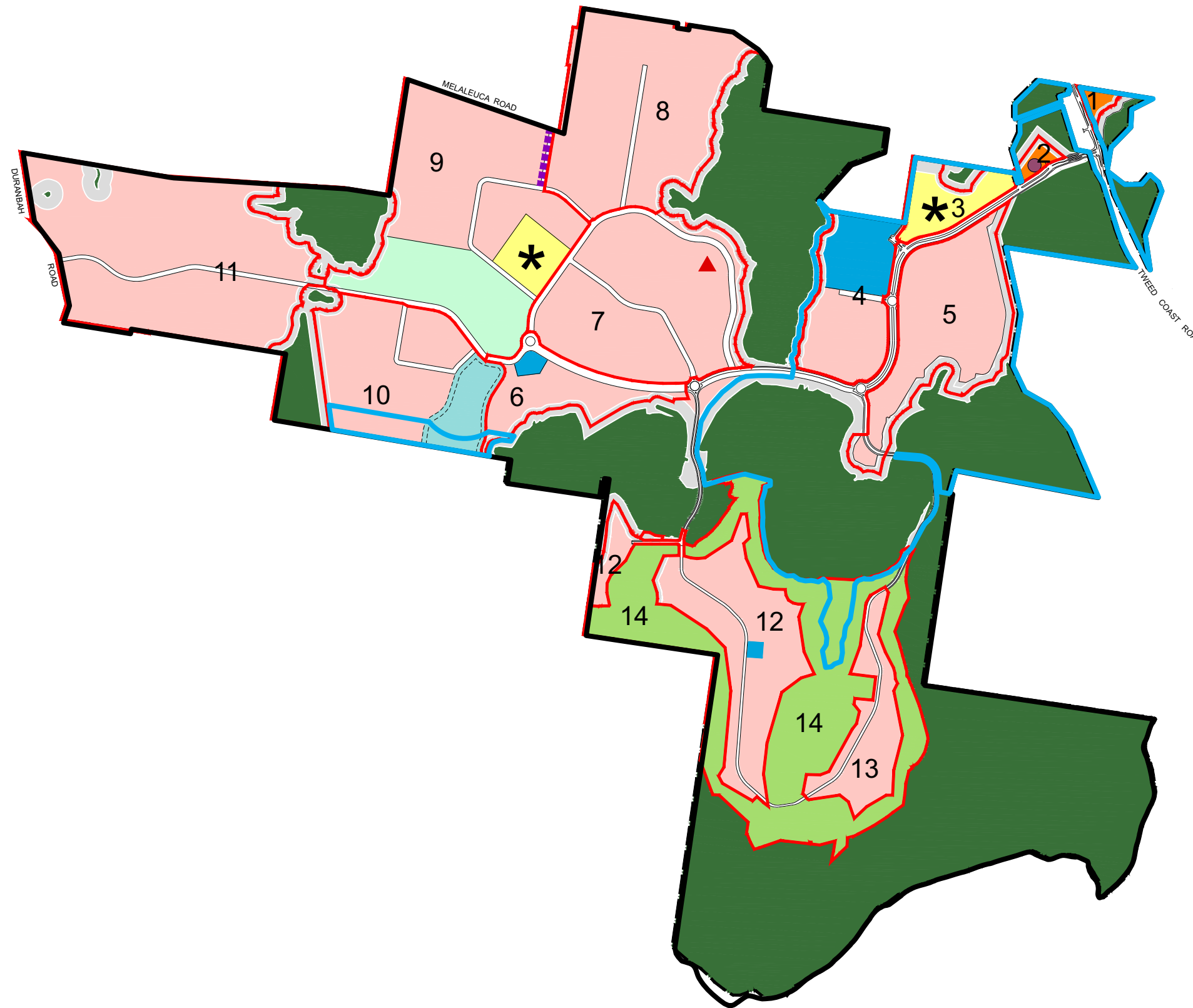
Retained vegetation and habitat areas across the site generally occur within Environmental Protection Zones (EPZs) and associated buffers. To assist in identifying the staging of rehabilitation and management actions, these EPZ and buffer areas have been associated with a relevant development precinct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

Precincts 1 - 5 and the proposed East-West Corridor are the subject of this VWMP. Precincts 1 - 5 occur in the north-eastern portion of the Kings Forest development site. The proposed East-West Corridor occurs in the central western portion of the Kings Forest development site.

3.2 Precinct Descriptions

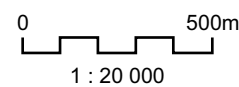
3.2.1 Precinct 1

Precinct 1 occurs in the far east of the Kings Forest site. Tweed Coast Road traverses the western boundary of Precinct 1 and Cudgen Creek occurs offsite to the east. Precinct 1 is proposed to be developed for the purposes of a Service Station (**FIGURE 6**). An EPZ and associated 50 m buffer zone occur to the south of Precinct 1 (collectively referred to as the Precinct 1 EMA) in which no development works are proposed. Works within the Precinct 1 EMA will include:

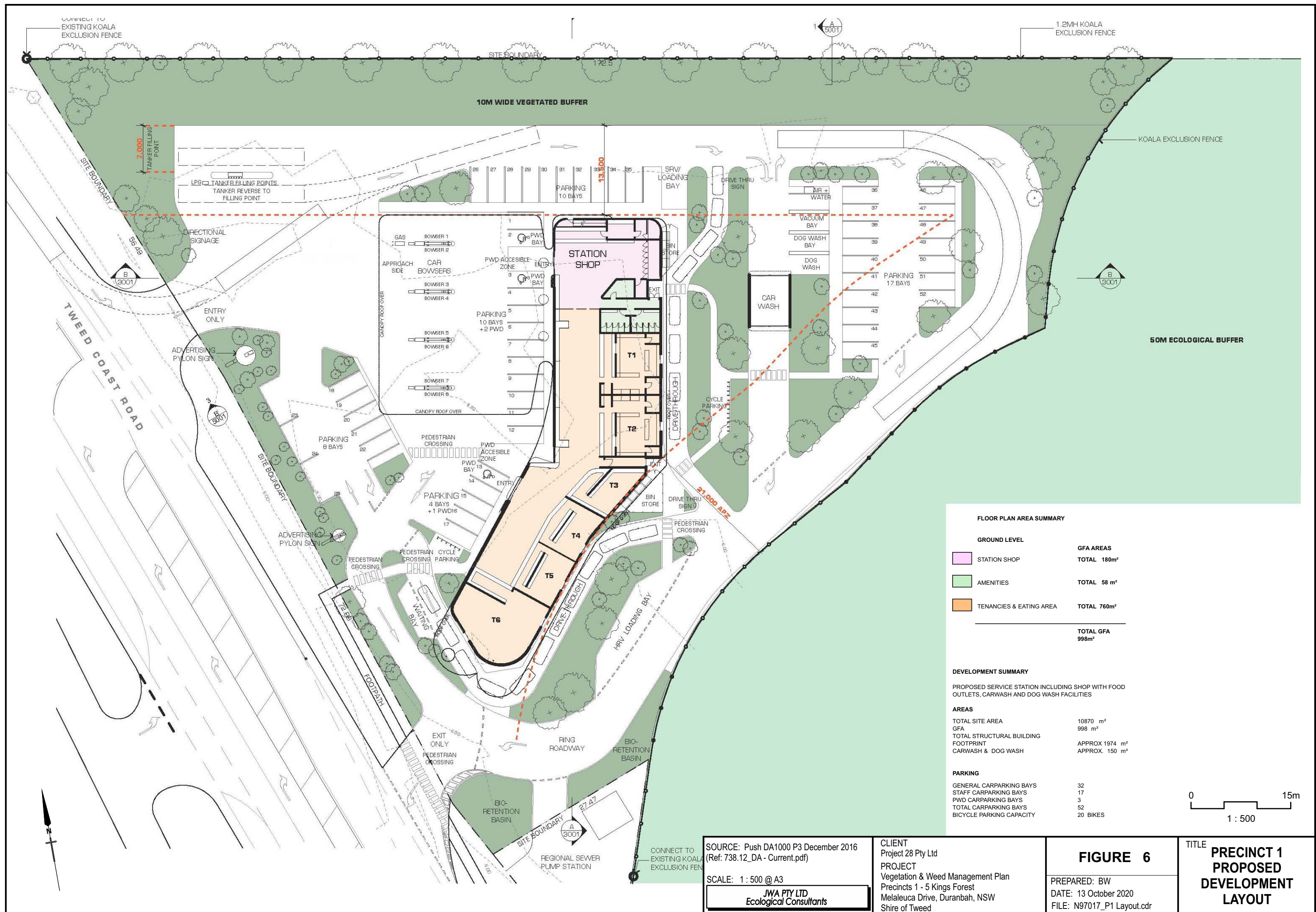


- LEGEND**
- Area Subject to this Management Plan
 - Precinct Boundary
 - Kings Forest Boundary
- PRECINCT PLAN**
- Town Centre / Neighbourhood Centre
 - Residential
 - Community Facilities / Education
 - Employment Land
 - Structured Open Space (Active)
(Passive open space to council standards, location 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	CLIENT Project 28 Pty Ltd PROJECT Vegetation & Weed Management Plan Precincts 1 - 5 Kings Forest Melaleuca Drive, Durambah, NSW Shire of Tweed	FIGURE 5 PREPARED: BW DATE: 13 October 2020 FILE: N97017_Precinct Plan.cdr	TITLE PRECINCT PLAN
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- Protection and maintenance of retained vegetation in accordance with this VWMP and Section 7.5 of the Kings Forest KPoM (JWA 2019); and
- Littoral rainforest regeneration/revegetation works in accordance with this VWMP.

3.2.2 Precinct 2

Precinct 2 is located at the entrance to the Kings Forest site, to the west of Tweed Coast Road and north of the proposed Kings Forest Parkway. Precinct 2 is proposed to be developed for employment purposes. An EPZ and associated 50 m buffer zone occur to the north of Precinct 2 (collectively referred to as the Precinct 2 EMA) in which no development works are proposed. Works within the Precinct 2 EMA will include:

- Protection and maintenance of retained vegetation in accordance with this VWMP and Section 7.5 of the Kings Forest KPoM (JWA 2019); and
- Regeneration/revegetation works (including compensatory koala habitat creation and heath regeneration/revegetation) in accordance with this VWMP and Section 7.6 of the Kings Forest KPoM (JWA 2019).

3.2.3 Precinct 3

Precinct 3 is proposed to be developed as a Community Facility/Education Precinct. A small EPZ and associated 50 m buffer occur adjacent to the central northern portion of the Precinct (collectively referred to as the Precinct 3 EMA) in which no development. Works within the Precinct 3 EMA will include:

- Protection and maintenance of retained vegetation in accordance with this VWMP and Section 7.5 of the Kings Forest KPoM (JWA 2019); and
- Regeneration/revegetation works (including compensatory koala habitat creation and heath regeneration/revegetation) in accordance with this VWMP and Section 7.6 of the Kings Forest KPoM (JWA 2019).

3.2.4 Precinct 4

Precinct 4 is located in the central portion of the Kings Forest site, to the east of the northern SEPP and west of the proposed Kings Forest Parkway. The northern portion of Precinct 4 is proposed to be developed as a Town Centre precinct while the southern portion is proposed to be developed as a residential precinct. A large EPZ associated with Precinct 7 occurs to the west of Precinct 4. A 50 m buffer (referred to as the Precinct 4 EMA) occurs between the Precinct 7 EPZ and Precinct 4 in which no development works are proposed.

Works within the Precinct 4 EMA will include:

- Protection and maintenance of retained vegetation in accordance with this VWMP and Section 7.7 of the Kings Forest WSFMP (JWA 2020a); and
- Regeneration/revegetation works (including compensatory koala and WSF habitat creation and heath regeneration/revegetation) in accordance with this VWMP and the following documents where appropriate:

- Kings Forest KPoM (JWA 2019) - Section 7.6; and
- Kings Forest WSFMP (JWA 2020a) - Section 7.8.

3.2.5 Precinct 5

Precinct 5 is located at the entrance to the Kings Forest site to the west of Tweed Coast Road and south of the proposed Kings Forest Parkway. Cudgen Nature Reserve occurs to the east of Precinct 5 and Blacks Creek occurs to the south.

Precinct 5 is proposed to be developed as a residential precinct and will also include the construction of a significant portion of the proposed Kings Forest Parkway. Large areas adjacent to Precinct 5 will be retained within EPZs and associated 50 m buffer zones (collectively referred to as the Precinct 5 EMA). Where the 50 m buffer zones occur adjacent to development in Precinct 5, the outer 20 m zone will be utilised for stormwater conveyance and ancillary structures such as fauna exclusion fencing whilst the inner 30 m zone will be utilised for conservation purposes only such as revegetation and assisted regeneration works. Works within the inner 30 m of the Precinct 5 EMA will include:

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

FIGURE 7 shows the proposed development for Precinct 5.

3.2.6 East-West Corridor

The proposed East-West Corridor is located in the central west section of the Kings Forest site and extends along the southern boundary of Precinct 10. The proposed East-West Corridor will link the Precincts 6 and 10 EPZs and bolster movement/dispersal corridors in this portion of the Kings Forest site. Works within the proposed East-West Corridor will include compensatory koala habitat creation in accordance with Section 7.6 of the Kings Forest KPoM (JWA 2019).

3.3 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**). In relation to Precincts 1 - 5 (i.e. the subject of this VWMP) it is intended to construct the Kings Forest Parkway and develop Precincts 1, 2, 5 and the majority of Precinct

RESIDENTIAL PRODUCT MIX

- TERRACES

- Build to both boundaries

- Rear loaded
- PLEXES

- Attached Dwelling

- Front loaded parking
- ZERO - Lot Dwellings

- Min. Frontage : 8m

- Min. depth 24m
- TRADITIONAL Detached Dwelling

- Attached Dwelling

- Build to one side boundary

- Front loaded parking
- Min. Frontage : 18m , Corner : 20m

- Min. Depth : 20m
- Min. Frontage : 8m with rear lane : 10m with front access,

- Corner : 10m with rear lane, 12m with front access

- Min. depth : 24m
- Detached Dwelling

- Garage may Zero to side boundary

- Front loaded parking
- Min. Frontage : 15m, Corner : 18m

- Min. Depth : 25m

DEVELOPMENT SUMMARY			
LOT CATEGORY	NUMBER OF ALLOTMENTS	NUMBER OF DWELLINGS	PERCENTAGE OF DWELLINGS
TOWNHOUSES	1	20	5%
TERRACES	44	44	10%
PLEXES	25	54	13%
ZERO - LOT DWELLING	192	192	44%
TRADITIONAL DETACHED DWELLINGS	121	121	28%
TOTALS	383	431	100%

LEGEND :

ELECTRICAL TRANSFORMER (Pad Mount)



SOURCE: RPS (Ref: Plan 10 (Indicative Subdivision Plan).pdf dated 28.08.12)
SCALE: 1 : 3000 @ A3

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PROJECT
Vegetation & Weed Management Plan
Precincts 1 - 5 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 7
PREPARED: BW
DATE: 13 October 2020
FILE: N97017_P5 Layout.cdr

TITLE
PRECINCT 5
PROPOSED
DEVELOPMENT
LAYOUT

4 as Stage 1. Stage 2 of the development will include Precinct 3 and the remainder of Precinct 4.

4 EXISTING SITE VALUES

4.1 Introduction

The following sections detail the existing ecological values contained within Precincts 1 - 5 and associated EMAs, and the proposed East-West Corridor. An aerial photograph of these areas is shown in **FIGURE 8**.

4.2 Vegetation

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 9 shows the vegetation communities occurring over Precincts 1 - 5 and associated EMAs, and the proposed East-West Corridor (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 1 - 5 and associated EMAs, and the proposed East-West Corridor:

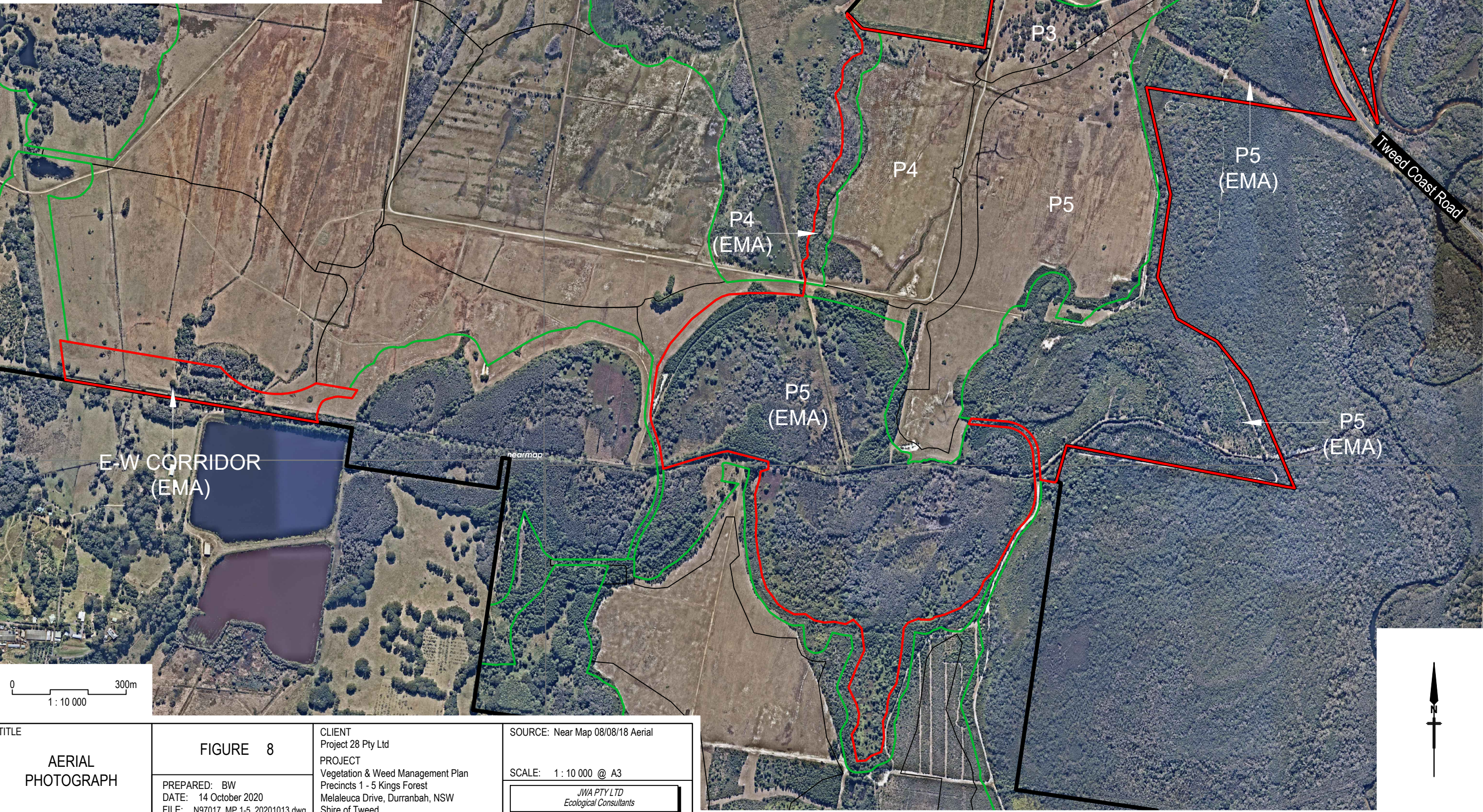
- Highly modified vegetation communities;
- Freshwater wetlands;
- Heathland and shrublands;
- Swamp sclerophyll floodplain forests;
- Dry to moist open forests; and
- Rainforest.

Vegetation community descriptions in this VWMP, 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

LEGEND

-  Area Subject to this Management Plan
-  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).



TITLE AERIAL PHOTOGRAPH	FIGURE 8 PREPARED: BW DATE: 14 October 2020 FILE: N97017_MP 1-5_20201013.dwg	CLIENT Project 28 Pty Ltd PROJECT Vegetation & Weed Management Plan Precincts 1 - 5 Kings Forest Melaleuca Drive, Durrabah, NSW Shire of Tweed	SOURCE: Near Map 08/08/18 Aerial SCALE: 1 : 10 000 @ A3 JWA PTY LTD Ecological Consultants
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LEGEND

- Area Subject to this Management Plan
- Environmental Management Area (EMA) Boundary (#1)
- Precinct Boundary
- Kings Forest Boundary

VEGETATION COMMUNITIES (#2)

Community 1 - Highly Modified

- 1(a) Substantially cleared of native vegetation
- 1(b) Camphor laurel dominant closed forest (with rainforest species)
- 1(c) Native plantation/plantings
- 1(e1) Exotic pine plantation
- 1(e2) Exotic pine plantation (with heathland species)
- 1(f) Exotic grassland dominated (with heathland species)
- 1(g) Exotic grassland dominated (with regrowth Acacia & other native species)
- 1(h) Exotic pines with sedgeland/rushland/ferland
- 1(i) Exotic pines with swamp sclerophyll floodplain forest

Community 2 - Freshwater Wetland

- 2(b) Ponds & fringing wetland [PCT 1911, TVMS 701]
- 2(c1) Sedgeland/rushland/ferland [PCT 1911, TVMS 701/702]
- 2(c2) Sedgeland/rushland/ferland (with exotic pines) [PCT 1911, TVMS 701/702]

Community 3 - Heathland & Shrubland

- 3(a1) Dry coastal heathland to shrubland [PCT 663, TVMS 501]
- 3(a2) Dry coastal heathland to shrubland (with exotic pines) [PCT 663, TVMS 501]
- 3(b1) Wet coastal heathland to shrubland [PCT 1297, TVMS 502]
- 3(d) Regenerating wet/dry coastal heathland to shrubland [PCT 1297, TVMS 501/5022]
- 3(e) Regenerating wet/dry coastal heathland to shrubland (with exotic pines) [PCT 1297, TVMS 501/502]

Community 4 - Swamp Sclerophyll Floodplain Forest

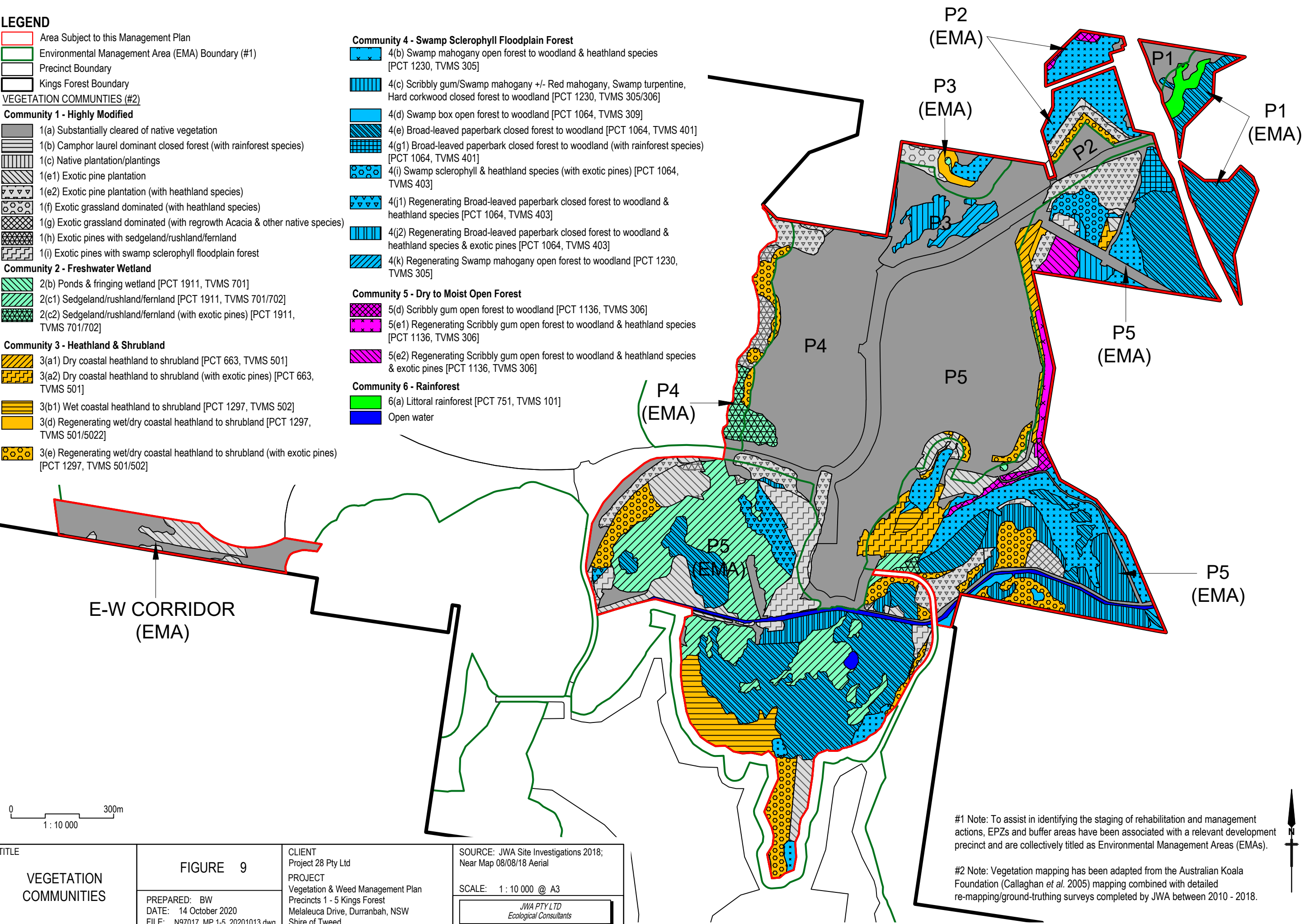
- 4(b) Swamp mahogany open forest to woodland & heathland species [PCT 1230, TVMS 305]
- 4(c) Scribbly gum/Swamp mahogany +/- Red mahogany, Swamp turpentine, Hard corkwood closed forest to woodland [PCT 1230, TVMS 305/306]
- 4(d) Swamp box open forest to woodland [PCT 1064, TVMS 309]
- 4(e) Broad-leaved paperbark closed forest to woodland [PCT 1064, TVMS 401]
- 4(g1) Broad-leaved paperbark closed forest to woodland (with rainforest species) [PCT 1064, TVMS 401]
- 4(i) Swamp sclerophyll & heathland species (with exotic pines) [PCT 1064, TVMS 403]
- 4(j1) Regenerating Broad-leaved paperbark closed forest to woodland & heathland species [PCT 1064, TVMS 403]
- 4(j2) Regenerating Broad-leaved paperbark closed forest to woodland & heathland species & exotic pines [PCT 1064, TVMS 403]
- 4(k) Regenerating Swamp mahogany open forest to woodland [PCT 1230, TVMS 305]

Community 5 - Dry to Moist Open Forest

- 5(d) Scribbly gum open forest to woodland [PCT 1136, TVMS 306]
- 5(e1) Regenerating Scribbly gum open forest to woodland & heathland species [PCT 1136, TVMS 306]
- 5(e2) Regenerating Scribbly gum open forest to woodland & heathland species & exotic pines [PCT 1136, TVMS 306]

Community 6 - Rainforest

- 6(a) Littoral rainforest [PCT 751, TVMS 101]
- Open water



TITLE VEGETATION COMMUNITIES	FIGURE 9	CLIENT Project 28 Pty Ltd	SOURCE: JWA Site Investigations 2018; Near Map 08/08/18 Aerial
	PREPARED: BW DATE: 14 October 2020 FILE: N97017_MP 1-5_20201013.dwg	PROJECT Vegetation & Weed Management Plan Precincts 1 - 5 Kings Forest Melaleuca Drive, Durrnabah, NSW Shire of Tweed	SCALE: 1 : 10 000 @ A3 JWA PTY LTD Ecological Consultants

bioregions and subsequently subregions based on common features such as climate, geology, landform, and vegetation.

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 1 - 5 and associated EMAs, and the proposed East-West Corridor (**FIGURE 10**):

- 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 1 - 5 and associated EMAs, and the proposed East-West Corridor over the last 30 years. These threatened species are listed in **TABLE 1** and their locations shown in **FIGURE 10**. The conservation status of each species listed in **TABLE 1** is shown in accordance with the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the NSW BC Act.

TABLE 1
THREATENED SPECIES RECORDED WITHIN PRECINCTS 1 - 5 AND ASSOCIATED EMAS,
AND THE PROPOSED EAST-WEST CORRIDOR

Scientific Name	Common Name	BC Act*	EPBC Act#
Threatened flora species			
<i>Endiandra muelleri</i> subsp. <i>bracteata</i>	Green-leaved rose walnut	E	-
<i>Phaius australis</i>	Southern swamp orchid	E	E
<i>Cryptocarya foetida</i>	Stinking cryptocarya	V	V
<i>Archidendron hendersonii</i>	White laceflower	V	-
Threatened fauna species			
<i>Ixobrychus flavicollis</i>	Black bittern	V	-
<i>Syconycteris australis</i>	Common blossom bat**	V	-
<i>Falsistrellus tasmaniensis</i>	Eastern false pipistrelle**	V	-
<i>Tyto longimembris</i>	Grass owl	V	-
<i>Pteropus poliocephalus</i>	Grey-headed flying fox	V	V
<i>Phascolarctos cinereus</i> [^]	Koala	V	V
<i>Miniopterus australis</i>	Little bent-wing bat**	V	-
<i>Tyto novaehollandiae</i>	Masked owl	V	-

Scientific Name	Common Name	BC Act*	EPBC Act#
<i>Pandion cristatus</i>	Eastern osprey	V	-
<i>Ptilinopus regina</i>	Rose-crowned fruit-dove**	V	-
<i>Myotis macropus</i>	Southern myotis**	V	-
<i>Crinia tinnula</i>	Wallum froglet	V	-
<i>Litoria olongburensis</i>	Wallum sedge frog	V	V
<i>Saccolaimus flaviventris</i>	Yellow-bellied sheath-tail bat**	V	-

* E - Endangered and V - Vulnerable as listed within schedules of the NSW *BC Act* (2016).

E - Endangered and V - Vulnerable as listed within schedules of the Commonwealth *EPBC Act* (1999).

** These species are highly mobile and were generally recorded foraging opportunistically over the site and are not included in **FIGURE 10**.

^ The koala (combined population in Queensland, New South Wales and the Australian Capital Territory) is listed as a vulnerable species within schedules of the Commonwealth *EPBC Act* (1999). 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).

4.5 Weed Assessment

4.5.1 Introduction

Kings Forest has a long history of varied land uses. Disturbance to the natural ecosystems and vegetation communities has resulted in the introduction of a variety of exotic species.

Site surveys indicate that the primary weed species on the Kings Forest site is Slash pine (*Pinus elliottii*), with large areas of recruitment originating from historical pine plantations. Other environmental weeds of note include Camphor laurel (*Cinnamomum camphora*), Lantana (*Lantana camara*), Pampas grass (*Cortaderia selloana*), Blackberry nightshade (*Solanum nigrum*) and Bitou bush (*Chrysanthemoides monilifera*).

4.5.2 Weed Mapping

Areas of weed invasion on the Kings Forest site were originally mapped by LandPartners (2009) in the Revised Weed Management Plan which accompanied the Concept Plan application. Mapping was limited to species considered particularly invasive and therefore a priority for control (e.g. Madeira Vine, Pampas grass, Para grass), or where species occurred over a sufficient area to enable broad scale mapping (notably Slash pine and areas of exotic grass).

Mapped weed infestations within Precincts 1 - 5 and associated EMAs, and the proposed East-West Corridor were ground-truthed during the preparation of this VWMP. Due to the large vegetated areas within the EMAs not all areas of vegetation were investigated, however particular attention was paid to ecological buffers (i.e. edges of vegetation to be retained).

The results of weed mapping within Precincts 1 - 5 and associated EMAs, and the proposed East-West Corridor are shown in **FIGURE 11**. The locations of threatened flora have also been included in the figure to provide an indication of threats to these species.

LEGEND

- Area Subject to this Management Plan
- Environmental Management Area (EMA) Boundary (#)
- Precinct Boundary
- Kings Forest Boundary

THREATENED FLORA RECORDS

- Green-leaved rose walnut (*Endiandra muelleri* subsp. *bracteata*) - Endangered (BC Act 2016)
- Southern swamp orchid (*Phaius australis*) - Endangered (BC Act 2016 & EPBC Act 1999)
- Stinking cryptocarya (*Cryptocarya foetida*) - Vulnerable (BC Act 2016 & EPBC Act 1999)
- White laceflower (*Archidendron hendersonii*) - Vulnerable (BC Act 2016)

THREATENED FAUNA RECORDS

Birds

- Black bittern (*Ixobrychus flavicollis*) - Vulnerable (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)
- Osprey (*Pandion haliaetus*) - Vulnerable (BC Act 2016)

Mammals

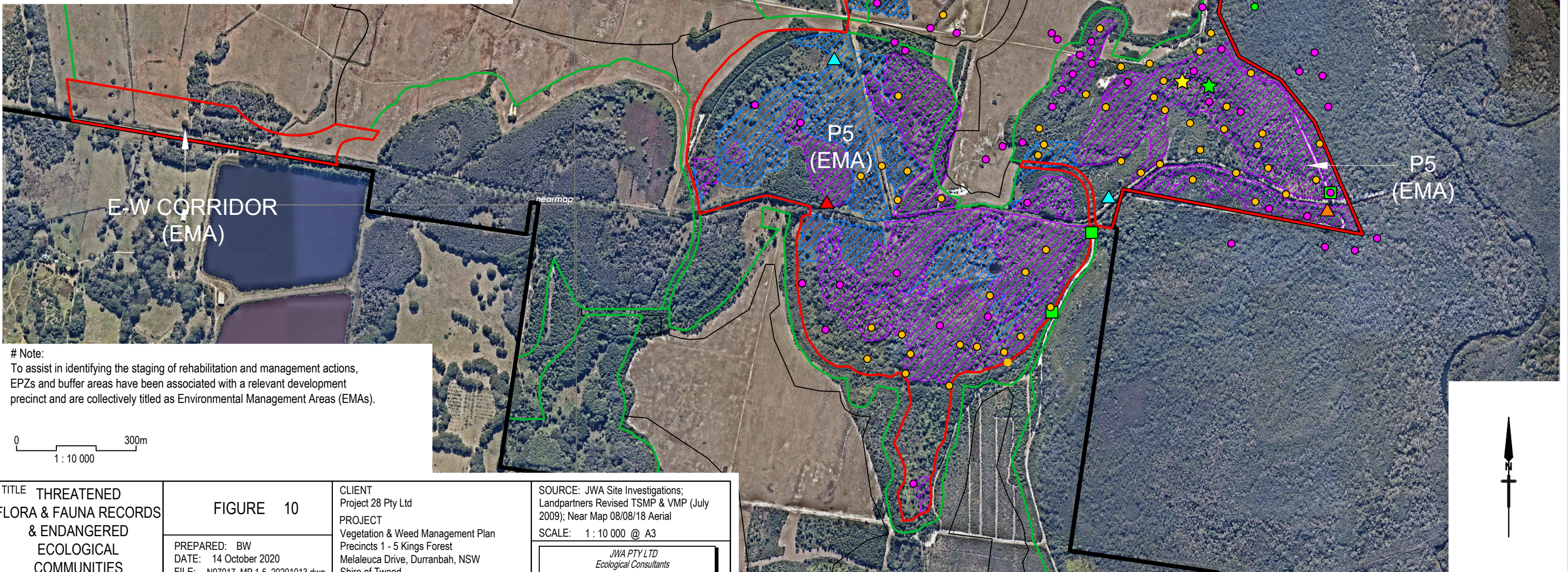
- Grey-headed flying-fox (*Pteropus poliocephalus*) - Vulnerable (BC Act 2016 & EPBC Act 1999)
- Koala (*Phascolarctos cinereus*) - Vulnerable (BC Act 2016 & EPBC Act 1999)

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).

0 300m
1 : 10 000

TITLE THREATENED
FLORA & FAUNA RECORDS
& ENDANGERED
ECOLOGICAL
COMMUNITIES

FIGURE 10

PREPARED: BW
DATE: 14 October 2020
FILE: N97017_MP 1-5_20201013.dwg

CLIENT
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PROJECT
Vegetation & Weed Management Plan
Precincts 1 - 5 Kings Forest
Melaleuca Drive, Durrabah, NSW
Shire of Tweed

SOURCE: JWA Site Investigations;
Landpartners Revised TSMP & VMP (July
2009); Near Map 08/08/18 Aerial
SCALE: 1 : 10 000 @ A3

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