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**MANNING
RIVER**
ESTUARY &
CATCHMENT



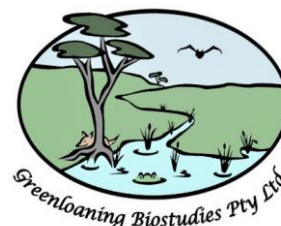
**EVIDENCE FOR A FUTURE PLANNING PROPOSAL
TO AMEND THE CM SEPP - COASTAL WETLANDS
2021**

Annexure M

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Executive Summary

The *Coastal Management Act 2016* promotes strategic and integrated management, use and development of the coast for the social, cultural and economic wellbeing of the people of NSW. It also establishes the framework for developing strategic Coastal Management Programs and identifies four coastal management areas (sometimes overlapping) that comprise the coastal zone. The associated *State Environmental Planning Policy (Coastal Management) 2018* implements the objectives of the *Coastal Management Act 2016* from a land use planning perspective, and includes maps of the coastal management areas.

As part of MidCoast Council's commitment to the Coastal Management Program, detailed mapping of two of the coastal management areas has been undertaken - coastal wetlands and littoral rainforests. This finer-scale mapping shows additional areas outside currently mapped areas in the *State Environmental Planning Policy (Coastal Management) 2018*.

This report provides the results of a detailed analysis of the mapping and justification for the mapped areas in the *State Environmental Planning Policy (Coastal Management) 2018* to be updated, via the Planning Proposal process.

The mapping analysis has given detailed consideration given to the following:

- Existing *State Environmental Planning Policy (Coastal Management) 2018* mapping
- Definition of coastal wetlands and littoral rainforest
- Confidence in mapping methodology
- Condition of coastal wetlands and littoral rainforest

The technical mapping analysis has identified an additional 313.68 hectares comprising 31 Littoral Rainforest patches comprising 49% of the original 2019 gross area, noting these patches generally include parts of lots. Of the areas identified as littoral rainforest 50 lots (271.4 hectares) of private property are included.

Further, the technical mapping analysis has identified an additional 317.97 hectares comprising 112 wetlands in the Manning River catchment, noting these generally includes parts of lots. Of the areas identified as coastal wetlands 123 lots (284.98 hectares) of private property are included.

The environmental protection of these areas is of positive value to the broader community (being consistent with both the MidCoast Local Strategic Planning Statement and Community Strategic Plan), and implements a priority action in the Coastal Management Program.

Further, much of the land to which the mapping applies has already been identified as having high conservation biodiversity value and as such represents “endangered ecological communities” under the *Biodiversity Conservation Act 2016*, Biodiversity values of coastal wetlands and littoral rainforests are further protected under MidCoast Council’s respective Local Environmental Plans, *Fisheries Management Act 1994*, *Water Management Act 2000* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Ensuring that the locations of the coastal wetlands and littoral rainforests are correctly mapped under the policy that provides high level planning controls (i.e. *State Environmental Planning Policy (Coastal Management) 2018*) will help to protect them in their natural state, including their biological diversity and ecosystem integrity. In turn, this will promote the rehabilitation and restoration of degraded parts of these important coastal management areas. This is consistent with the management objectives of the *Coastal Management Act 2016* and the NSW Government’s NSW Wetland Policy’s principles for management and conservation.

This report recommends that the community impact of the proposed map changes be the subject of a detailed community engagement strategy, that would form part of the Planning Proposal process.

1. Introduction

The *Coastal Management Act 2016* promotes strategic and integrated management, use and development of the coast for the social, cultural and economic wellbeing of the people of NSW. It also establishes the framework for developing strategic Coastal Management Programs and identifies four coastal management areas (sometimes overlapping) that comprise the coastal zone. It establishes objectives specific to each of these management areas, reflecting their different values and threats.

The associated *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) implements the objectives of the *Coastal Management Act 2016* from a land use planning perspective. It does this by specifying how development proposals are to be assessed if they fall within the coastal zone, and includes the mapping of the coastal management areas.

One of coastal management areas that makes up the coastal zone is the '*coastal wetlands and littoral rainforests area*'. This is defined as land area which displays 'the hydrological and floristic characteristics of coastal wetlands or littoral rainforests and land adjoining those features'.

The mapping of the '*coastal wetlands and littoral rainforests area*' in the Coastal Management SEPP builds on the original *State Environmental Planning Policy 14 – Wetlands* (SEPP 14) and *State Environmental Planning Policy 26 – Littoral rainforest* (SEPP 26) maps to reflect improved knowledge of these areas.

The Coastal Management SEPP Fact Sheet No. 4 (April 2018) states that when the Coastal Management SEPP was gazetted, the coastal wetlands and littoral rainforests mapping was refined from that originally prepared for SEPP 14 and SEPP 26 which were published in 1985 and 1986 respectively. These maps were updated in 2012 (University of NSW wetland mapping), and 2013 (OEH mapping of vegetation communities in Greater Metropolitan Sydney). Further, to prepare the maps for the Coastal Management SEPP, recent mapping of mangrove and saltmarsh communities (by DPI Fisheries) and vegetation mapping prepared by local councils submitted during the exhibition process was also considered.

As part of MidCoast Council's commitment to the Coastal Management Program, detailed mapping of coastal wetlands and littoral rainforests have been undertaken. This finer-scale mapping shows significantly expanded areas outside currently mapped areas in the Coastal Management SEPP.

The Coastal Management SEPP Fact Sheet No. 4 (April 2018) states that "the Department of Planning and the Environment [now Department of Planning, Industry and Environment (DPIE)] expects that maps of the coastal management

areas will be regularly reviewed as improved data and mapping methods become available to councils and the NSW Government”.

This report provides recent data and mapping methodology to support and justify a proposed amendment to the current coastal wetlands and littoral rainforest as mapped in specific parts of the MidCoast LGA. It is intended that this report be the basis to amend the Coastal Management SEPP maps through a planning proposal and SEPP amendment process.

1.1 Report overview

This report provides:

- An overview of the legislative framework as it applies to amending the coastal wetlands and littoral rainforest mapping contained in the Coastal Management SEPP (see Section 1.2)
- Technical analysis of recent 2019 mapping of coastal wetlands and littoral rainforest and an outline of the mapping methodology to support and justify expanding the areas currently mapped in the Coastal Management SEPP (see Section 2)
- Planning analysis to support and justify expanding the areas of coastal wetlands and littoral rainforest currently mapped in the Coastal Management SEPP (see Section 3)
- Recommendations to move forward with a planning proposal (see Section 4)

1.2 Legislative Framework

1.2.1 Coastal Management Act 2016

The *Coastal Management Act 2016* establishes a strategic framework and objectives for managing coastal issues in NSW.

The objects of the *Coastal Management Act 2016* are to manage the coastal environment of NSW in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State, and in particular—

- a) to protect and enhance natural coastal processes and coastal environmental values including natural character, scenic value, biological diversity and ecosystem integrity and resilience, and
- b) to support the social and cultural values of the coastal zone and maintain public access, amenity, use and safety, and
- c) to acknowledge Aboriginal peoples’ spiritual, social, customary and economic use of the coastal zone, and
- d) to recognise the coastal zone as a vital economic zone and to support sustainable coastal economies, and

- e) to facilitate ecologically sustainable development in the coastal zone and promote sustainable land use planning decision-making, and
- f) to mitigate current and future risks from coastal hazards, taking into account the effects of climate change, and
- g) to recognise that the local and regional scale effects of coastal processes, and the inherently ambulatory and dynamic nature of the shoreline, may result in the loss of coastal land to the sea (including estuaries and other arms of the sea), and to manage coastal use and development accordingly, and
- h) to promote integrated and co-ordinated coastal planning, management and reporting, and
- i) to encourage and promote plans and strategies to improve the resilience of coastal assets to the impacts of an uncertain climate future including impacts of extreme storm events, and
- j) to ensure co-ordination of the policies and activities of government and public authorities relating to the coastal zone and to facilitate the proper integration of their management activities, and
- k) to support public participation in coastal management and planning and greater public awareness, education and understanding of coastal processes and management actions, and
- l) to facilitate the identification of land in the coastal zone for acquisition by public or local authorities in order to promote the protection, enhancement, maintenance and restoration of the environment of the coastal zone, and
- m) to support the objects of the *Marine Estate Management Act 2014*.

Specifically, the management objectives for the coastal wetlands and littoral rainforests coastal management area are as follows:

- a) to protect coastal wetlands and littoral rainforests in their natural state, including their biological diversity and ecosystem integrity,
- b) to promote the rehabilitation and restoration of degraded coastal wetlands and littoral rainforests,
- c) to improve the resilience of coastal wetlands and littoral rainforests to the impacts of climate change, including opportunities for migration,
- d) to support the social and cultural values of coastal wetlands and littoral rainforests,
- e) to promote the objectives of State policies and programs for wetlands or littoral rainforest management.

Further consideration of the *Coastal Management Act 2016* is provided in Section 2 of this report.

1.2.2 State Environmental Planning Policy (Coastal Management) 2018

The Coastal Management SEPP commenced on 3 April 2018. It implements the objectives of the *Coastal Management Act 2016* from a land-use planning perspective

by specifying how development proposals are to be assessed if they fall within the coastal zone, and has the following aims:

- a) managing development in the coastal zone and protecting the environmental assets of the coast, and
- b) establishing a framework for land use planning to guide decision-making in the coastal zone, and
- c) mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the *Coastal Management Act 2016*.

Targeted development controls apply to each coastal management area within the coastal zone and are designed to achieve the specific management objectives for that area as set out in the *Coastal Management Act 2016*.

The Coastal Management SEPP essentially carries forward pre-existing controls from the now repealed SEPP 14 and SEPP 26 for the coastal wetlands and littoral rainforests coastal management area.

The Coastal Management SEPP requires development consent for clearing native vegetation on land mapped as coastal wetlands or littoral rainforests, even if the clearing is not associated with any other development. The development controls for land mapped as coastal wetlands and littoral rainforests apply to all land use zones in LEPs.

In addition, as the clearing of native vegetation on land mapped as a coastal wetland or littoral rainforest is a 'designated development' it also triggers a requirement for an assessment under the *Biodiversity Conservation Act 2016*. It is noted that mapped coastal wetlands and littoral rainforests are also types of land that can, and have, been included on the Biodiversity Values Map given they have high or sensitive biodiversity values. The proximity areas for coastal wetlands and littoral rainforests have not been included on the Biodiversity Values Map.

Councils may seek amendments to any of the coastal management area maps contained in the Coastal Management SEPP, as needed, via a planning proposal.

1.2.3 Environmental Planning & Assessment Act 1979

A Ministerial Planning Direction under Section 9.1 of the *Environmental Planning and Assessment Act 1979* accompanies the Coastal Management SEPP. It requires that planning proposals within the coastal zone need to be consistent with Coastal Management Programs (or CZMPs that continue to apply) including maps developed as part of these programs, or evidence obtained through similar processes or studies.

DPIE states that this *“strategic approach will reduce the degree to which future land uses threaten important coastal and marine environmental assets, expose communities to coastal hazards or create other legacy issues that burden future generations”*.

1.2.4 MidCoast Council's Coastal Management Program

Consistent with the Coastal Management Program framework established by the *Coastal Management Act 2016*, MidCoast Council is developing CMPs across various coastal locations in the LGA. The focus of this report is the Manning River Estuary and Catchment CMP and the Old-Bar Manning Point CMP.

The scope of the Manning River Estuary and Catchment CMP covers issues and management actions for all Coastal Management Areas. This covers the estuary and its catchment, commencing 2 km inland from the average low tide water mark.

Concurrent with the development of the Manning River Estuary CMP, a CMP is also being prepared for the 'coastal erosion hotspot' of Old Bar - Manning Point. This CMP covers the area from the average low tide water mark to approximately 2 km inland.

The Manning River Estuary and Catchment Scoping Study (June 2020) informs the Manning River Estuary and Catchment CMP, and it specifically noted:

- mapping data of coastal wetlands is in need of finer scale survey and mapping for management, protection and ongoing planning
- gap analysis identified a need for better for spatial information, description and assessment of coastal wetlands
- the CMP Technical Working Group ranked coastal wetland assessment as a priority action
- the Manning River Estuary CMP will include evidence and supporting documents for a proposed amendment to the Coastal Management SEPP for Coastal Wetlands across both the Manning River Estuary and Old Bar Manning Point CMP AOI.

Consequently, Council engaged Eco Logical Australia (ELA) to map wetlands in the Manning River. The aim of this project was to produce fine-scale wetland mapping and detailed descriptions for coastal wetlands in the Manning River catchment. In addition, North Coast Aerial Mapping (NCAM) undertook detailed mapping of the littoral rainforests in the entire LGA in 2019. The project involved the collation of all available existing literature, floristic data and GIS-based vegetation mapping layers, aerial photography and extensive field survey. The fine-scale coastal wetlands and littoral rainforest mapping shows significantly expanded areas outside the coastal wetlands and littoral rainforest areas currently mapped in the Coastal Management SEPP. This is further detailed in Section 2 of this report.

2. Mapping Analysis

This section provides an overview of the mapping analysis undertaken for the project, including reviewing the existing mapping and preparation of proposed amendment coastal management maps.

2.1 Existing Coastal Management Maps

The initial step in the process was to examine the existing mapping for coastal management, of which there have been several iterations over a number of years. A review of the existing SEPP mapping was required to compare with the mapping from the recent consultant's studies in order to generate a 'difference' layer. The aim was to provide an evidence base to support a future amendment to the Coastal Management SEPP 2018 maps that apply to MidCoast LGA.

The existing mapping layers included the following:

- SEPP (Coastal Management) 2018
- ELA 2019 Manning River wetlands mapping
- NCAM 2019 littoral rainforest mapping

2.1.1 State Environmental Planning Policy (Coastal Management) 2018 maps

The existing Coastal Management SEPP 2018 spatial dataset identifies the land to which the SEPP applies and aims to provide a co-ordinated approach by mapping the four coastal management areas that comprise the NSW Coastal Zone.

DPIE developed the spatial data and is the responsible party for its development and use. Under section 5 of the *Coastal Management Act 2016*, the Coastal Zone is defined by the following layers.

- Coastal Wetlands
- Littoral Rainforest
- Coastal Use Area
- Coastal Environment Area
- Coastal Vulnerability Area

A description of each layer relevant to this report (being Coastal Wetlands and Littoral Rainforest) is provided below.

1. Coastal Wetlands

Coastal wetlands are defined under the DPIE *Coastal Management SEPP, Fact Sheet 4: Mapping of Coastal Management Areas (Technical)* as plant communities dominated by any of the following seven vegetation types:

- mangroves

- salt marshes
- melaleuca forests
- casuarina forests
- sedgelands
- brackish and freshwater swamps
- wet meadows

The mapped coastal wetlands include a separate 100 metre buffer termed 'proximity area for coastal wetlands'. The mapped coastal wetlands' definitions were derived from the now superseded SEPP 14.

2. Littoral Rainforest

Littoral rainforest is defined under the DPIE *Coastal Management SEPP, Fact Sheet 4: Mapping of Coastal Management Areas (Technical)* as plant communities dominated by any of the following five combinations of tree species:

- Riberry and broad-leaved Lilly Pilly
- Tuckeroo
- Brush box
- Yellow Tulip, bauerella, red olive plum, plum pine
- Lilly Pilly, various figs, cabbage palm and plum pine

The mapped Littoral Rainforest includes a separate 100 metre buffer termed 'proximity area for littoral rainforest' under the Coastal Management SEPP. The mapped littoral rainforest definitions were derived from the now superseded SEPP 26.

2.1.2 Manning River Coastal Wetlands Mapping 2019

In 2019, MidCoast Council engaged ELA to map wetlands in the Manning River catchment. The aim of the project was to produce fine-scale wetland type mapping and detailed descriptions for coastal wetlands.

The project area included the coastal area of the Manning River catchment with the additional inclusion of areas with impeded drainage in the Crowdy Bay National Park. The Manning River Estuary includes the Manning River and its tributaries up to the approximate tidal limit and the adjoining floodplain. The Manning River catchment covers approximately 856,224 hectares of land and includes the towns of Taree, Wingham, Lansdowne, Gloucester, and Harrington and extends to Barrington Tops in the southwest of the catchment. The study area is shown below in **Figure 1**.

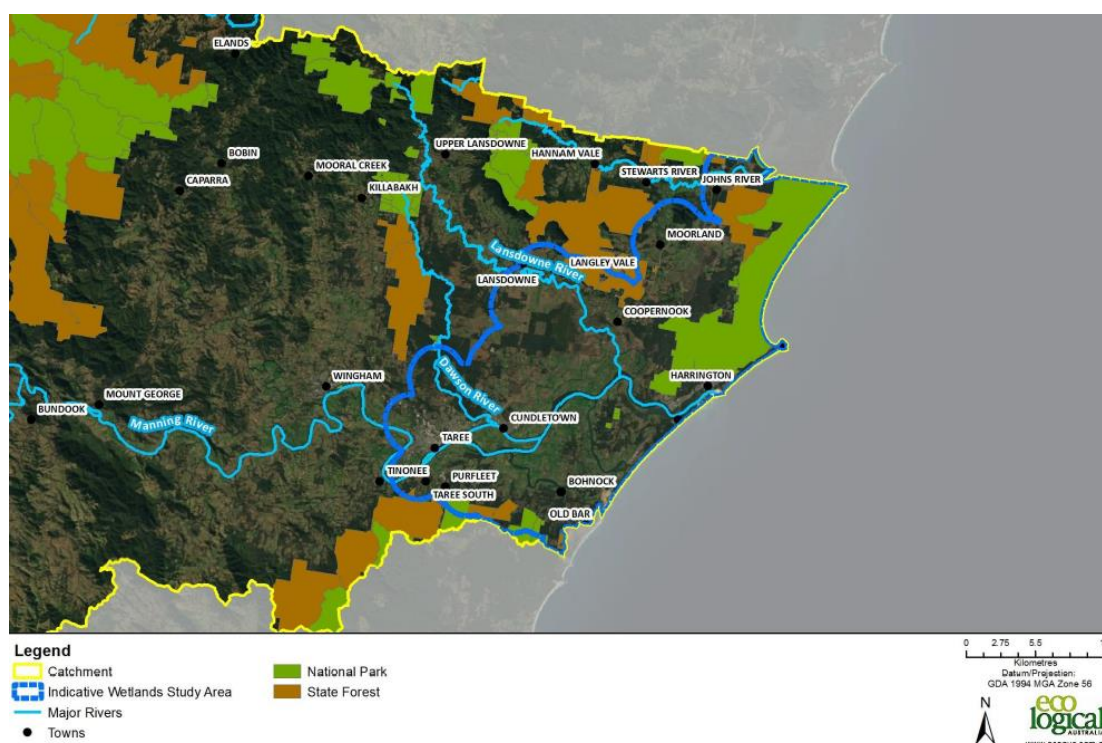


Figure 1: Manning River Coastal Wetlands Mapping 2019 study area

The study encompassed mapping of 13 wetland types. The maps included three vegetation formations, six vegetation classes and 51 discrete units, including variants and intergrades (complexes). A number of rules were developed before the commencement of the process. These rules resulted in the exclusion of derived communities (such as native grasslands), non-native vegetation and scattered/isolated paddock trees.

The field procedures included surveying twenty-two 20 x 20m full floristic vegetation plots and over 280 rapid data points between 15 July 2019 and 16 August 2019 by ELA botanist and ecologists. Surveys were also undertaken using mobile devices loaded with Collector for ArcGIS software and relevant geographic information system (GIS) datasets including existing plots, aerial photography, draft wetland mapping and tenure.

Wetlands were generally mapped in three broad condition states. These were based on both field validation (where possible) and aerial photographic interpretation. The results from the survey are as follows:

- 8,906 hectares mapped in total
- 69% of the mapped wetlands were in good/excellent condition (6,156 hectares)
- 19% of the mapped wetlands were in fair condition (1,040 hectares)
- 12% of the mapped wetlands were in poor/ very poor condition (1,707 hectares)

The majority (86%) of all wetland types mapped are protected under existing State or Commonwealth legislation. Table 1 provides the results of the survey, including the vegetation classes observed.

Table 1: 2019 Mapping - Vegetation Formation and Classes

Formation	Class	Hectares
Forested Wetlands	Coastal Floodplain Wetlands	2,818.4
	Coastal Heath Swamps	2,431.0
	Coastal Swamp Forests	2,647.5
Freshwater Wetlands	Coastal Freshwater Lagoons	54.5
Saline Wetlands	Mangrove Swamps	564.4
	Saltmarshes	390.4
Total		8,906.3

2.1.3 Littoral Rainforests Mapping 2019

The aim of the littoral rainforests mapping undertaken by North Coast Aerial Mapping in 2019 was to describe and assess littoral rainforests across Mid Coast Council coastal areas to better understand and manage the conservation of these areas. The project involved the collation of all available existing literature, floristic data and GIS-based vegetation mapping layers.

To inform the survey sites, vegetation mapping layers were collated to produce a preliminary composite map. This provided a basis for aerial photo interpretation (API) to identify potential littoral rainforest and delineate spatial boundaries at a scale of 1:2000. Aerial photographic interpretation was then undertaken iteratively in conjunction with an extensive field survey during which full floristic site, rapid floristic site, site traverse and stand condition data were collected.

The study area was designated as a 5km-wide strip of land fringing the coast, estuaries and tidal lake shorelines (including islands in lakes) of the MidCoast Council LGA. **Figure 2** demonstrates the study area.

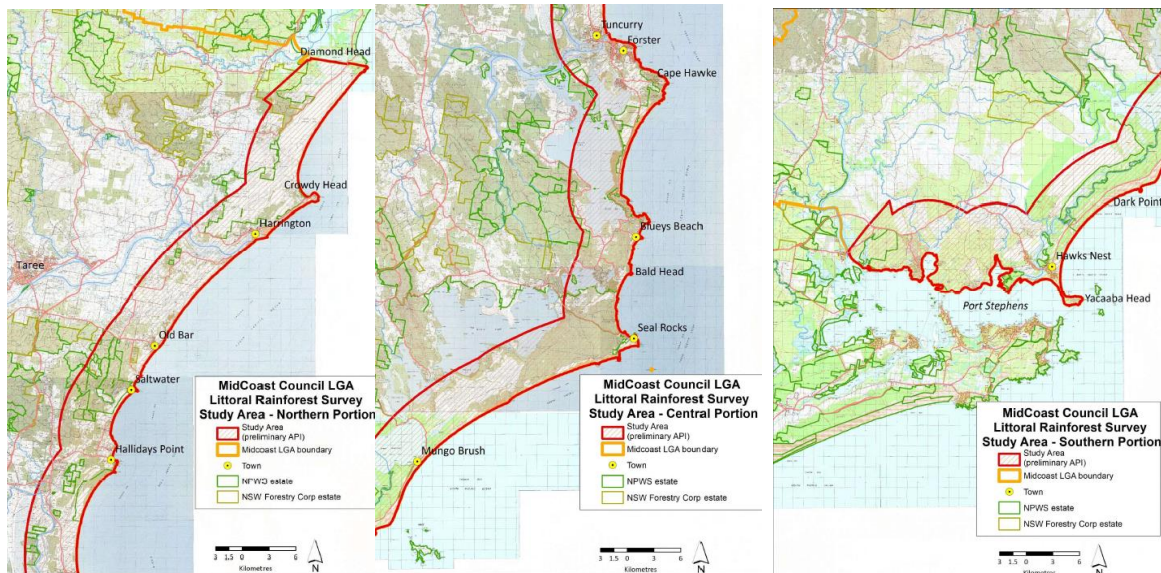


Figure 2: Littoral Rainforests Mapping 2019 study area

A total of 42 person-days of fieldwork was undertaken, encompassing sampling of 26 full floristic plots and 650 rapid assessment plots. For full floristic plots, sampling was conducted within 20m x 20m plots. To facilitate rapid data entry for rapid assessment plots, digital proforma were used in a Fulcrum mobile platform application on a cellular iPad, for import into ArcGIS.

Following field work, six littoral rainforest communities were identified covering a total of 635 hectares. The six groups that were mapped included:

- Group 1 - Red Olive Plum - Yellow Tulip - Black Plum - Python Tree Littoral Rainforest
- Group 2 - Coogera - Yellow Tulip - Native Celtis - Myrtle Ebony Littoral Rainforest
- Group 3 - Brush Box - Mock Olive - Veiny Wilkiea - Scentless Rosewood Littoral Rainforest
- Group 4 - Cabbage Palm Littoral Rainforest
- Group 5 - Tuckeroo - Coast Banksia - Yellow Tulip - Mock Olive Littoral Rainforest
- Group 6 - Brown Myrtle Littoral Rainforest.

2.2 Proposed Coastal Management Maps

2.2.1 Scope of the proposed Coastal Management Maps

The aim of the mapping component of the study was to develop spatial datasets as supporting documentation to propose a future amendment to the Coastal Management SEPP. The areas of the coastal zone that were investigated included

the coastal wetlands encompassed within the 2019 coastal wetlands study and the land identified in the 2019 littoral rainforest study.

The spatial GIS layers, defining the location and extent of coastal wetlands and littoral rainforest that meet the SEPP definition, were therefore a key component of this study.

This process required the interrogation and truncation of the existing spatial datasets. The outcome was two spatial datasets (GIS layers) for wetlands and two for littoral rainforest, one identifying the proposed additional area by vegetation community and one identifying the proposed additional area by tenure. The format will meet the NSW Government *Standard Technical Requirements for Spatial Datasets and Maps* and MidCoast Council's spatial data specifications. The GIS software used was QGIS 3.16 "Hannover" with Coordinate Reference System GDA2020/MGA Zone 56, Authority ID EPSG:7856. Spatial datasets produced comply with the NSW *Standard Technical Requirements for Spatial Datasets and Maps* (DPIE, 2017).

Spatial data sources and mapping limitations are included in Appendix A.

2.2.2 General approach to suitability of wetlands for inclusion in the Coastal Management SEPP

Mapping tasks included analysing the *Manning River Coastal Wetlands Mapping* (2019) to identify those wetlands most suitable for inclusion as proposed amendments to the Coastal Management SEPP. Given that it was unlikely that all wetlands should be included, it was determined that a prioritisation process would be appropriate. To facilitate this process, a simple decision process/tree was developed and included the following two steps:

1. **Condition of the wetland:** it was considered that wetlands most suitable for inclusion in the SEPP needed to have a high condition level, as defined in the 2019 mapping study. Wetlands with a high condition level would generally be expected to be relatively intact as a community, show low/minimal levels of disturbance and low incidence of exotic weeds. Such wetlands would tend to have higher biodiversity values and lower ongoing management issues. Wetlands that were determined to be in low-moderate condition were therefore excluded from the mapping of potentially suitable areas.
2. **Confidence of mapping:** it was assessed as important that the confidence in the accuracy of the mapped wetland type needed to be very high for the purpose of the project. Wetlands with a very high confidence level had been subject to either field validation or confident aerial photographic interpretation. Wetlands that had low-moderate confidence levels were subsequently excluded from further assessment.

An outline of how the decision tree was applied is further identified below and articulated in Table 2.

2.2.3 Mapping process - wetlands

The following outlines the process of developing the proposed wetlands mapping amendments:

Step 1 – Analysis of Coastal Management SEPP 2018 data sets

The first step in the process was to analyse the existing mapping and gain a greater understanding of the Coastal Management SEPP wetlands data.

This included the following tasks:

1. Review and familiarisation with relevant reports (as described in Section 2.1)
2. Review and familiarisation with spatial datasets provided by MidCoast Council
3. Review of Coastal Management SEPP spatial datasets sourced from the NSW SEED portal.

The aim was to examine the SEPP vegetation classifications within the SEPP boundary and compare these wetland types with the vegetation layers developed in the Manning River Coastal Wetlands Mapping Study (2019).

Step 2 - Mapping wetland in the Manning River Catchment

Following comprehensive analysis of the existing mapping sets, including comparison of the Coastal Management SEPP 2018 spatial datasets with the 2019 ELA wetland mapping and application of GIS geoprocessing tools, identification of specific wetland areas (polygons) located outside the current SEPP boundary was possible.

The subsequent methods for developing the wetland maps included the following:

1. **Condition and Confidence of the wetland** - QGIS Query Builder was applied to the Manning River Coastal Wetlands Mapping (ELA, 2019) spatial dataset, comprising 9,031 records (polygons) and a total area of 8,906.254 hectares, to extract features representing wetlands mapped as having high condition and confidence features (refer Section 2.2.2).
2. **Extract areas outside of the Coastal Management SEPP boundary** - QGIS Vector Geoprocessing Difference tool was applied to extract areas of the wetlands with both high condition and high level of confidence outside of the existing Coastal Management SEPP 2018 wetlands layer.
3. **Extract areas ≥ 1 ha** - In the absence of specific data on individual wetlands, it was determined that higher priority be given to including wetlands ≥ 1 ha in the

potential SEPP wetland category. The result produced a layer with 138 records (wetland areas/polygons) and total area of 402.81 hectares which represents 4.5% of the gross original area developed in the Manning River Coastal Wetlands Mapping (2019).

4. **Conformity with Coastal Management SEPP 2018 Wetland Definitions -**

Vegetation types were then compared for conformity with Coastal Management SEPP definitions for wetland types (refer to Section 2.1.1 and Table 2). This process entailed the following procedures:

- Individual wetland polygons were examined for proximity to locations for which full floristics or rapid plot data had been collected in order to facilitate confidence in community definitions. This process was applied primarily to communities identified in the 2019 wetlands mapping, but not directly comparable with the Coastal Management SEPP wetlands definitions (refer to Table 2).
- Amendments were then made to delete non-conforming polygons as detailed in Table 2, and a final layer "Conforming Wetlands" was produced with 112 records (wetland areas/polygons) and an area of 317.97 hectares.

In summary, "Conforming Wetlands" comprise all wetlands identified as:

1. being outside the current SEPP boundary
2. of high condition level
3. with a very high level of confidence in the mapped community identification
4. conforming to the SEPP definitions for wetlands.

5. **Identification of Wetland Tenure -**

- All wetlands identified as "Conforming Wetlands" were then examined in relation to land tenure. The tenure layer provided by Council was used for this process.
- A separate tenure layer was generated for all wetlands conforming to the above criteria (a Conforming Wetlands with tenure layer).
- A grid-based mapping atlas (a series of maps for the study area) was subsequently prepared for:
 - 1) Conforming Wetlands by Vegetation Type, and for
 - 2) Conforming Wetlands by Tenure

2.2.4 Mapping process - littoral rainforest

Littoral rainforests in the *MidCoast Council Local Government Area Floristic Survey* (North Coast Aerial Mapping, 2019) was the primary source for the development of the littoral rainforest mapping layers. Only areas located outside the existing Coastal Management SEPP littoral rainforest maps were analysed.

As with the wetlands mapping described in Section 2.2.3, part of the initial process was to capture high condition and high confidence level areas of littoral rainforest as being most suitable for inclusion in proposed amendments to the Coastal Management SEPP.

Subsequent mapping tasks specific to the littoral rainforest layer comprised the following steps:

1. **Condition and Confidence of the Littoral Rainforest** - QGIS Query Builder was applied to the *MidCoast Council Local Government Area Floristic Survey* (North Coast Aerial Mapping, 2019) dataset, comprising 337 records (polygons) and a total area of 635.17 hectares. As for the wetlands, areas identified as having a high condition level were extracted for the purpose of developing a “conforming Littoral Rainforest” layer. Areas identified as having a high level of condition were then examined further to identify polygons with a high level of confidence in mapping (Confidence Level 1 and 2), as determined in the 2019 mapping study. Confidence definitions comprised the following:
 1. Site visited in field and/or existing floristic data
 2. Confident extrapolations based upon field sites in adjoining or nearby polygons
 3. Less confidence polygon further from known sites or unusual photo pattern
 4. Low level of confidence
2. **Extract areas outside of the Coastal Management SEPP boundary** - QGIS Vector Geoprocessing Difference tool was applied to extract areas outside of the Coastal Management SEPP layer and generate a mapping layer: 'Littoral Rainforest Condition Good Confidence 1 or 2'.
3. **Extract areas ≥ 1 ha** - As for the wetland mapping, it was determined that areas of littoral rainforest with an area ≥ 1 ha would be likely to have a higher level of biodiversity and long-term sustainability and should be prioritised. The absence of specific data for individual areas also precluded assessments of particular values for any small polygons being included, such as occurrence of threatened species.

A layer representing “Conforming Littoral Rainforest” was subsequently generated, with 31 records (areas/polygons) and a total area of 313.68 hectares, comprising 49% of the original 2019 gross area.
4. **Conformity to Coastal Management SEPP 2018 Littoral Rainforest Definitions** – Data was not available for further analysis of floristic composition of mapped polygons. A conservative approach was therefore adopted and all

areas mapped as littoral rainforest were assumed to comply with the original SEPP 26 definitions.

5. **Identification of Littoral Rainforest Tenure** - All areas of Littoral Rainforest identified as “Conforming Littoral Rainforest” were then examined in relation to land tenure. The tenure layer provided by Council was used for this process. A separate tenure layer was then generated for all areas of “Conforming Littoral Rainforest”. A grid-based mapping atlas (a series of maps for the littoral rainforest study area) was prepared for:
 - 1) Conforming Littoral Rainforests by Vegetation Type, and for
 - 2) Conforming Littoral Rainforests by Tenure.

Table 2: Comparison of Wetland Types for MidCoast Council - Decision Table

ELA (2019) Wetland Types (Major Groups-13)	Step 1 Some Wetland Polygons Occur Outside Current SEPP Wetlands with Condition High Confidence Level- High (Level 1) and area ≥1ha?	Step 2 Plot Data Relevant to Step 1 available?	Step 3 Some Wetland Polygons Occur Outside Current SEPP Wetlands with Condition High Confidence Level- High (Level 1 & 2) and area ≥1ha?	Step 4 Plot Data Relevant to Step 3 available?	Step 5 SEPP Wetland Definitions Does ELA Community Conform (with Certainty)?	Step 6 Does ELA Mapped Community have Potential to Conform to SEPP Wetland Definitions	Comments (where relevant)
Broad- leaved Paperbark	YES - numerous conforming polygons occur	Plot data confirmation not essential as general ELA community descriptions provide reasonable certainty	YES - conforming polygons occur	As for Step 2	Melaleuca Forest YES - conforms - direct correlation with SEPP definition	N/A	
Forest Red Gum (FRG)	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A FRG only occurs in ELA mapping as Condition High Confidence Level 4	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A FRG only occurs in ELA mapping as Condition High Confidence Level 4	Potentially Melaleuca Forests/ Casuarina Forests	This could conform if community/ polygon also supports Melaleuca and/or Swamp Oak but excluded on the basis of Steps 1-4. -	
Freshwater Wetland	YES - a few polygons occur	No relevant plot data available	YES - a few polygons occur	No relevant plot data available	Brackish and Freshwater Swamps YES conforms - freshwater swamps is comparable with freshwater wetlands -	N/A	
Grey Mangrove	YES - a few polygons occur	No relevant plot data available	YES - a few polygons occur	No relevant plot data available	YES - Mangroves encompasses Grey Mangrove Forests/Woodlands	N/A	
Heath- leaved Banksia	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A	NO - ELA community does not conform to SEPP Wetland definitions	NO - no form of the community would be expected to conform	Type of tall Wet Heathland – no wet heaths/heathlands included in SEPP definitions

ELA (2019) Wetland Types (Major Groups-13)	Step 1 Some Wetland Polygons Occur Outside Current SEPP Wetlands with Condition High Confidence Level- High (Level 1) and area ≥1ha?	Step 2 Plot Data Relevant to Step 1 available?	Step 3 Some Wetland Polygons Occur Outside Current SEPP Wetlands with Condition High Confidence Level- High (Level 1 & 2) and area ≥1ha?	Step 4 Plot Data Relevant to Step 3 available?	Step 5 SEPP Wetland Definitions Does ELA Community Conform (with Certainty)?	Step 6 Does ELA Mapped Community have Potential to Conform to SEPP Wetland Definitions	Comments (where relevant)
Melaleuca Thicket	YES - 2 polygons to investigate	Plot Data available - YES See table 4 (in Appendix A) 2 polygons to be investigated	YES - 8 polygons to investigate	Plot Data available - YES See table 4 (in Appendix A) 8 polygons to be investigated	Potentially Melaleuca Forests	Based on ELA (2019) descriptions, areas dominated by <i>M ericifolia</i> could have potential to conform. Descriptions of community are general and plot data is very limited. Determined NO - doesn't conform to SEPP Wetlands definitions.	10 polygons to be excluded from Conforming Wetlands layer
Reedland	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A	YES - ELA community forms part of SEPP Freshwater Wetland	Included in Scientific Determination of 'Coastal Wetlands' EEC	
Saltmarsh	YES - a few polygons occur	No relevant plot data available but not considered necessary	YES - a few polygons occur	No relevant plot data available but not considered necessary	YES - ELA community forms part of SEPP Salt Marshes	N/A	Saltmarsh communities are distinctive and no uncertainty regarding identification
Sedgeland	YES - a few polygons occur	No relevant plot data available but not considered necessary	YES - a few polygons occur	No relevant plot data available but not considered necessary	YES - ELA community forms part of SEPP Sedgelands	N/A	Sedgelands is a relatively broad, but distinctive type of community and ELA descriptions fits with SEPP definition
Shrubland	NO - conforming polygons do not occur	N/A	NO - conforming polygons do not occur	N/A	NO - no Shrubland Wetlands included in SEPP definitions	NO - no potential to conform to any SEPP Wetlands definition	

ELA (2019) Wetland Types (Major Groups-13)	Step 1 Some Wetland Polygons Occur Outside Current SEPP Wetlands with Condition High Confidence Level- High (Level 1) and area ≥1ha?	Step 2 Plot Data Relevant to Step 1 available?	Step 3 Some Wetland Polygons Occur Outside Current SEPP Wetlands with Condition High Confidence Level- High (Level 1 & 2) and area ≥1ha?	Step 4 Plot Data Relevant to Step 3 available?	Step 5 SEPP Wetland Definitions Does ELA Community Conform (with Certainty)?	Step 6 Does ELA Mapped Community have Potential to Conform to SEPP Wetland Definitions	Comments (where relevant)
	outside current SEPP Wetlands		outside current SEPP Wetlands				
Swamp Mahogany	YES - 3 conforming polygons to investigate	YES - Plot Data available See table 4 (in Appendix A)	YES - 12 conforming polygons to investigate	YES - Plot Data available See table 4 (in Appendix A)	See Step 6	Potential to conform to Melaleuca Forests or Casuarina Forests Level of conformity dependent on extent of representation of Melaleuca and/or Swamp Oak –check plot data. NO - 2 polygons from Step 2 and 8 polygons from Step 4 determined not to conform	5 polygons retained for inclusion or further consideration in “Conforming Wetland” mapping
Swamp Oak	YES - numerous conforming polygons occur	Plot data confirmation not essential as general ELA community descriptions provide reasonable certainty	YES - conforming polygons occur	See Step 2	YES - Casuarina Forests as a wetland is characterised by Swamp Oak	N/A	All conforming polygons retained in “Conforming Wetland” mapping
Wet Heath	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A	NO - conforming polygons do not occur outside current SEPP Wetlands	N/A	NO - no Heath/Heathland Wetlands included in SEPP definitions	NO - no potential to conform to any SEPP Wetlands definition	

3. Planning considerations and justification

3.1 Proposed Amendments to the Coastal Management SEPP

As outlined in Section 2, existing Coastal Management SEPP mapping and more recent mapping (undertaken in 2019 by ELA and NCAM) has been analysed with detailed consideration given to the following:

- Existing Coastal Management SEPP mapping
- Definition of coastal wetlands and littoral rainforest
- Confidence in mapping methodology
- Condition of coastal wetlands and littoral rainforest

The technical mapping analysis has identified areas outside the existing Coastal Management SEPP mapping as described below. These are the areas proposed to be added to the Coastal Management SEPP by way of a planning proposal.

Coastal Wetlands - Manning River catchment

Additional coastal wetland areas (in addition to those mapped in the Coastal Management SEPP) in the Manning River catchment have been mapped as shown in Appendix B.

An additional 317.97 hectares have been identified comprising 112 wetlands, noting these generally includes parts of lots. Of the areas identified as coastal wetlands 123 lots (284.98 hectares) of private property are included.

Littoral Rainforest – LGA wide

Additional littoral rainforest areas (in addition to those mapped in the Coastal Management SEPP) in the MidCoast LGA have been mapped as shown in Appendix C.

An additional 313.68 hectares have been identified, comprising 31 Littoral Rainforest patches, noting these generally includes parts of lots. Of the areas identified as littoral rainforest 50 lots (271.4 hectares) of private property are included.

3.2 Strategic justification for inclusion in the Coastal Management SEPP 2018

3.2.1 Coastal Management

The proposed map changes are the result of Council's ongoing commitment to the Coastal Management Program, being implemented under the *Coastal Management Act 2016* and the Coastal Management SEPP. The improved data and mapping methods outlined in Section 2 are based upon two separate mapping projects, undertaken in 2019, to ensure accurate mapping of the coastal wetlands (consistent with a priority action identified in the Manning River Estuary and Catchment CMP

Scoping Study) and littoral rainforest. These contemporary projects that have been the subject of detailed analysis as part of this report are:

- Eco Logical Australia (ELA) 2019 Manning River Wetlands mapping
- North Coast Aerial Mapping (NCAM) 2019 Littoral Rainforests in the MidCoast Council

3.2.2 Local Strategic Planning Statement

Further, the proposed map changes are consistent with the following *MidCoast Local Strategic Planning Statement* Planning Priorities:

- P6: Protect and improve our environment
- P7: Improve our resilience
- P8: Managing our land and water assets

3.2.3 Regional Strategy

The proposed map changes are also consistent with the aims and objectives of the *Mid North Coast Regional Strategy (MNCRS) 2006-31*. The Regional Strategy provides a series of principles and actions for environment and natural resources, natural hazards and cultural heritage, and the proposed map changes are consistent with these principles. In relation to these principles and actions:

- both the MNCRS and the *Draft Mid North Coast Regional Conservation Plan* recognise coastal wetlands and littoral rainforest as high conservation value biodiversity assets to be protected.
- updating the mapping of coastal wetlands and littoral rainforest will assist with limiting development on land constrained by coastal processes and areas that have valued environmental, coastal and cultural heritage landscape features.

3.2.4 Community Strategic Plan

The MidCoast 2030 Community Strategic Plan (CSP) is a roadmap for the future of the MidCoast Council area. In the development of the CSP, other key government plans and legislative frameworks were considered, in particular NSW State Plan, the Hunter Regional Plan, the *Local Government Act 1993* and the Integrated Planning and Reporting Guidelines, to ensure that there is alignment and the community is working towards a shared vision.

The Vision of the CSP is “*We aspire to be a place of unique environmental significance where our quality of life and sense of community is balanced by sustainable and sensitive development, which fosters economic growth*”.

The most relevant value of the CSP is *"We protect, maintain and restore our natural environment"*.

The proposed map changes will assist to protect, maintain and restore water quality and the health and diversity of natural assets in and around coastal estuaries and wetlands.

3.2.5 Ministerial Directions (Section 9.1 directions)

The proposed map changes are consistent with a Ministerial Planning Direction No. 2.2 Coastal Management, issued under Section 9.1 of the *Environmental Planning and Assessment Act 1979*.

In this case the proposed map changes are consistent with the MidCoast Coastal Management Program, including maps developed as part of these programs. DPIE states that this *"strategic approach will reduce the degree to which future land uses threaten important coastal and marine environmental assets, expose communities to coastal hazards or create other legacy issues that burden future generations"*.

3.2.6 Environmental Impact

The proposed map changes are not expected to impact adversely on critical habitats, threatened species, populations or ecological communities or their habitats, rather the changes will provide ongoing protection to existing coastal wetlands and littoral rainforest.

Coastal wetlands perform critical ecosystem services and environmental functions including:

- mitigating storm damage and flood impacts
- recharging groundwater
- storing carbon
- helping to stabilise climatic conditions
- purifying water quality (including denitrification)
- retaining and exporting nutrients and sediments
- providing highly biodiverse foraging, roosting and breeding habitats for flora and fauna including migratory shorebirds
- seagrass beds provide food, shelter and oxygen for organisms in the estuary, and reduce turbidity by stabilising the riverbed and trapping suspended sediments

Ensuring that the locations of the coastal wetlands and littoral rainforests are correctly mapped under the policy that provides high level planning controls (i.e. the Coastal Management SEPP) will help to protect them in their natural state, including their biological diversity and ecosystem integrity. In turn, this will promote the

rehabilitation and restoration of degraded parts of these important coastal management areas.

This is consistent with the management objectives of the Coastal Management Act 2016 and the NSW Government's NSW Wetland Policy's principles for management and conservation.

The environmental protection of these areas is of positive value to the broader community (being consistent with both the MidCoast LSPS and CSP), and implements a priority action in the Coastal Management Program.

3.2.7 Economic & Social Impact

Coastal wetlands and littoral rainforest provide economic, social and cultural benefits including:

- provision of foraging and nursery habitat for many fish, crustaceans and molluscs, including species of commercial and recreational value. Studies by DPI Fisheries (for NSW) and Raoult and Gaston (Wallis Lake) confirm that saltmarsh and seagrass are the most significant contributors to the productivity of commercial fisheries.
- opportunities for nature-based tourism and recreational activities such as swimming, boating, fishing, camping, walking and birdwatching. Destination NSW regularly produces profiles on different segments that exist in the NSW visitor economy. According to *Destination NSW Nature-Based Tourism 2019 Snapshot* (and accelerated by COVID-19 and increased urbanisation) this form of tourism continues to steadily rise in regional NSW and provides substantial economic benefit to coastal LGAs.
- Aboriginal cultural significance, historical significance and importance for science and education. According to *Destination NSW Aboriginal Tourism 2019 Snapshot*, although Sydney is still the top region visited for this type of tourism, regional coastal Aboriginal tourism activities also attract tourists.

It is also noted much of the land to which the mapping applies has already been identified as having high conservation biodiversity value and as such is "endangered ecological community" under the *Biodiversity Conservation Act 2016*.

As the biodiversity values of the subject land (noting the mapped areas only include the parts of each lot on which coastal wetland or littoral rainforest is located) are significant, generally the development potential is low. Biodiversity values of coastal wetlands and littoral rainforests are protected under the *Biodiversity Conservation Act 2016*, MidCoast Council's respective Local Environmental Plans, *Fisheries Management Act 1994*, *Water Management Act 2000* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Further the community impact of the proposed map changes will be the subject of detailed community engagement strategy that would form part of the Planning Proposal process.

3.3 Environmental zones

Environmental zones that can be applied under an LEP within the MidCoast LGA include:

- E1 – National Parks & Nature Reserves
- E2 – Environmental Conservation
- E3 – Environmental Management
- E4 – Environmental Living

E1 Zone: National Parks & Nature Reserves

This zone is for existing national parks, nature reserves and conservation areas and new areas proposed for reservation that have been identified and agreed by the NSW Government.

E2 Zone: Environmental Conservation

This zone is for areas with high ecological, scientific, cultural or aesthetic values outside national parks and nature reserves. The zone provides the highest level of protection, management and restoration for such lands whilst allowing uses compatible with those values. Examples of high ecological or scientific values can include: littoral rainforest, coastal wetlands, endangered ecological communities, threatened species habitat and over-cleared vegetation communities.

E3 Zone: Environmental Management

This zone is for land where there are special ecological, scientific, cultural or aesthetic attributes or environmental hazards/processes that require careful consideration/management and for a wider range of land use activities that are compatible with these attributes.

E4 Zone: Environmental Living

This zone is for land with special environmental or scenic values, and accommodates low impact residential development. As with the E3 zone, any development is to be well located and designed so that it does not have an adverse effect on the environmental qualities of the land.

MidCoast Council is in the process of developing a clear, consistent, region-wide planning framework across the entire LGA. This involves the development of various strategies to inform a single LEP and single Development Control Plan. It is

understood that the Rural Lands Strategy is considering Environmental zones, and as such any consideration of rezoning the land to which this report relates should be considered as part of that comprehensive planning process.

Further, DPIE has developed a new approach to environmental zoning on the Far North Coast to support farming and protect the environment. Although this approach currently applies to land in the Ballina, Byron, Kyogle, Lismore and Tweed LGAs, it can be considered as a guide for environmental zoning across other council areas throughout the State.

6. Recommendations

The Coastal Management SEPP Fact Sheet No. 4 (April 2018) states *“The Department of Planning and the Environment [now DPIE] expects that maps of the coastal management areas will be regularly reviewed as improved data and mapping methods become available to councils and the NSW Government”*.

This report provides the necessary background information and justification to amend the Coastal Management SEPP 2018 maps through a planning proposal and responds directly to a priority action in Mid Coast Council’s Coastal Management Program.

It is therefore recommended that the next step in the process is for MidCoast Council to proceed with a Gateway Determination for amendments to the maps in the Coastal Management SEPP.

As part of this process a comprehensive community engagement strategy should be developed and implemented to ensure all landowners (public and private) are aware of the proposed map changes and given an opportunity to engage in the planning process from an early stage. This engagement strategy should also include targeted and ongoing engagement with relevant government agencies, especially the DPIE.

References

1. Department of Planning, Industry and Environment (DPIE), 2018. Metadata for State Environmental Planning Policy (Coastal Management) 2018 spatial dataset. Accessed 17.02.2021 from <https://datasets.seed.nsw.gov.au/dataset/state-environmental-planning-policy-coastal-management-2018>.
2. Department of Planning, Industry and Environment (DPIE), 2017. Standard Technical Requirements for Spatial Datasets and Maps, Version 2.0, August 2017. Accessed 17.03.2021 from <https://www.planning.nsw.gov.au/-/media/Files/DPE/Other/standard-technical-requirements-for-spatial-datasets-and-maps-2017-08.pdf?la=en>. Document Reference: qA379678 ISBN: 978-176039-173-7
3. Department of Planning, Industry and Environment (DPIE), Northern Councils E Zone Review, a Final Recommendations Report, 2015
4. Eco Logical Australia (ELA), 2019. Manning River Wetlands mapping. Prepared for MidCoast Council.
5. MidCoast Council (2020). Supporting documentation for an amendment to the Coastal Management State Environmental Planning Policy (SEPP), MidCoast Council LGA. Prepared 25.11.2020.
6. North Coast Aerial Mapping (NCAM), 2019. Littoral Rainforests in the MidCoast Council.

Appendix A – Data Sources and Mapping Limitations

Data sources

a) Non spatial

1. Eco Logical Manning River Estuary & Catchment Coastal Wetlands Report 2019 including Wetlands Species Matrix
2. North Coast Aerial Mapping Littoral Rainforest MCC mapping Report May 2019
3. Coastal Wetlands of NSW A Survey and Report Prepared for the Coastal Council of NSW 1985 (book)
4. Department of Planning, Industry and Environment, 2017. Standard Technical Requirements for Spatial Datasets and Maps, Version 2.0, August 2017.

b) Spatial datasets and contents Sourced from MidCoast Council

1. Wetransfer.zip
 - ELA Manning Coastal Wetlands Final v1 2019: 9031 records of polygons by Vegetation Community and Condition.
 - Full floristic: 22 records with plot # but no species information.
 - Photo sites: 96 photos from July 2019 & 198 from Aug 2019 converted to points
 - Weeds: 51 records with multiple weeds at each and cover class
 - LRF Final 8/7/2019: 337 records of polygons by Littoral Rainforest Group and condition and some notes
2. VegValidationsJul/Aug2019_v1.zip
 - 90 records of Rapid Data Point data including vegetation community, TEC, Condition, Confidence, Notes, Dominant species per stratum in code only
3. Fulcum_Download.zip
 - 8 layers of Rapid Data Points with notes

c) Sourced from NSW SEED portal

1. Coastal Management SEPP (2018)

Mapping limitations and Assumptions

- A breakdown of the CM SEPP (2018) spatial datasets into vegetation types was not available, and additional attribute data was not available through MidCoast Council or the OEH data broker. Consequently, the distribution of Plant Community Types could not be assessed for the SEPP mapping. In addition, the Wetlands and Littoral Rainforest studies mapping did not include specific Plant Community Types for mapped polygons.
- Plot data supplied with the Eco Logical Wetlands study was not always sufficient to confirm vegetation types when checking for conformity i.e. plot data was usually located a very long way from the polygon in question. Therefore, where confirmation could not be confident, a precautionary approach was adopted and the areas in question were excluded from the final draft Wetlands Conforming layer.
- A filter of 1 hectare was applied to exclude slivers and small polygons with a subsequent decrease in the final Wetlands and Littoral Rainforest Conforming layers
- The vegetation community Fresh Meadows was not mapped by Eco Logical due to drought/condition of floodplain, so this component of wetlands does not form part of the final draft Wetlands Conforming layer. This community may need to be surveyed/ revisited.
- The Full floristic plot data was not available from MidCoast Council for Littoral Rainforest. The data is available from NSW Bionet VIS but would have to be requested. For the purposes of the mapping process, it therefore was assumed from the descriptions available, that all mapped units of Littoral Rainforest would conform to the SEPP definitions.

Table 3: Details of vegetation type matching interrogation

Vegetation Community	Decision
Melaleuca thicket Condition High, Confidence 1 – two polygons to investigate:	
1. Area 11.61ha – this polygon is closest to RPD #249 and #250: Rapid Point Data from consultants: - o #249 domcan emerg casuglau, dommid melanodo, domgro null, notes casuglau fringing. - o #250 domcan meladeco, melanodo, domgro null, notes null. According to ECL descriptions, only areas dominated by Mericofolia would conform. As the only species information available from the Rapid Data plots are canopy emergent casuarina glauca, mid Melnodosa, this area was assumed to be non-conforming and was excluded.	Delete from attribute table
2. Area 2.93ha – as per number 1 above	Delete from attribute table
Melaleuca thicket Condition High, Confidence 2 – eight polygons to investigate:	
1. Area 12.26ha – this polygon is closest to RPD #249 and #251: Rapid Point Data from consultants: - o #249 domcan emerg casuglau, dommid melanodo, domgro null, notes casuglau fringing. - o #251 domcan casuglau, euctere dommid melalina, melastyp, parsstra As per above, only areas dominated by M ericofolia would conform, this area was assumed to be non-conforming and was excluded.	Delete from attribute table
2. Area 7.33ha is 2.5km from nearest Plot # 10}	Delete from attribute table
3. Area 6.17ha is 2km from nearest plot # 135)	Delete from attribute table
4. Area 4.61ha is 2.3km from closest RPD # 135)	Delete from attribute table

Vegetation Community	Decision
5. Area 4.17ha is 258m away from closest RPD # 125} all of these are too far away from plot data, conservative approach taken	Delete from attribute table
6. Area 3.86ha is 1km away from closest RPD # 115}	Delete from attribute table
7. Area 3.5ha is 2.3km away from closest RPD # 135}	Delete from attribute table
8. Area 1.50ha is 800m away from closest RPD # 115}	Delete from attribute table
Swamp Mahogany Condition High, Confidence 1 – three polygons to investigate:	
1. Area 2.02ha very close to Plot #120 Dominant canopy Euc Robusta, Corymbia Intermedia Notes More behind river edge. Not enough information so excluded	Delete from attribute table
2. Area 1.96ha very close, 236m away from Plot #122 Dominant canopy Casuarina glauca, occ eucaseeana, dominant mid Mel nodosa, avicmari on edge, notes much lower on w bank, east bank raised. Matched to Casuarina Forest. Priority 2 not 1.	Leave in attribute table as priority 2 not 1
3. Area 1.37ha very close to Plot #125 but there is no data in the attribute table from the consultants. No data, exclude.	Delete from attribute table
Swamp Mahogany Condition High, Confidence 2 – twelve polygons to investigate:	
1 to 4. Area 3.64ha/3.02ha/1.92ha/1.02ha. These four polygons are close (200 to 700m) to plot #238 Dominant canopy Mel quin, occ eucarobu, Casuarina glauca, dominant ground Baumea rubignosa, gahnia clarkeii, ENTOSTRI ?, notes canopy stressed, low cover – sounds like this conforms to Casuarina Forest? Potentially Mel quin, if it is listed as dominant – but again, priority 2 if canopy stressed	Leave in attribute table as priority 2 not 1
Area 2. - 31ha not close to any plot.	Delete from attribute table
6 to 7. Area 2.12/2.04ha These two areas are close to plot #177. Dominant canopy Euc Robusta, Mel quin, Angophora costata, Dominant mid Glochidion ferdinandi, Dominant ground Gahnia clarkeii, BALOTETR, NOTES IN	Delete from attribute table

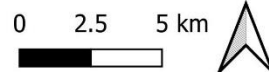
Vegetation Community	Decision
DEPRESSION. BLACKBUTT UPSLOPE. Doesn't sound like wetland - sounds like PCT 686 (Blackbutt - Pink Bloodwood shrubby open forest of the coastal lowlands of the NSW North Coast Bioregion). Angophora costata as a dominant in canopy doesn't sound appropriate for wetland, exclude.	
Area 2.07ha Very far away from any plot. Insufficient specific data, exclude.	Delete from attribute table
9 to 10. Area 1.57/1ha are both > 400m from plot #170. Too far away from plot data, exclude.	Delete from attribute table
11. Area 1.48ha is extremely far from any plot data, insufficient specific data, exclude.	Delete from attribute table
12. Area 1.41ha is 1.3km from full floristic plot #08, insufficient specific data, exclude.	Delete from attribute table

Appendix B – Wetlands Maps

Atlas of Wetlands by Vegetation Type Index



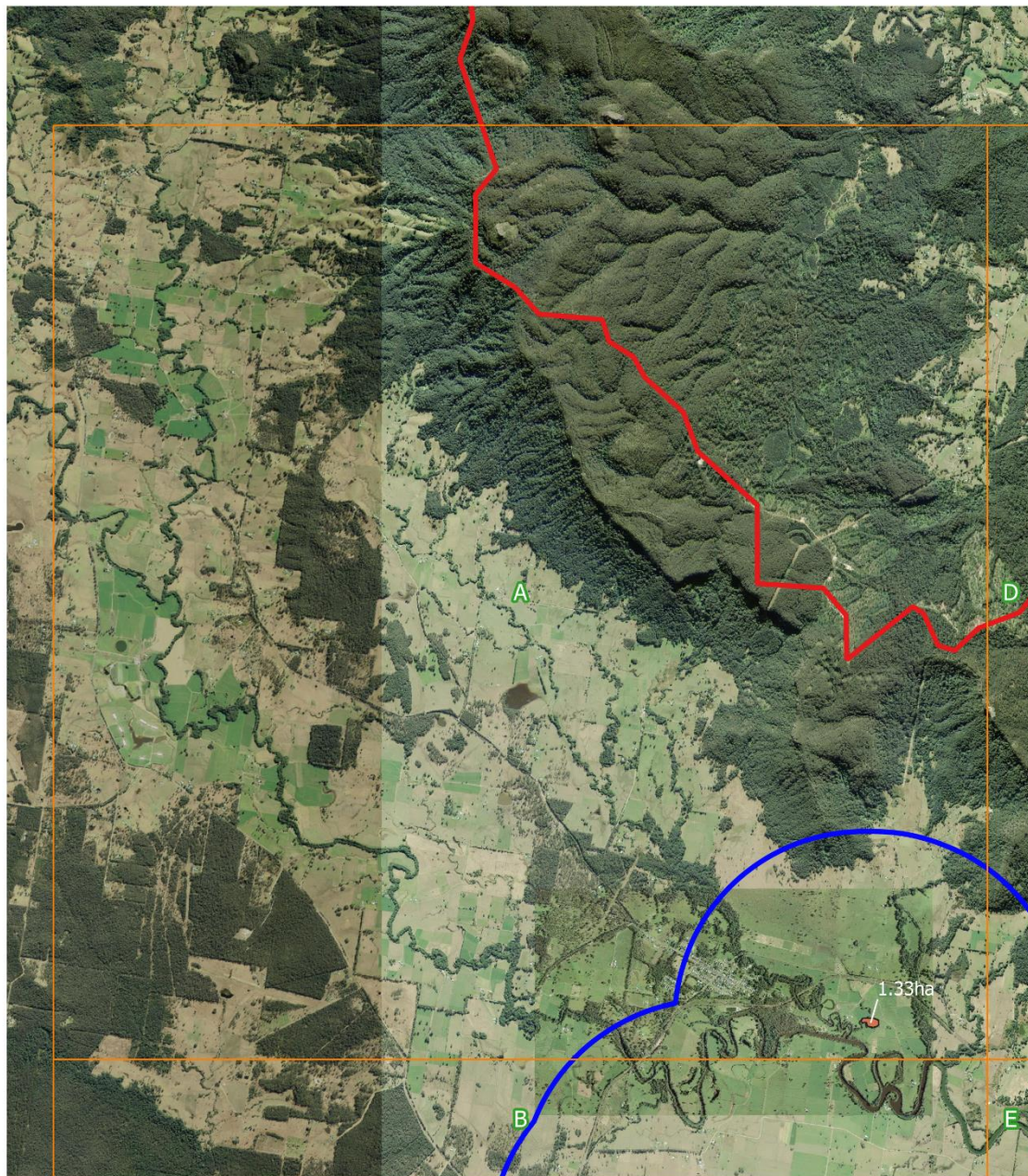
- Broad-leaved Paperbark
- Freshwater Wetland
- Grey Mangrove
- Saltmarsh
- Sedgeland
- Swamp Mahogany
- Swamp Oak
- Manning River Catchment
- Indicative Wetlands Study Area



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Prepared by F Dawson 30/3/21 GDA 2020 MGA 56

Atlas of Wetlands by Vegetation Type



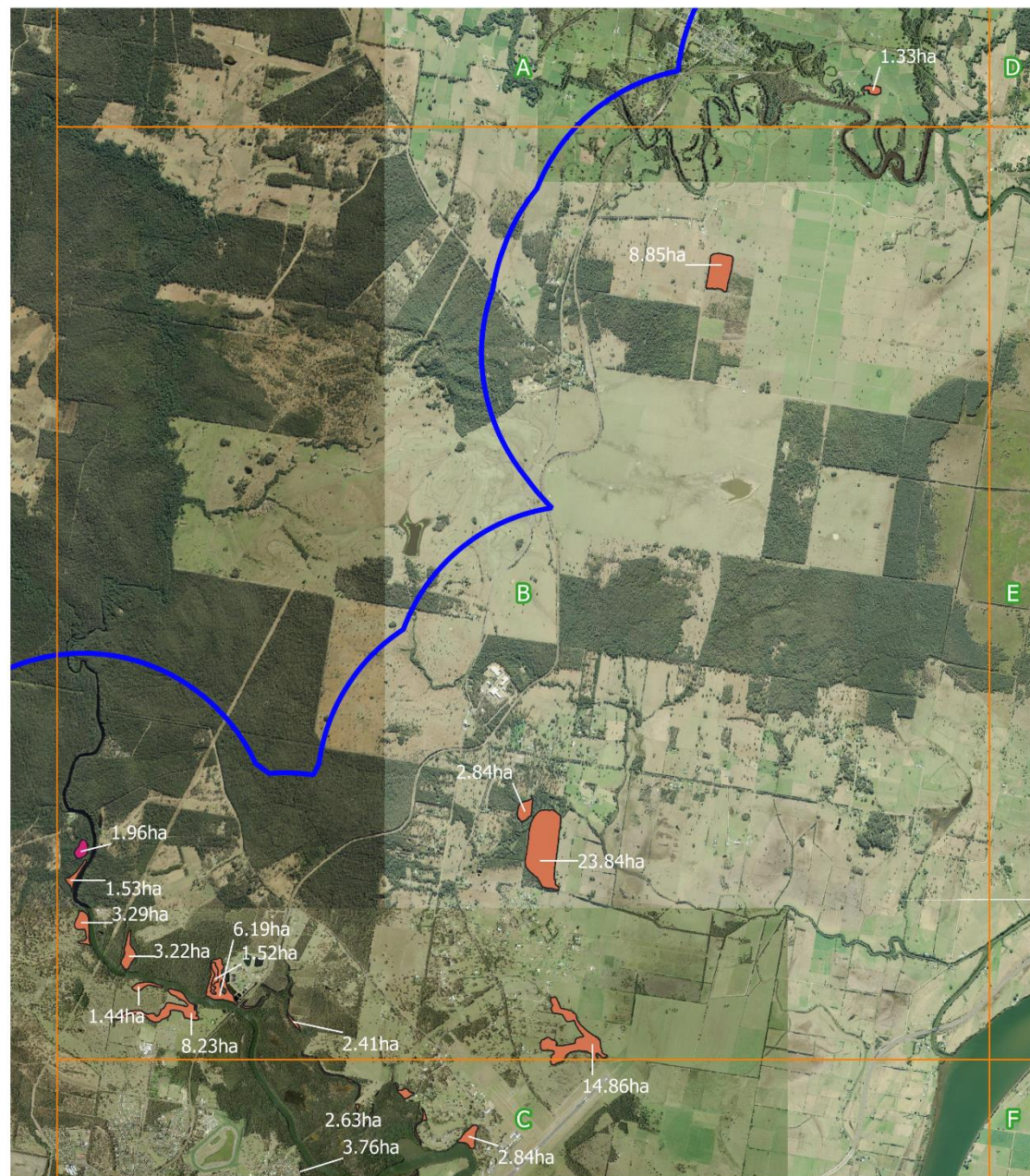
- Broad-leaved Paperbark
- Freshwater Wetland
- Grey Mangrove
- Saltmarsh
- Sedgeland
- Swamp Mahogany
- Swamp Oak
- Manning River Catchment
- Indicative Wetlands Study Area

0 1 2 km



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Atlas of Wetlands by Vegetation Type



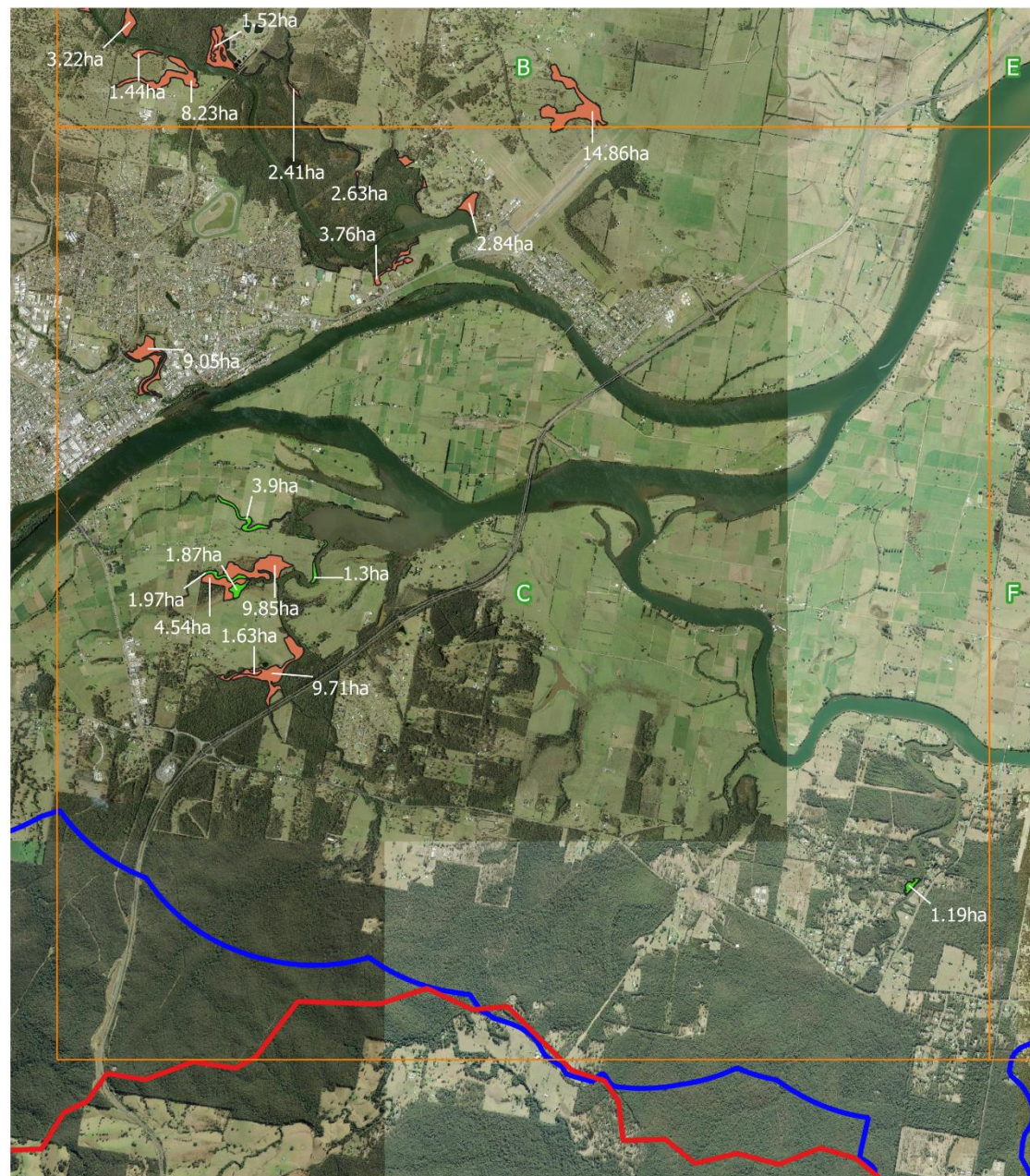
- Broad-leaved Paperbark
- Freshwater Wetland
- Grey Mangrove
- Saltmarsh
- Sedgeland
- Swamp Mahogany
- Swamp Oak
- Manning River Catchment
- Indicative Wetlands Study Area

0 1 2 km



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Atlas of Wetlands by Vegetation Type



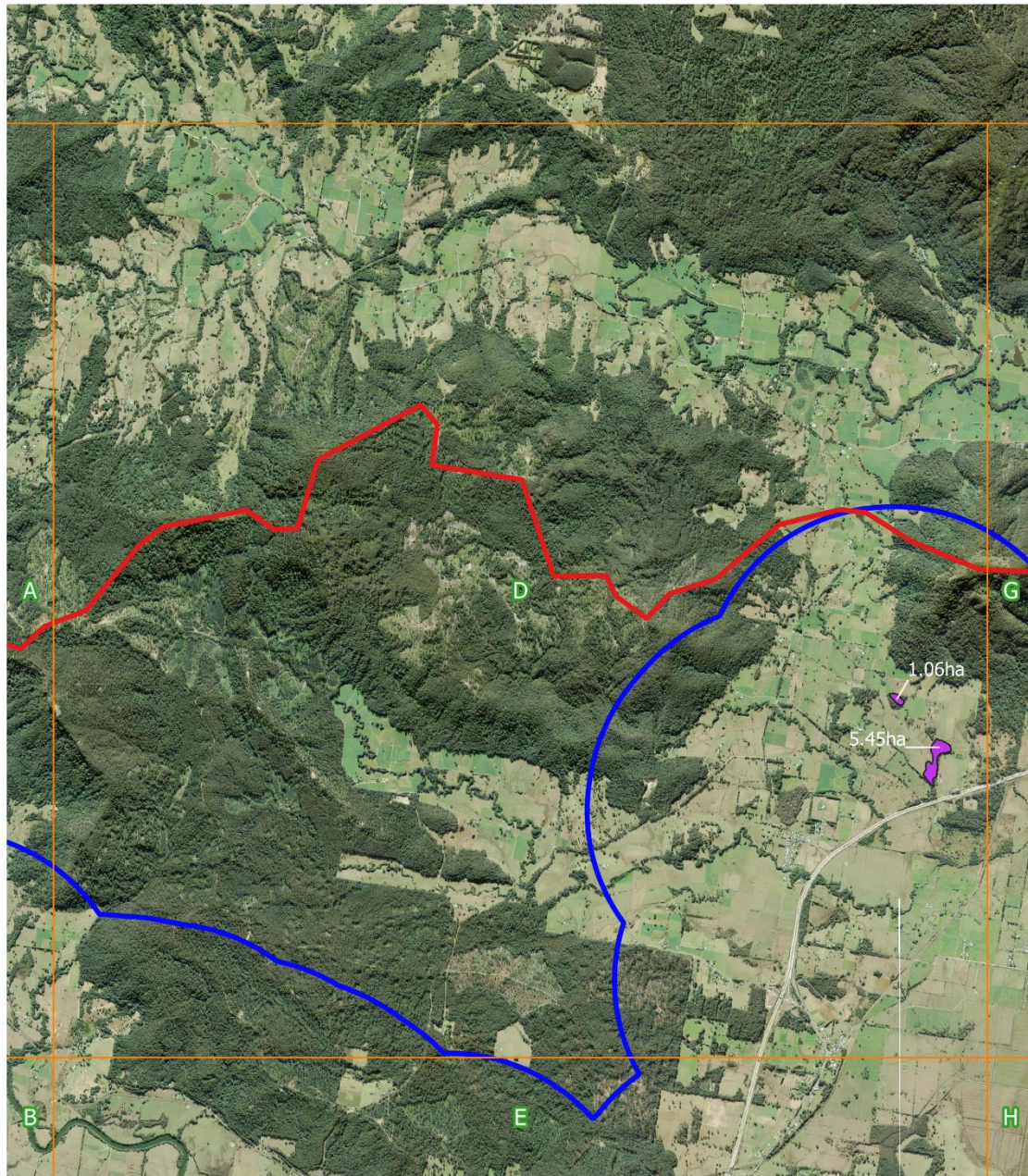
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0 1 2 km



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Atlas of Wetlands by Vegetation Type



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- Swamp Oak
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- Indicative Wetlands Study Area

0 1 2 km



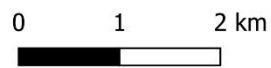
93 Wyrallah Rd
Lismore NSW 2480
ph: 02 6622 6668
mob: 0412 049 393
e: alison.martin@greenloining.com.au

Prepared by F Dawson 30/3/21 GDA 2020 MGA 56

Atlas of Wetlands by Vegetation Type

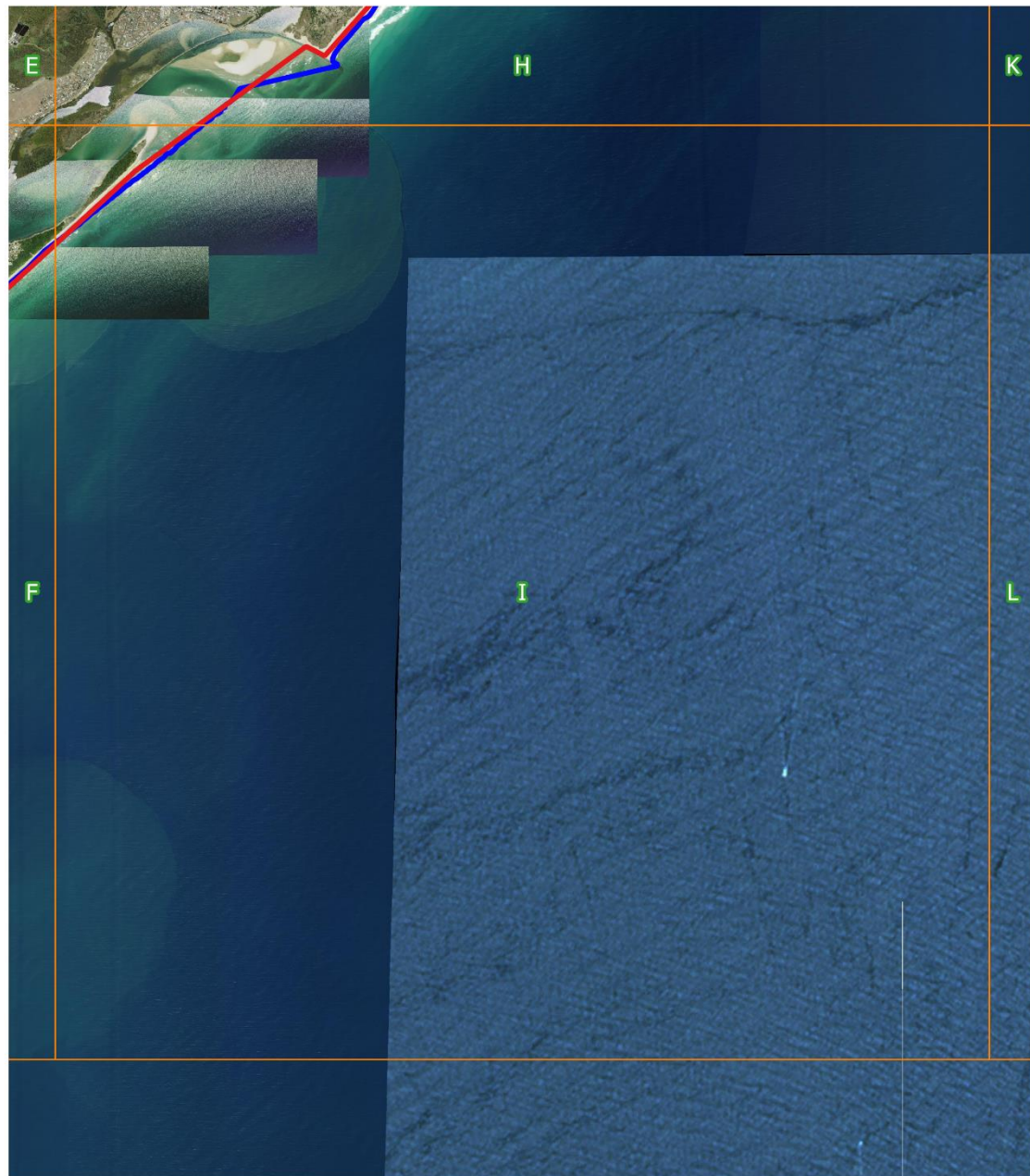


- Broad-leaved Paperbark
- Freshwater Wetland
- Grey Mangrove
- Saltmarsh
- Sedgeland
- Swamp Mahogany
- Swamp Oak
- Manning River Catchment
- Indicative Wetlands Study Area



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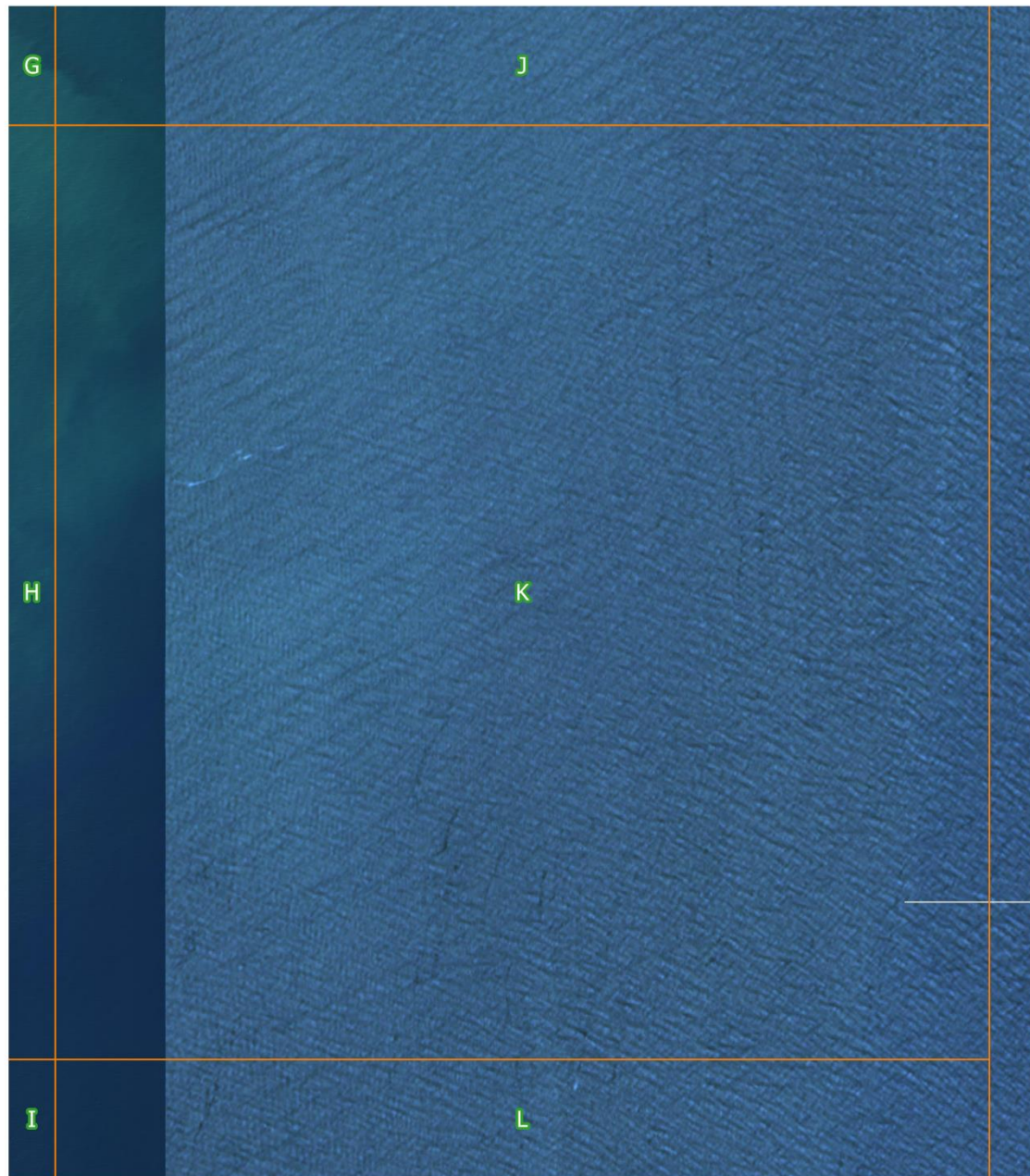
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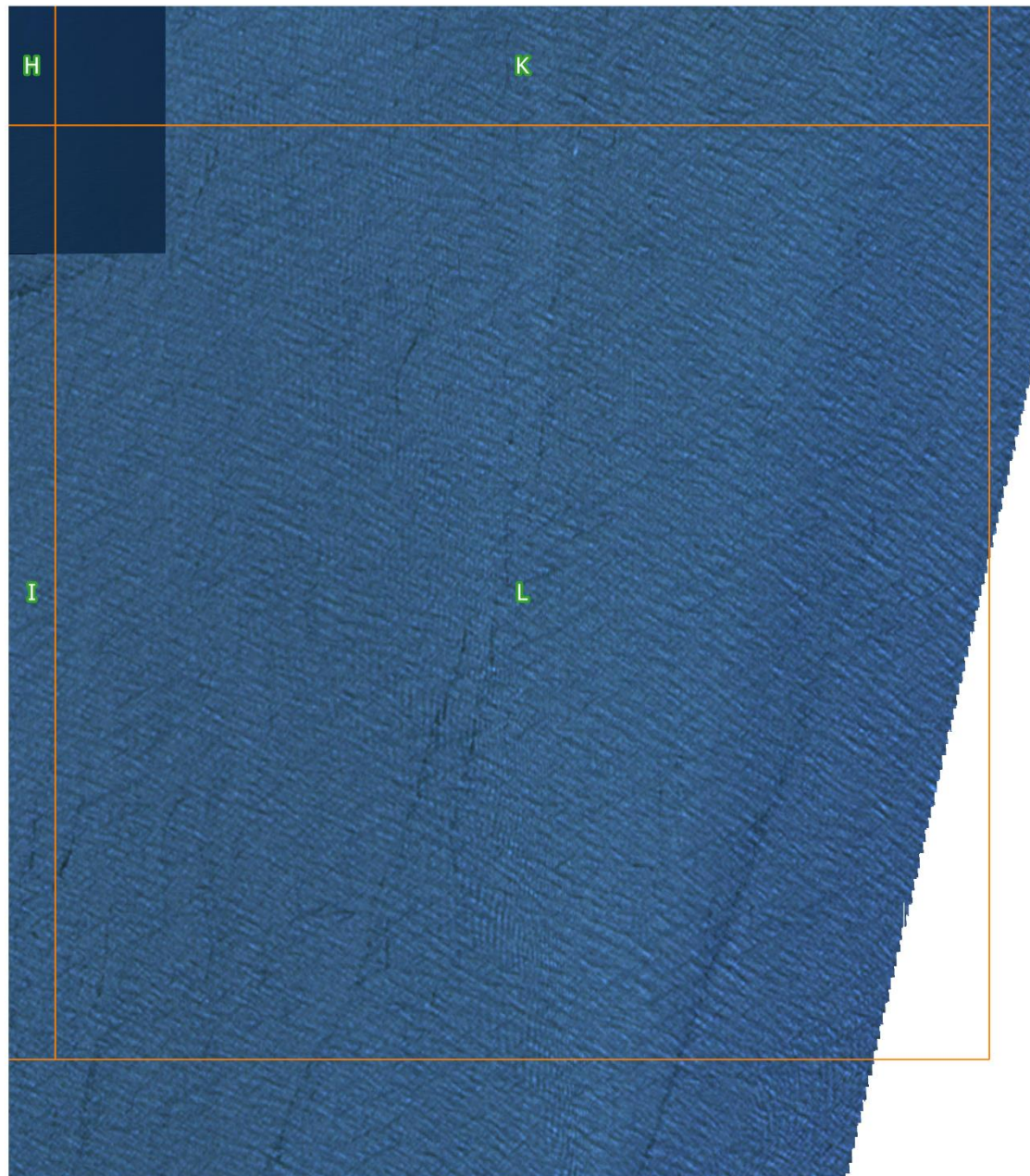
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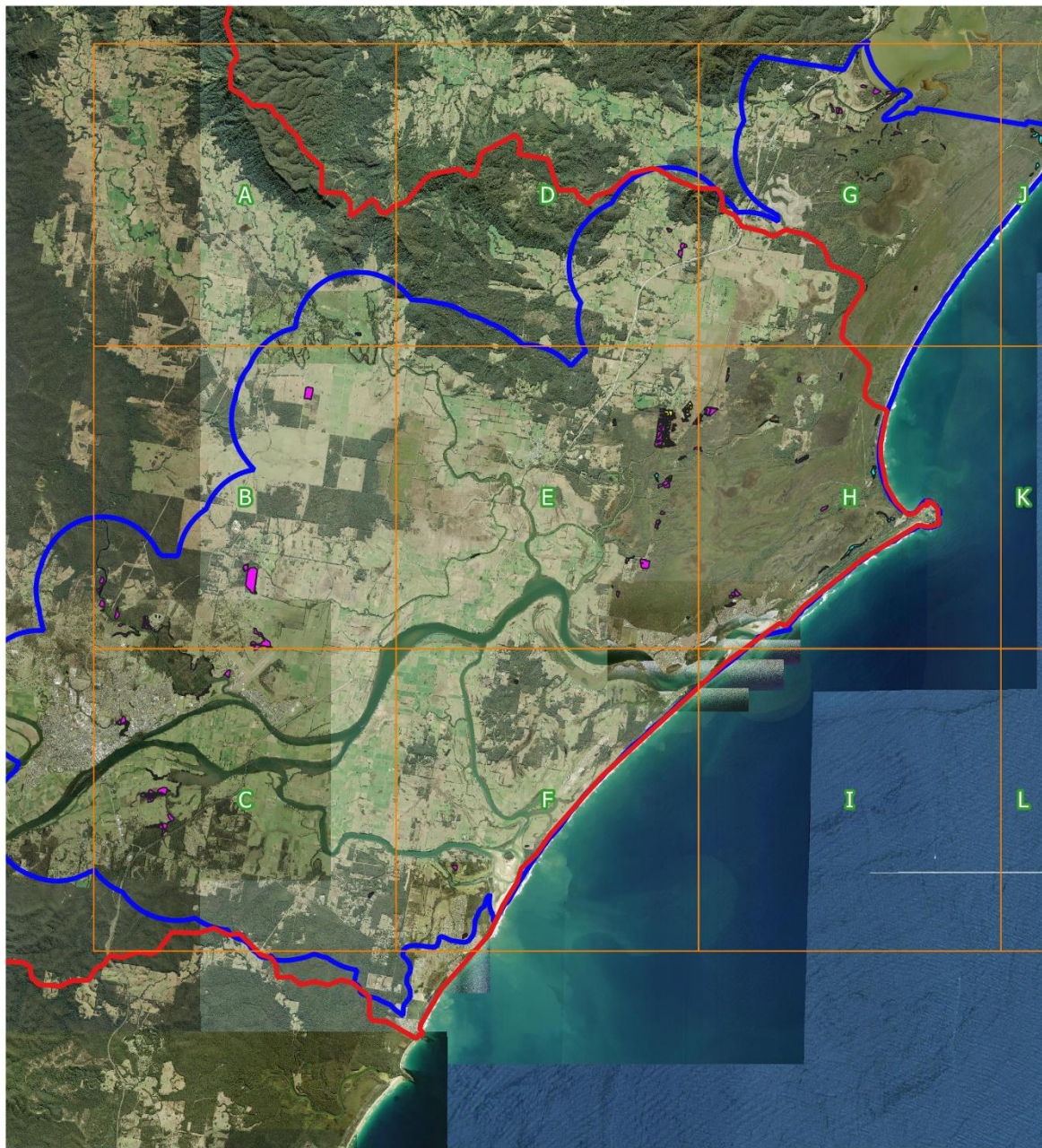
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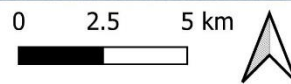



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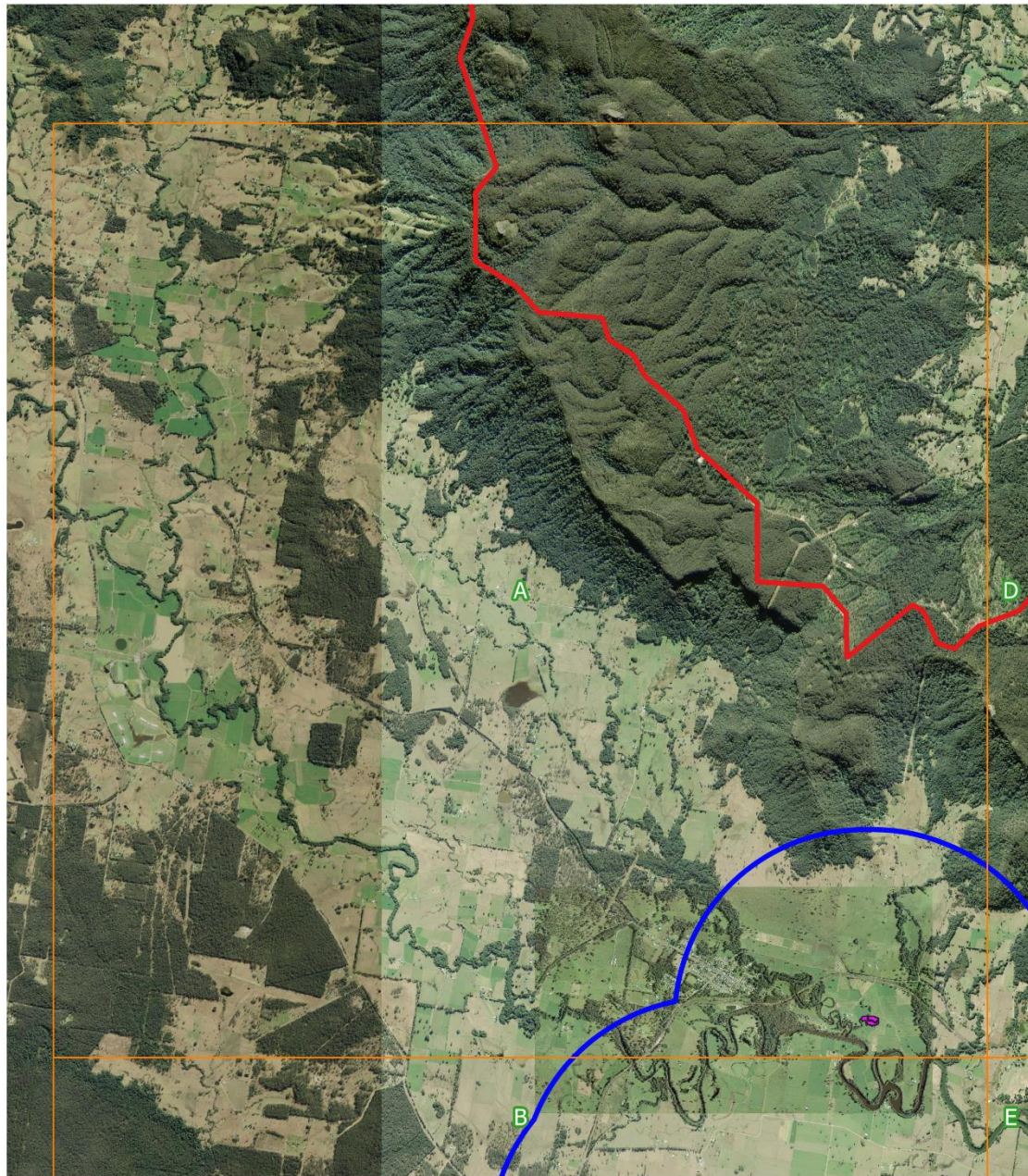
- Manning River Catchment
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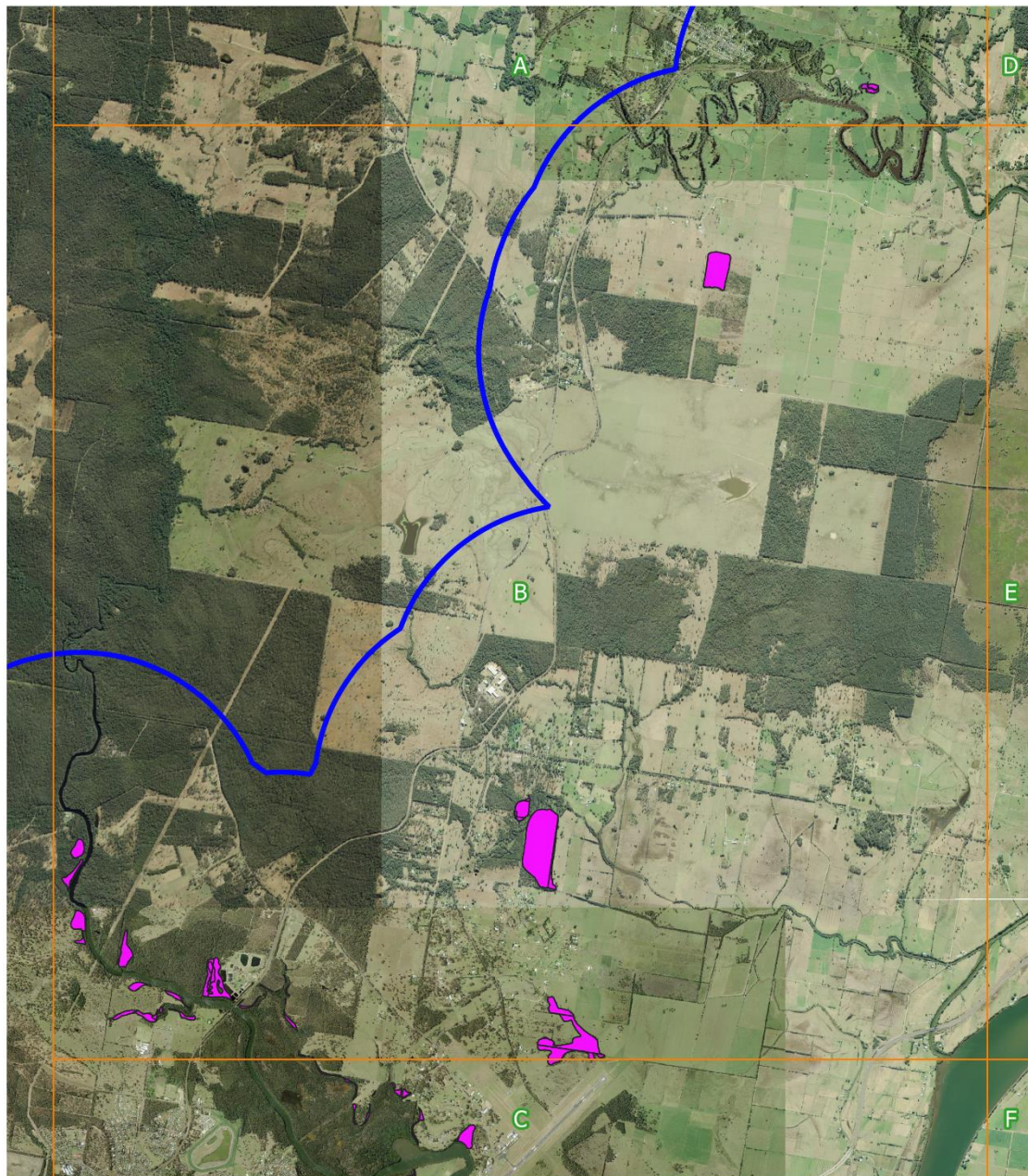
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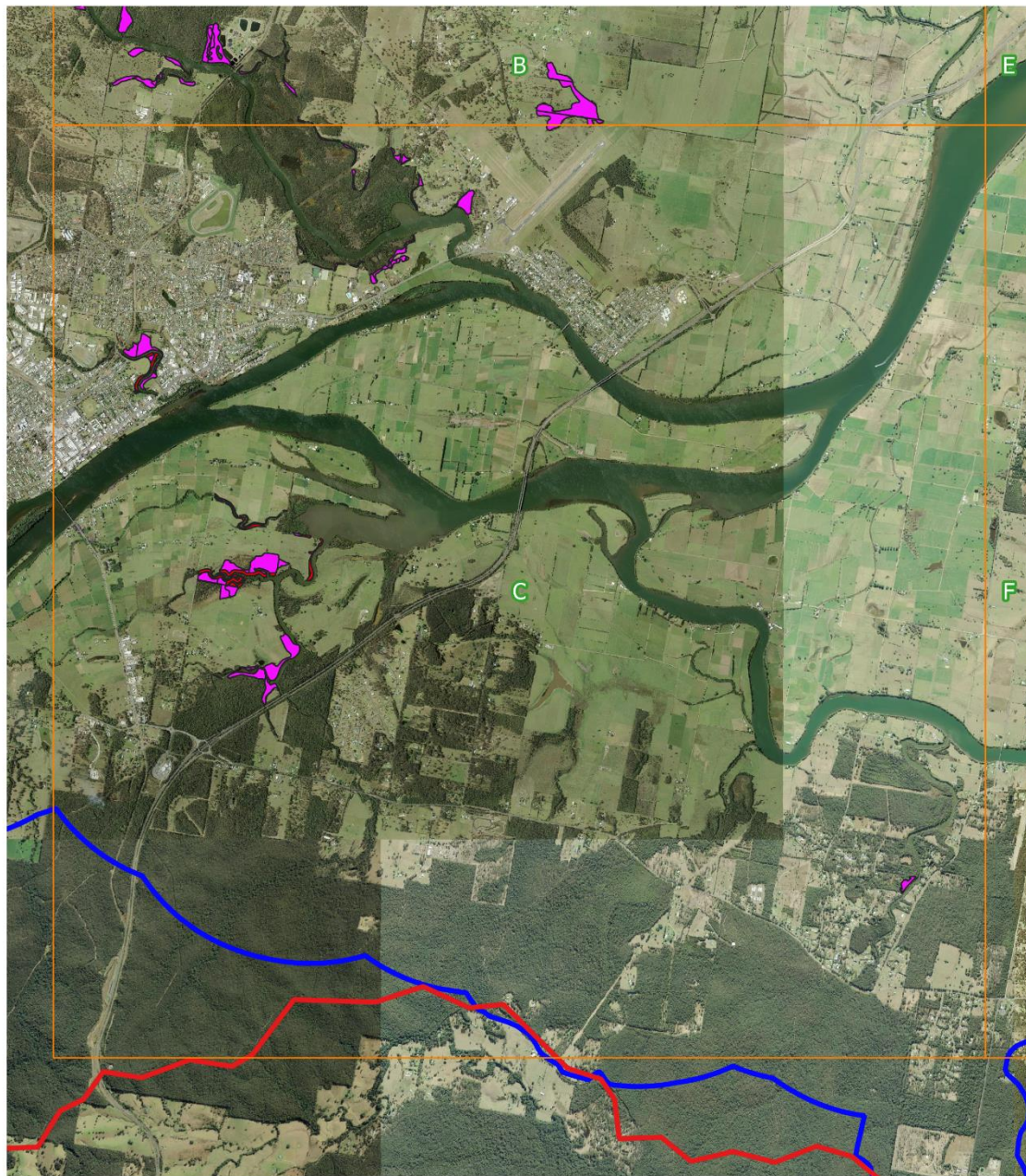
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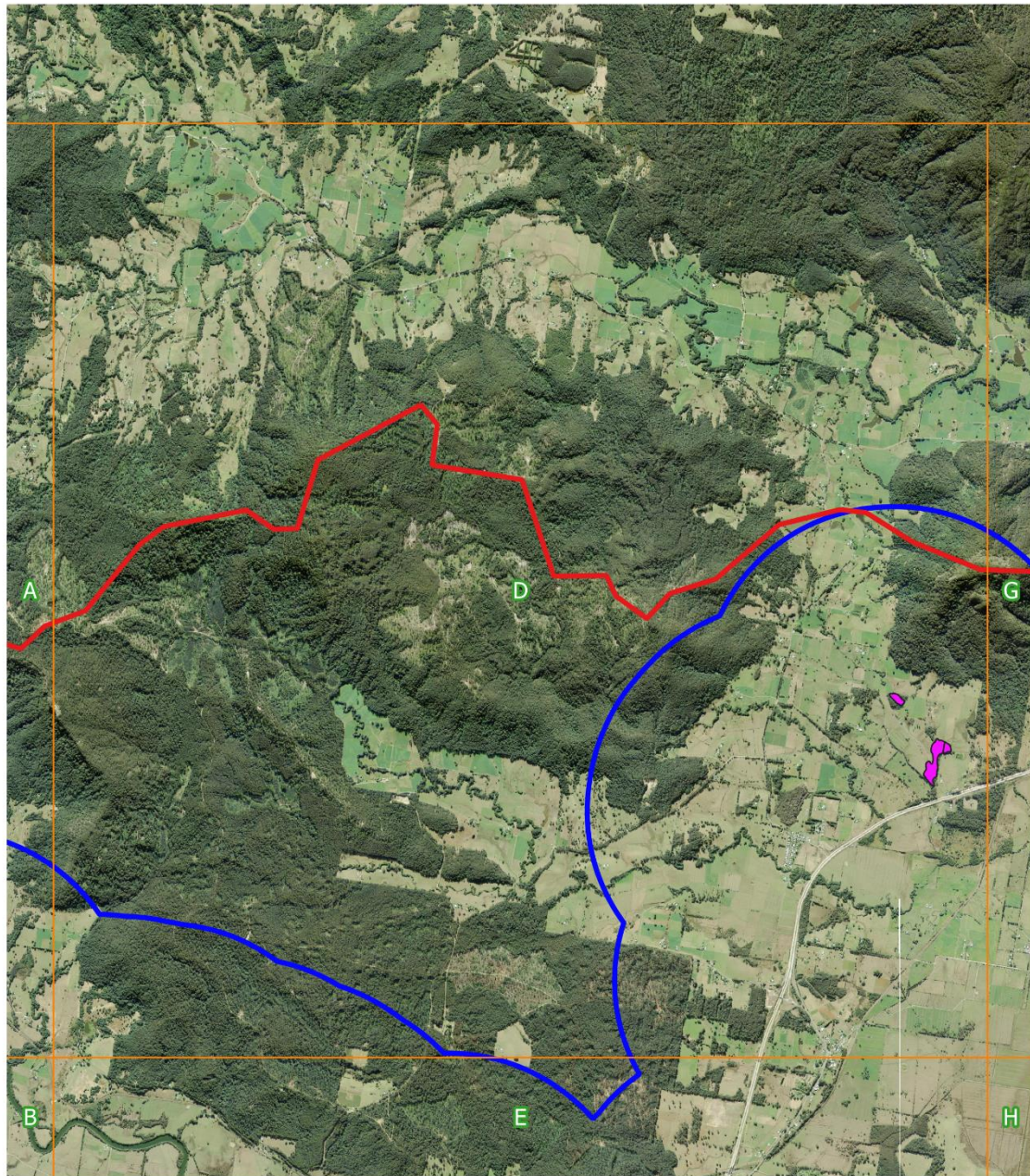
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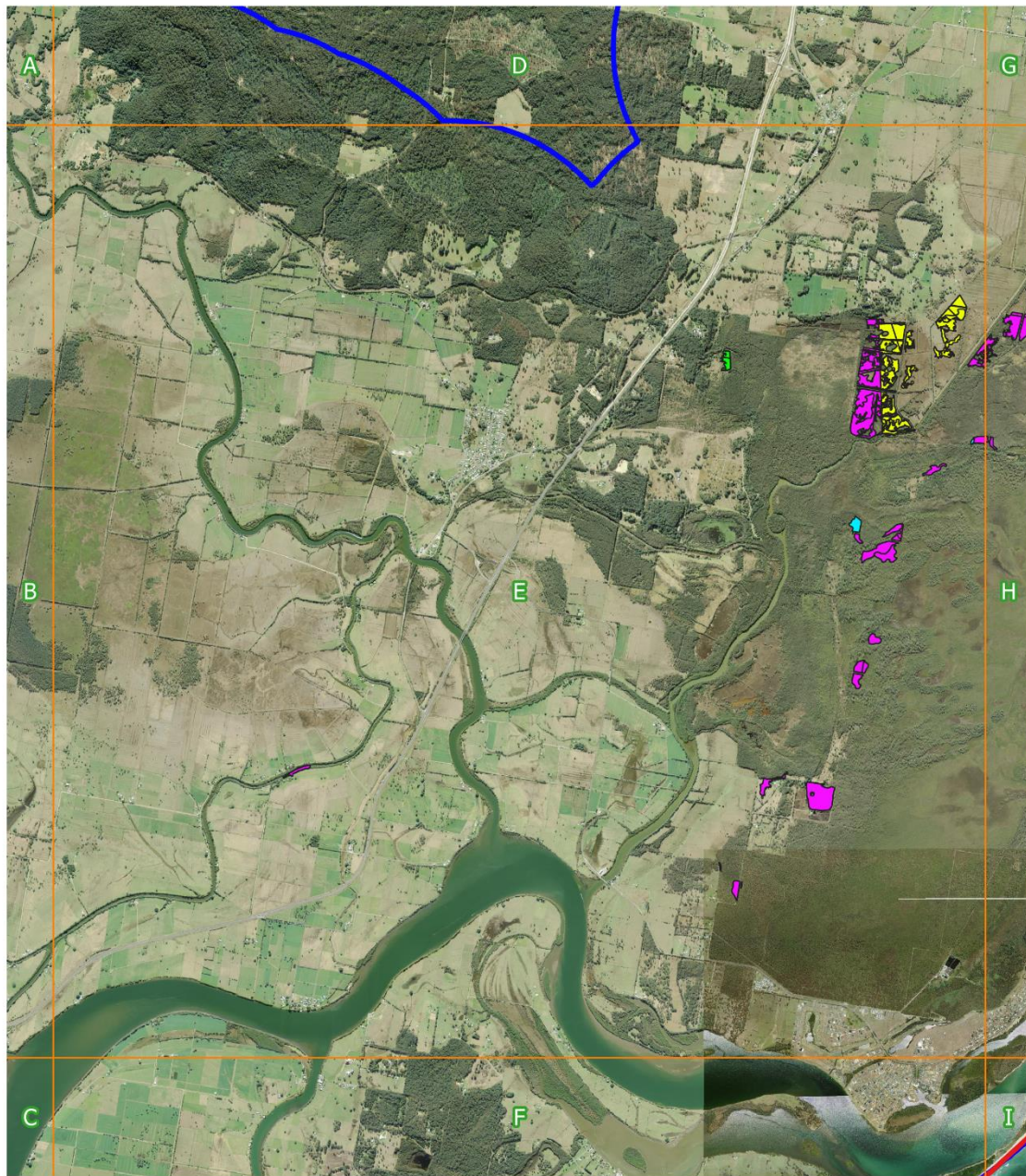
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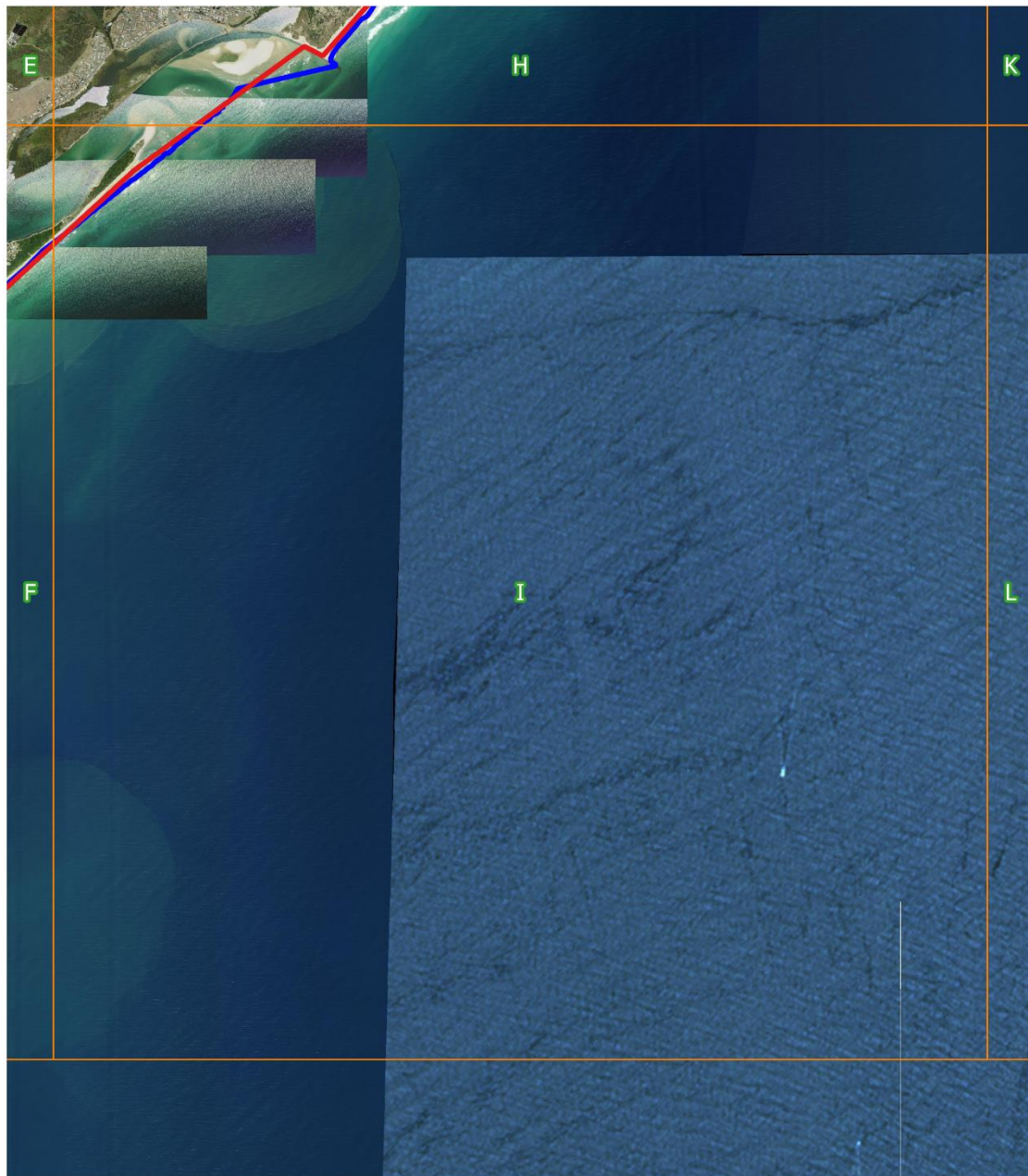
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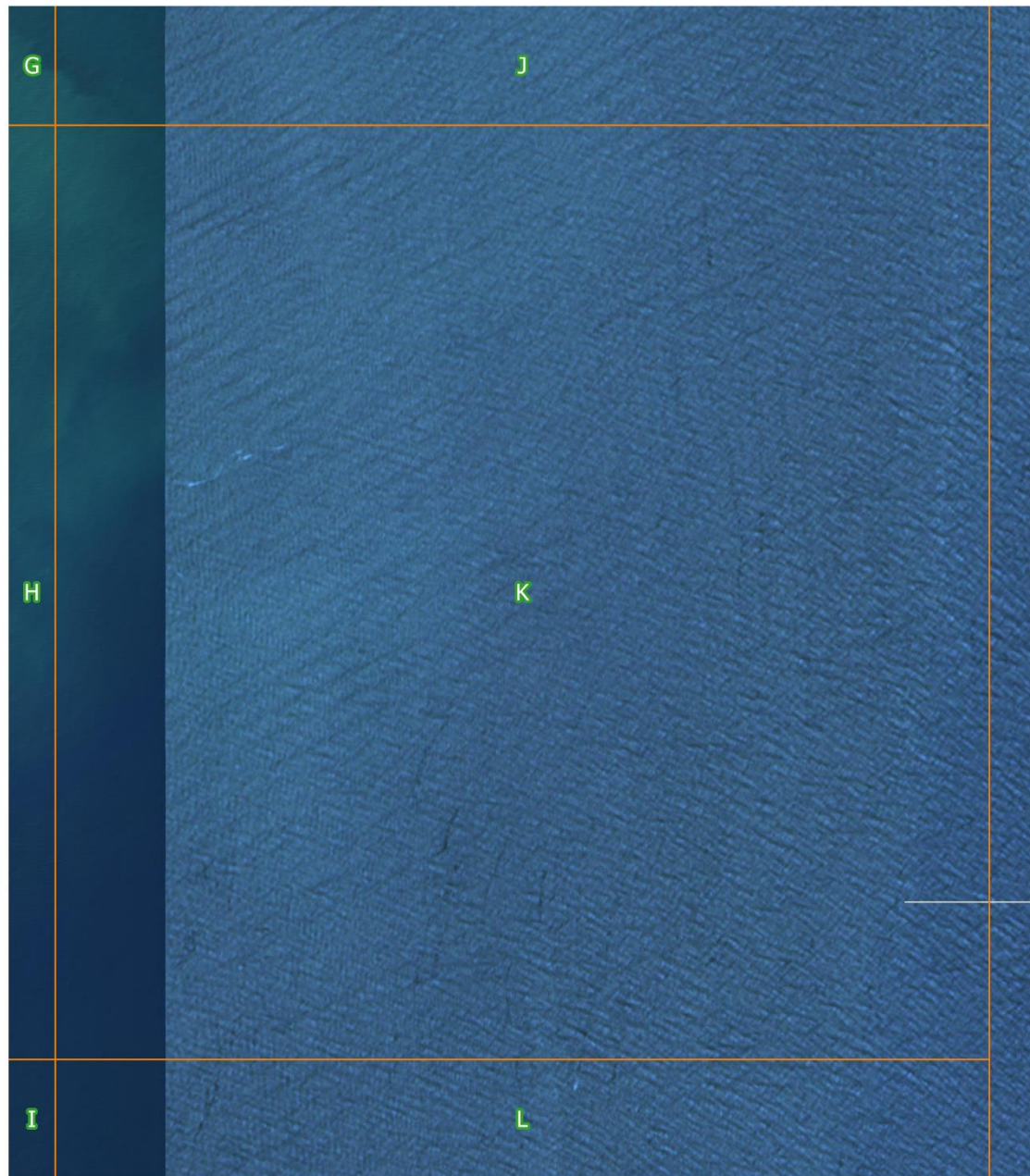
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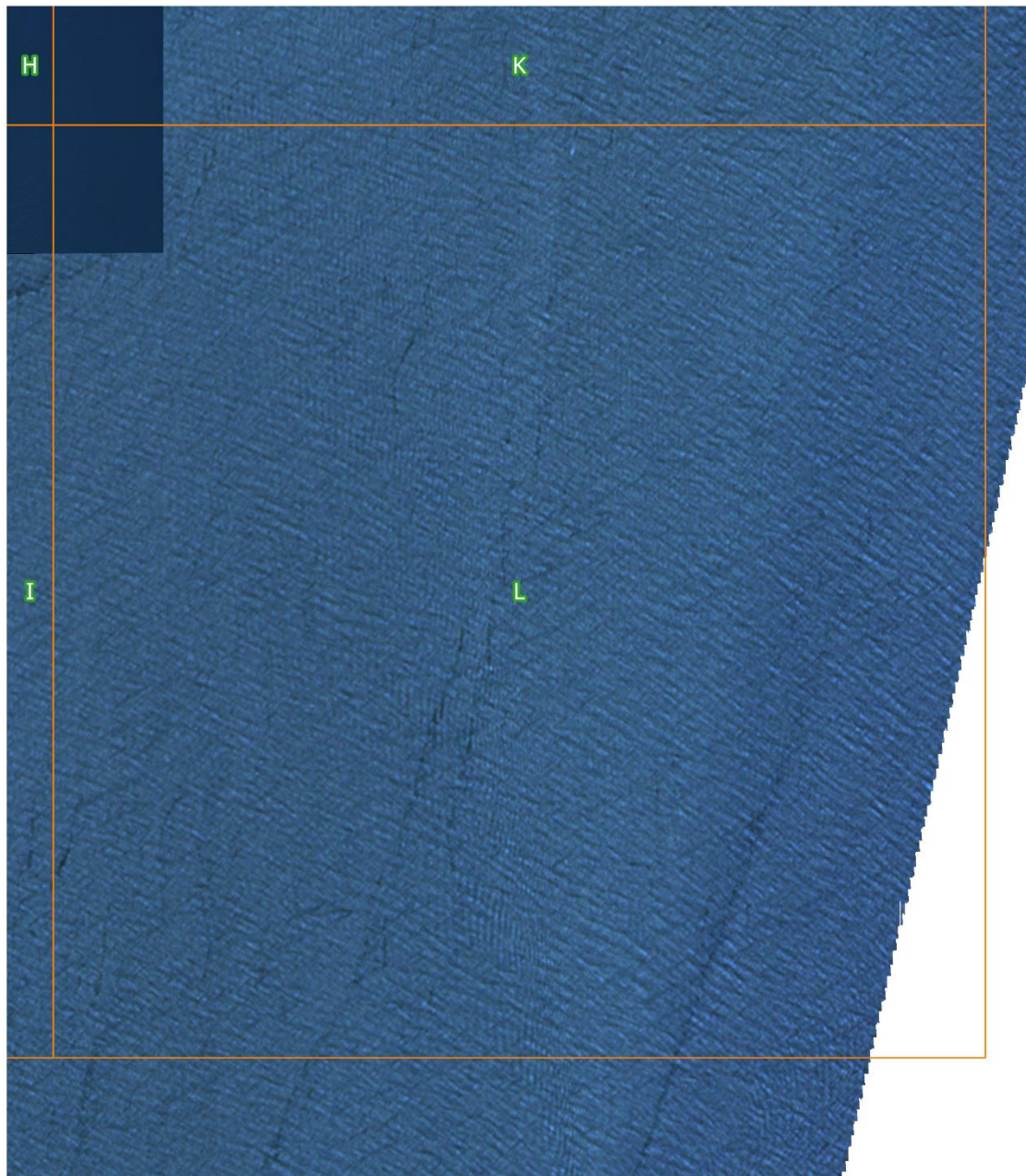
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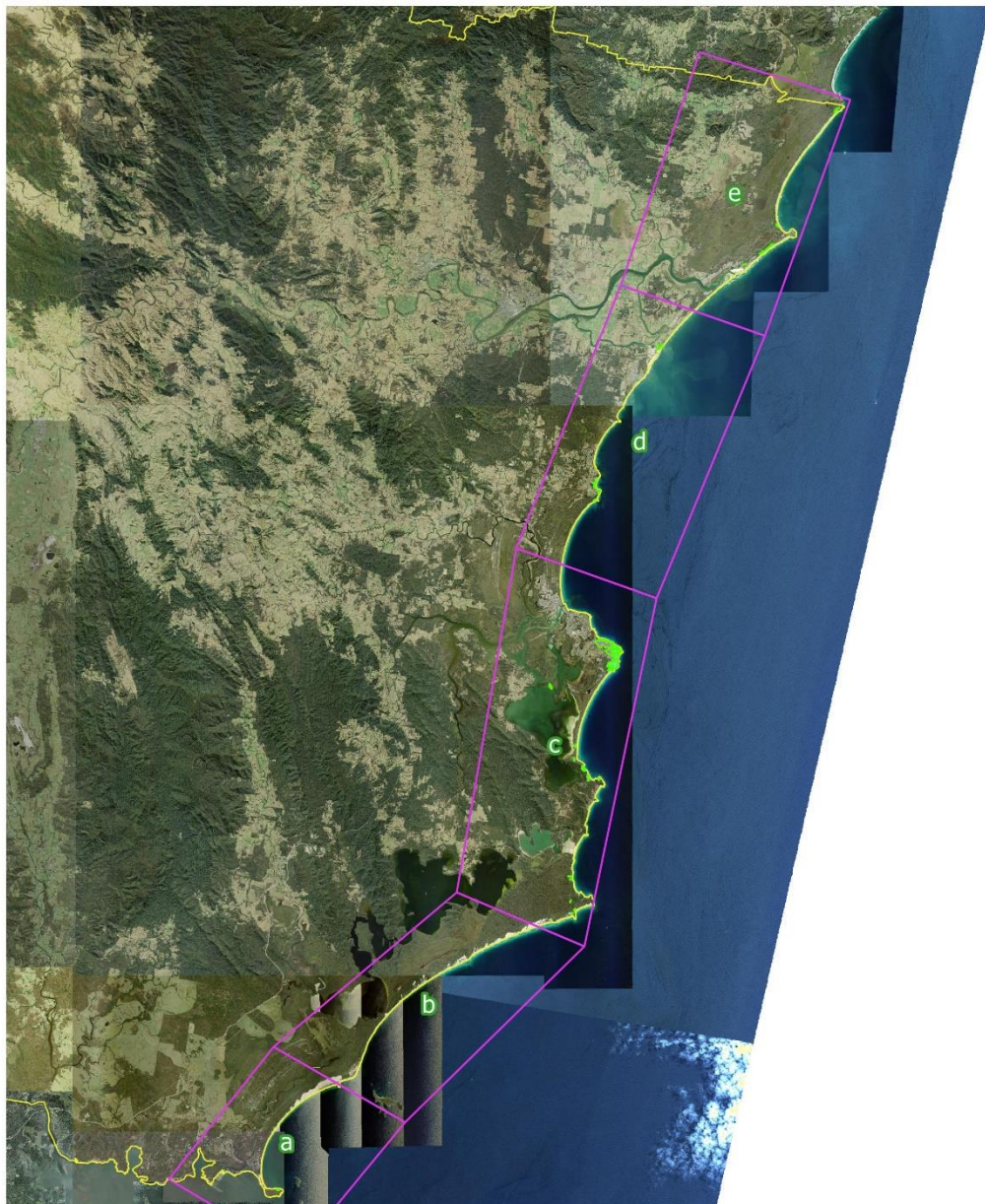
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Appendix C – Littoral Rainforest Maps

Atlas of Littoral Rainforest by Vegetation Type Index



0 7.5 15 km

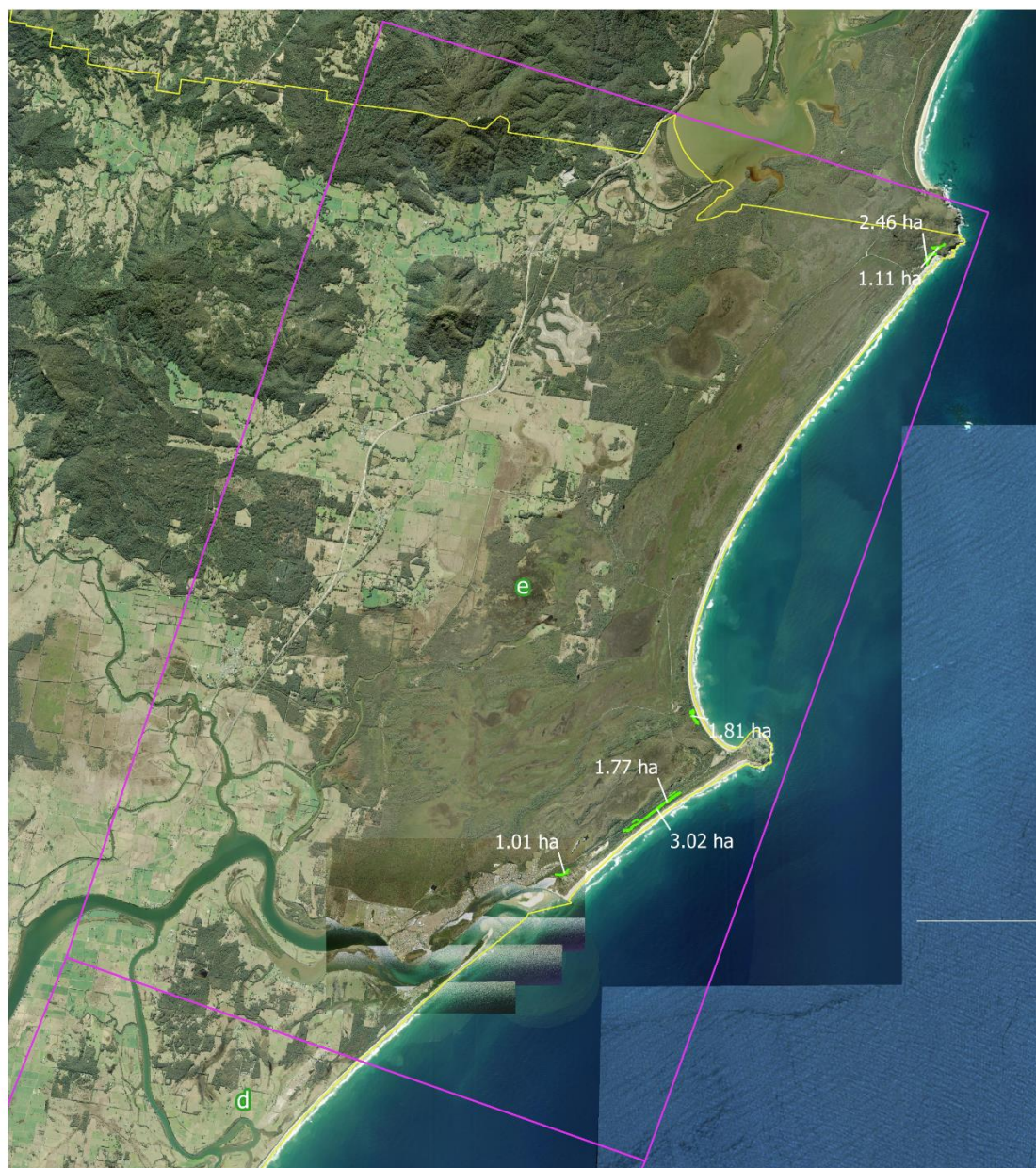


- Group_1 Red Olive Plum - Yellow Tulip - Black Plum - Python Tree
- Group_2 Coogera - Yellow Tulip - Native Celtis - Myrtle Ebony
- Group_3 Brush Box - Mock Olive - Veiny Wilkiea - Scentless Rosewood
- Group_4 Cabbage Palm
- Group_5 Tuckeroo - Coast Banksia - Yellow Tulip - Mock Olive
- Group_6 Brown Myrtle
- LGA Midcoast Council study area



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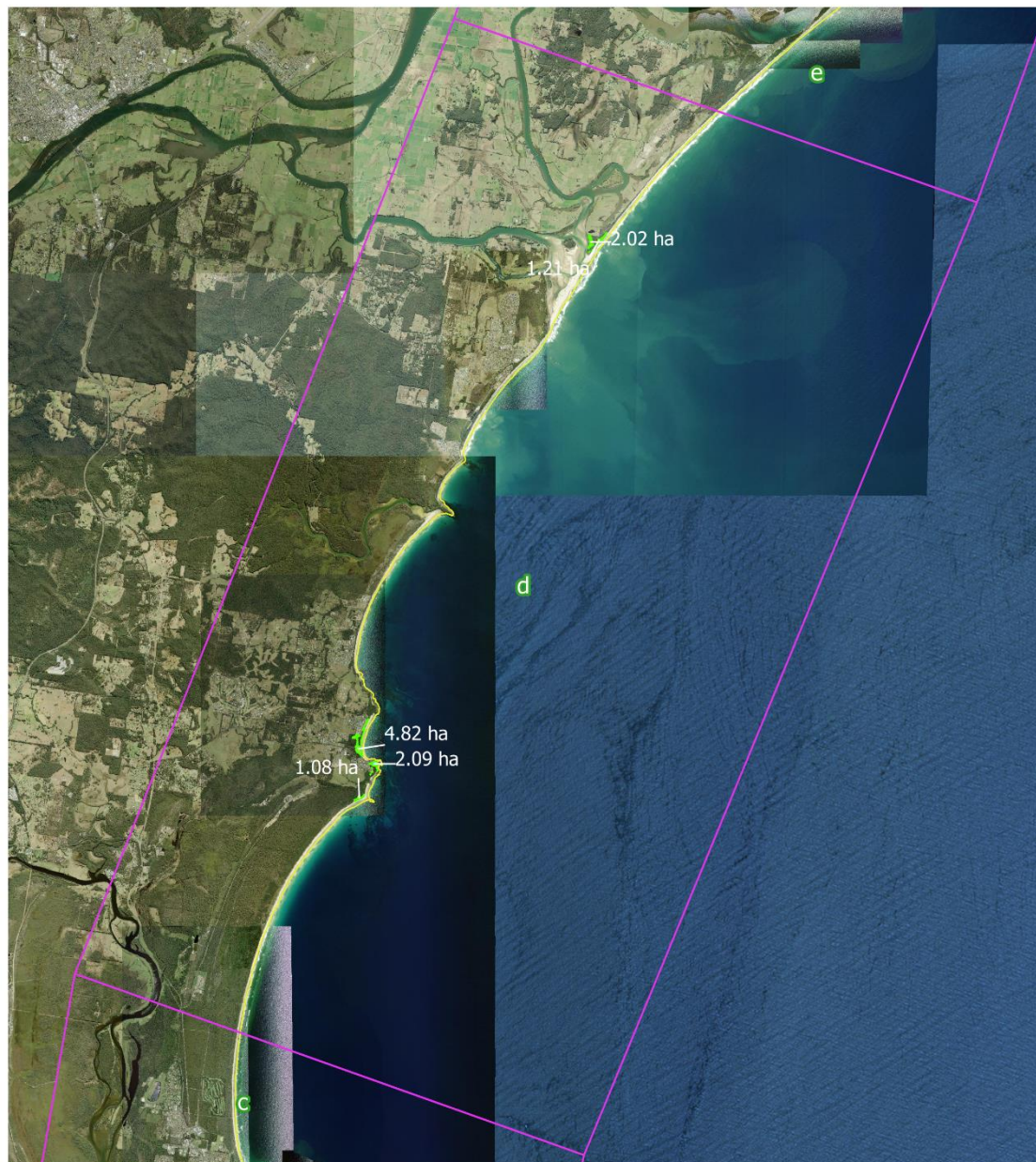
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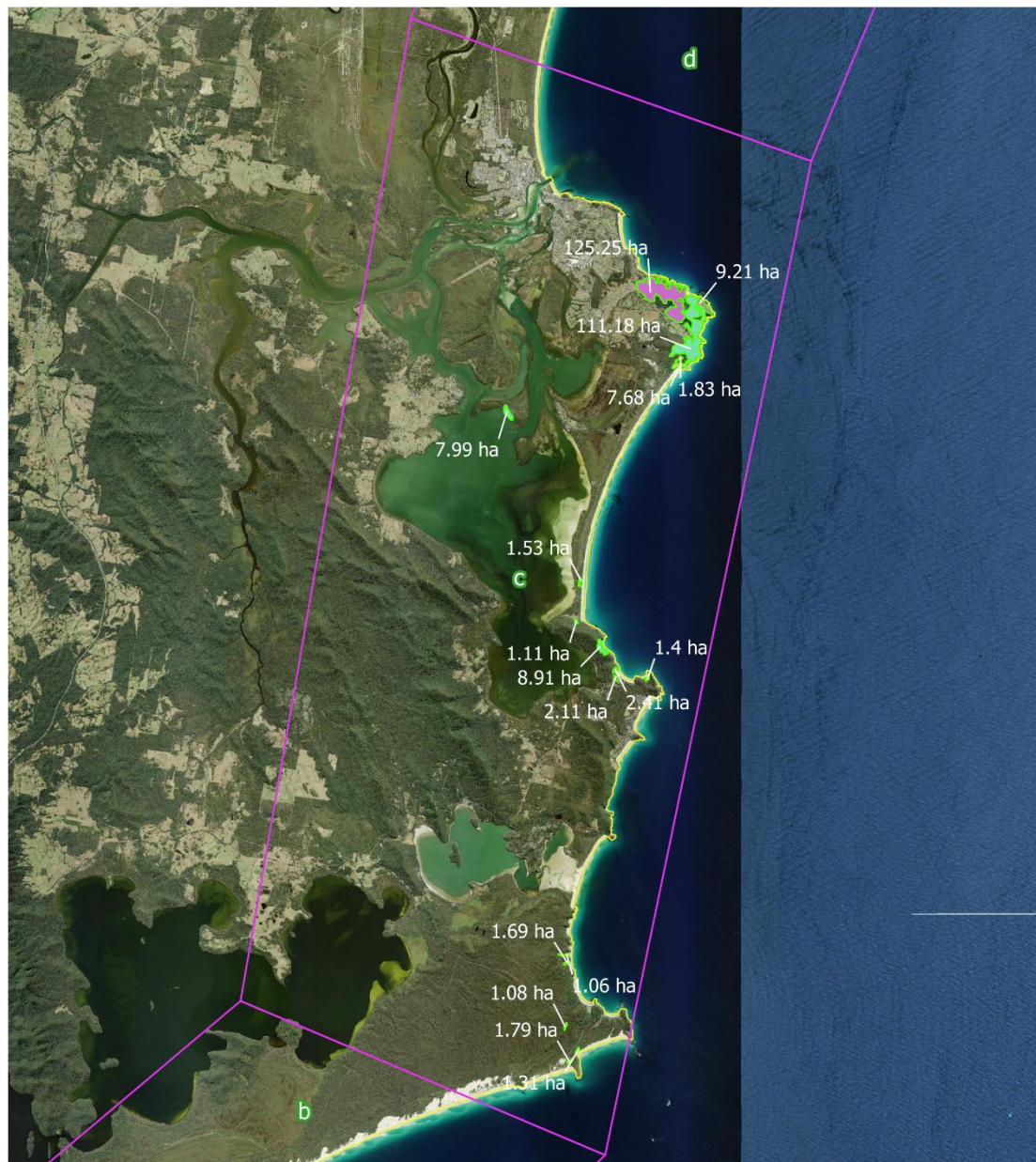
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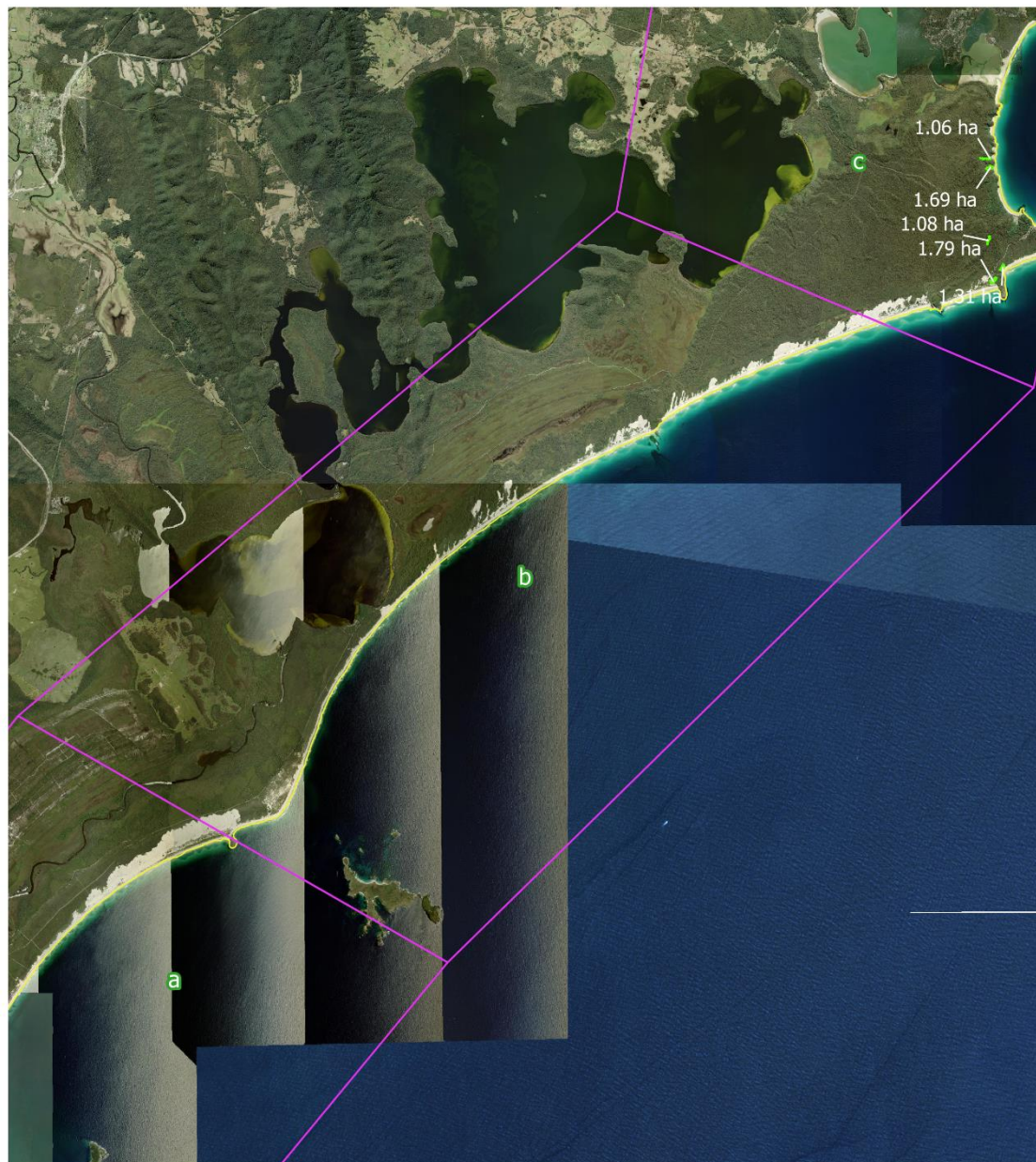
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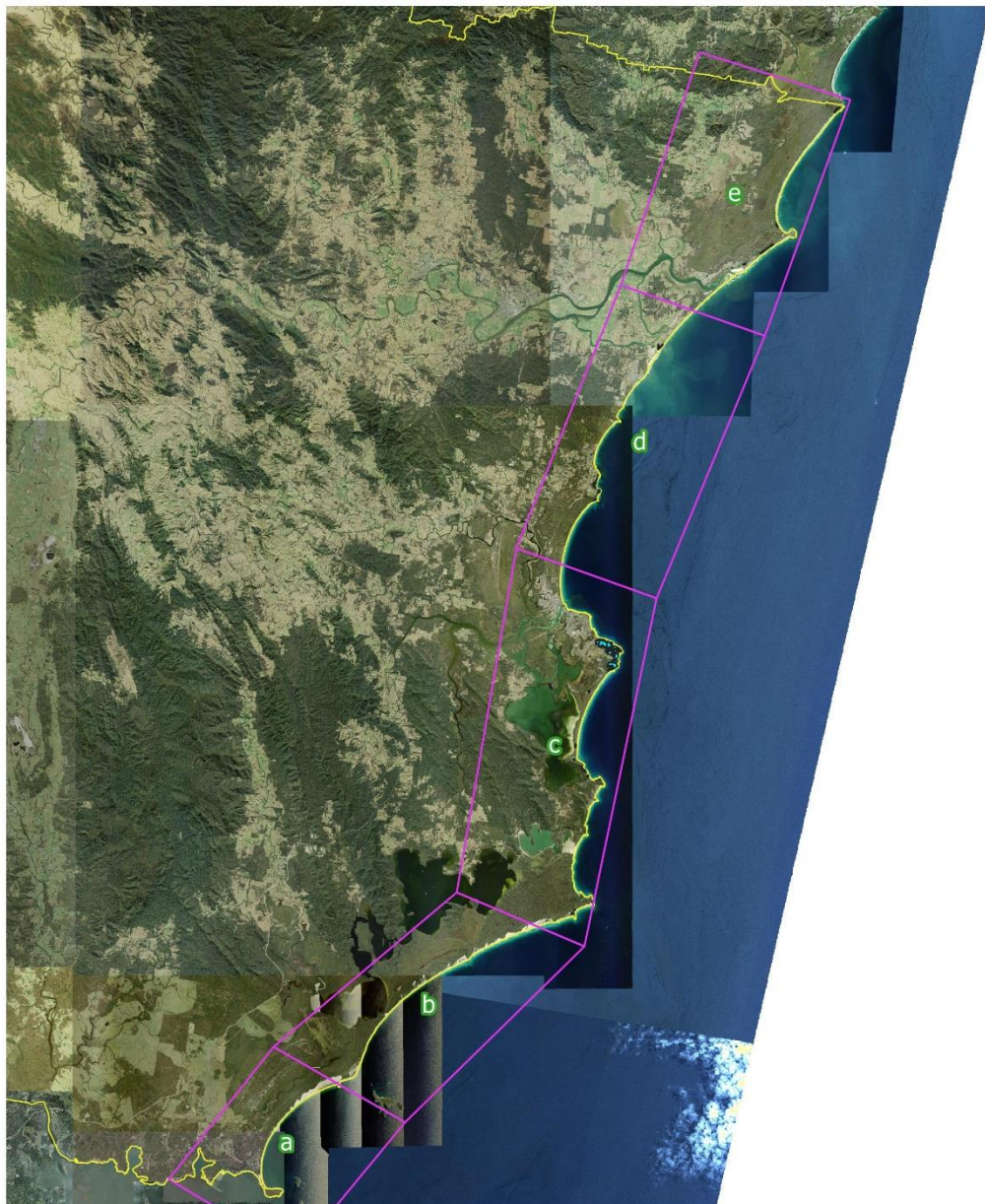
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Atlas of Littoral Rainforest by Tenure Index



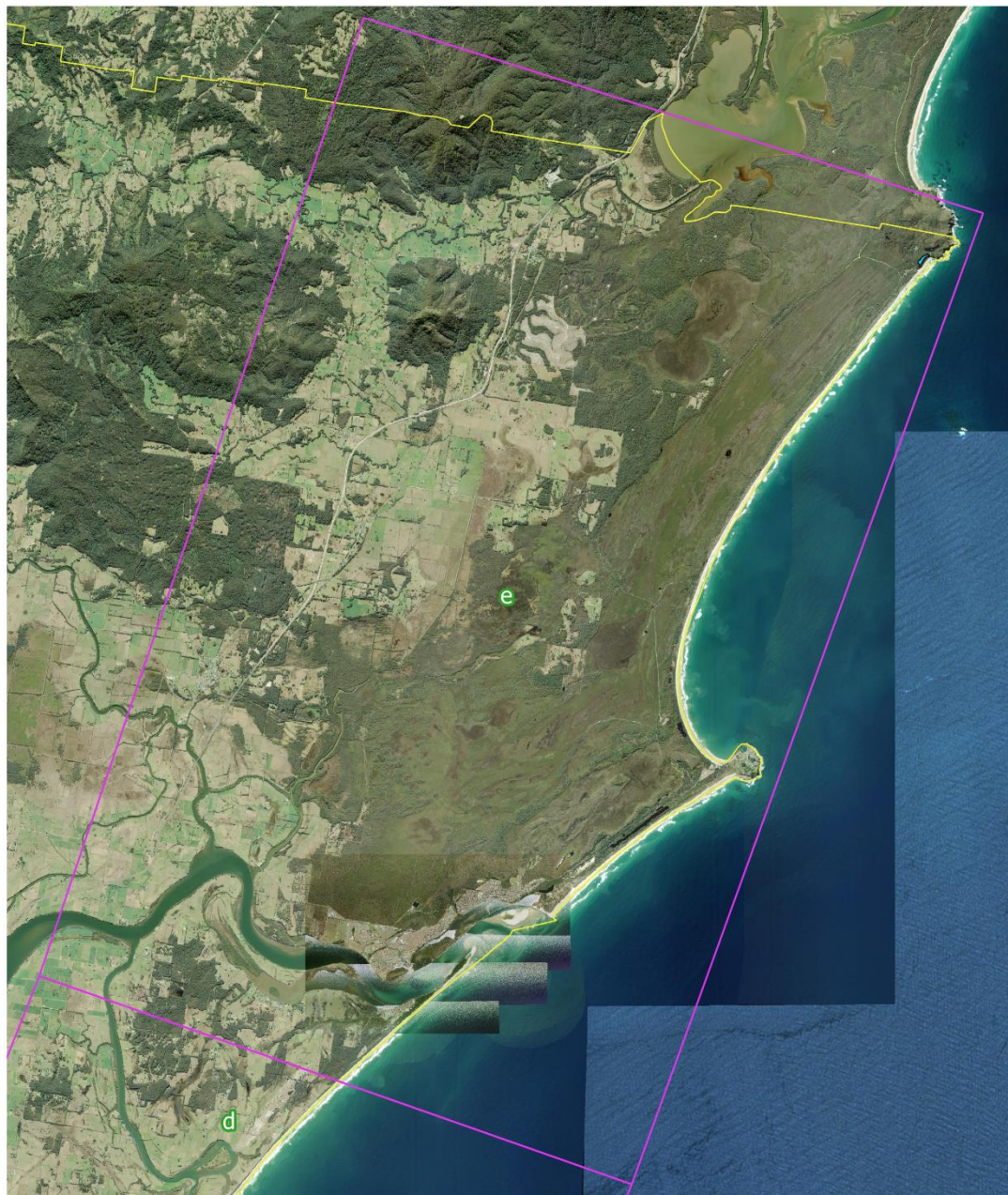
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0 7.5 15 km



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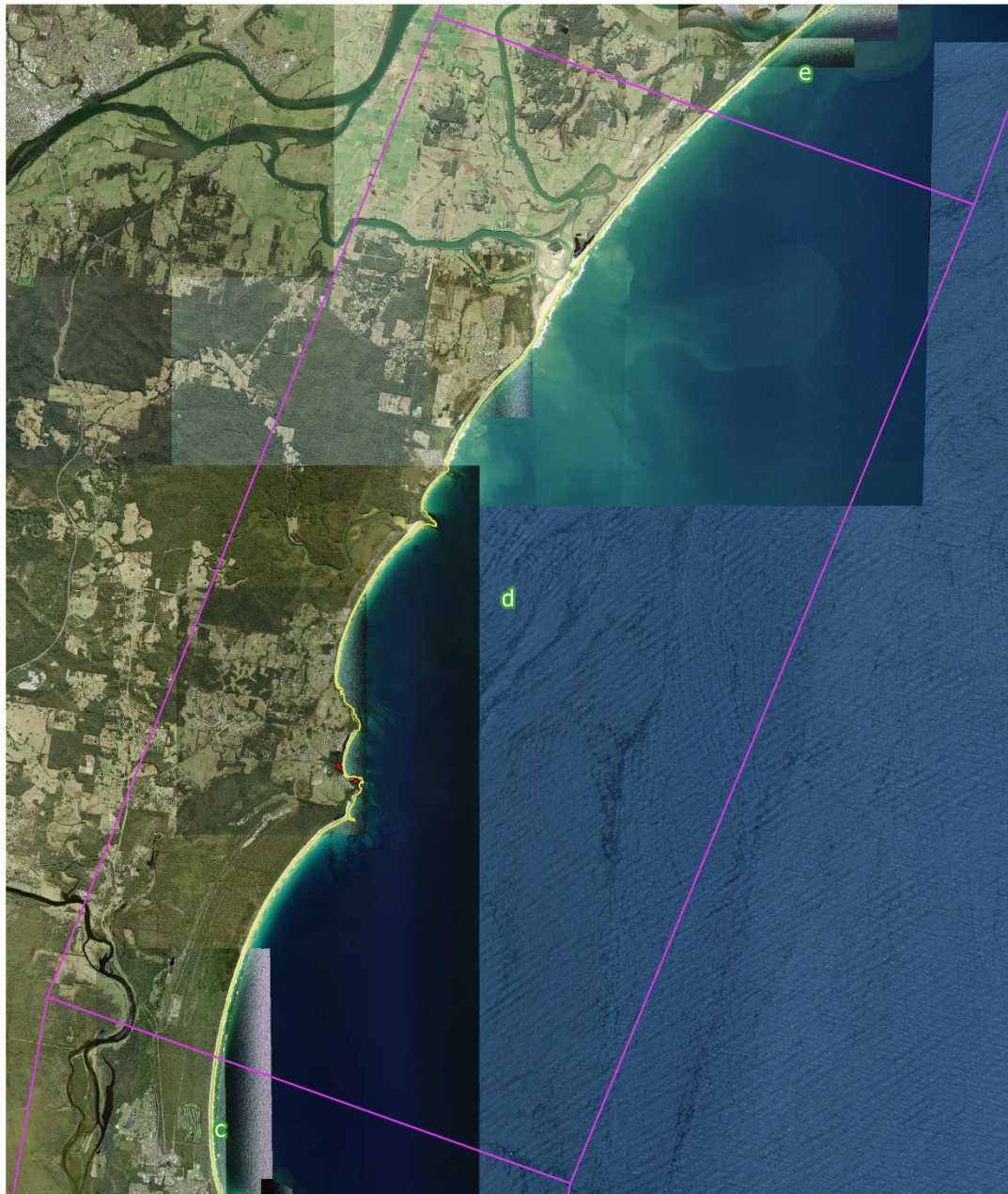
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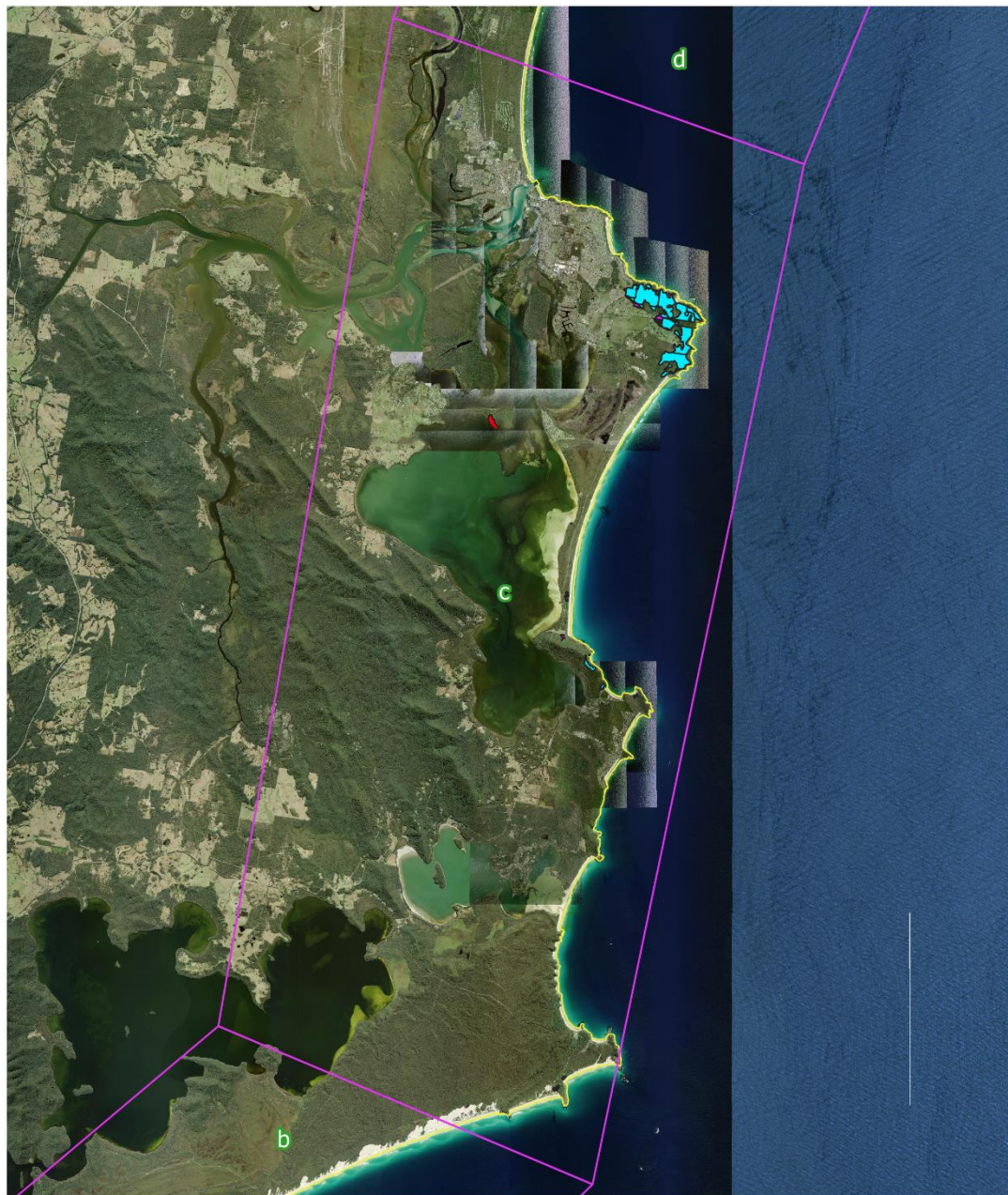
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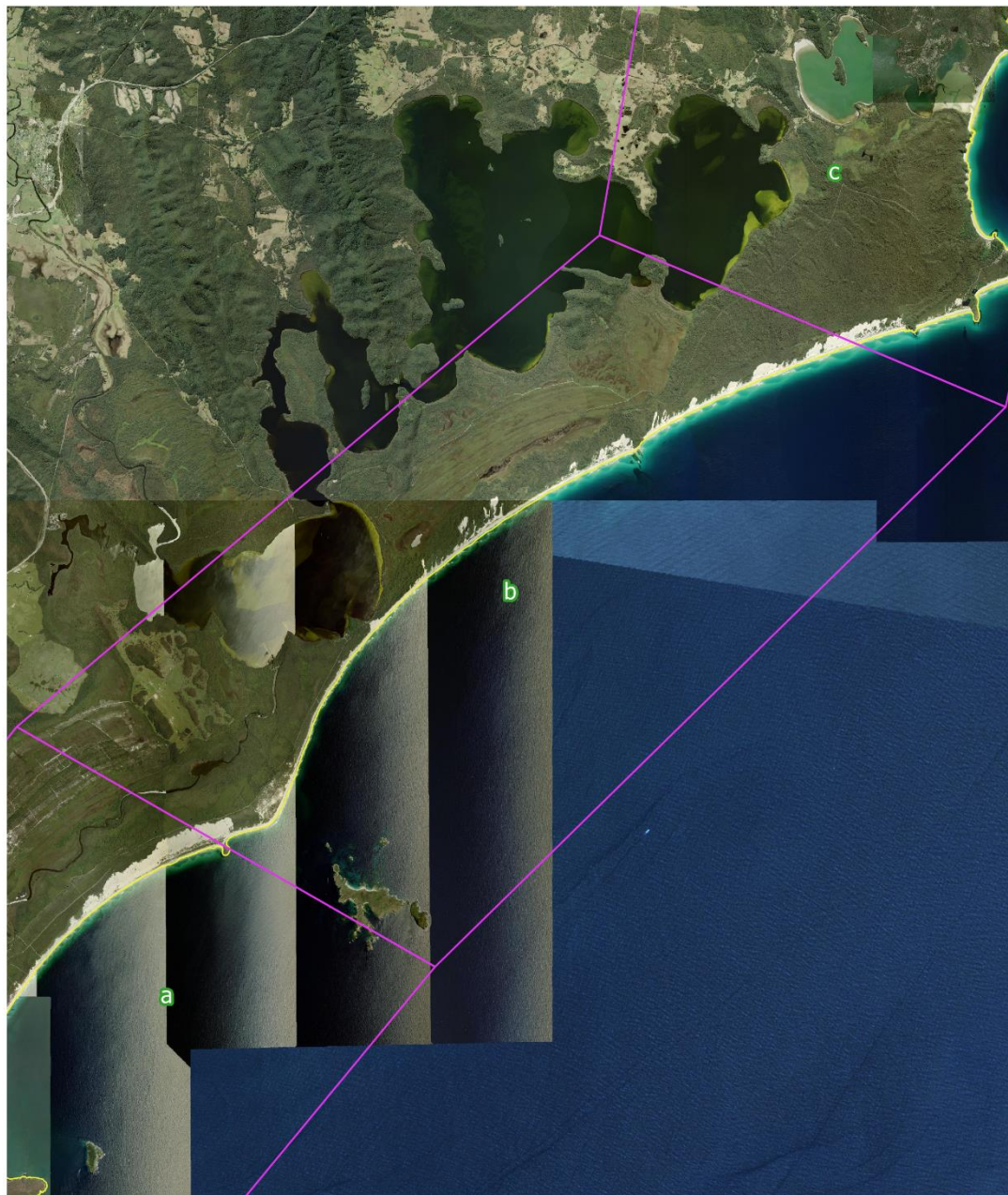
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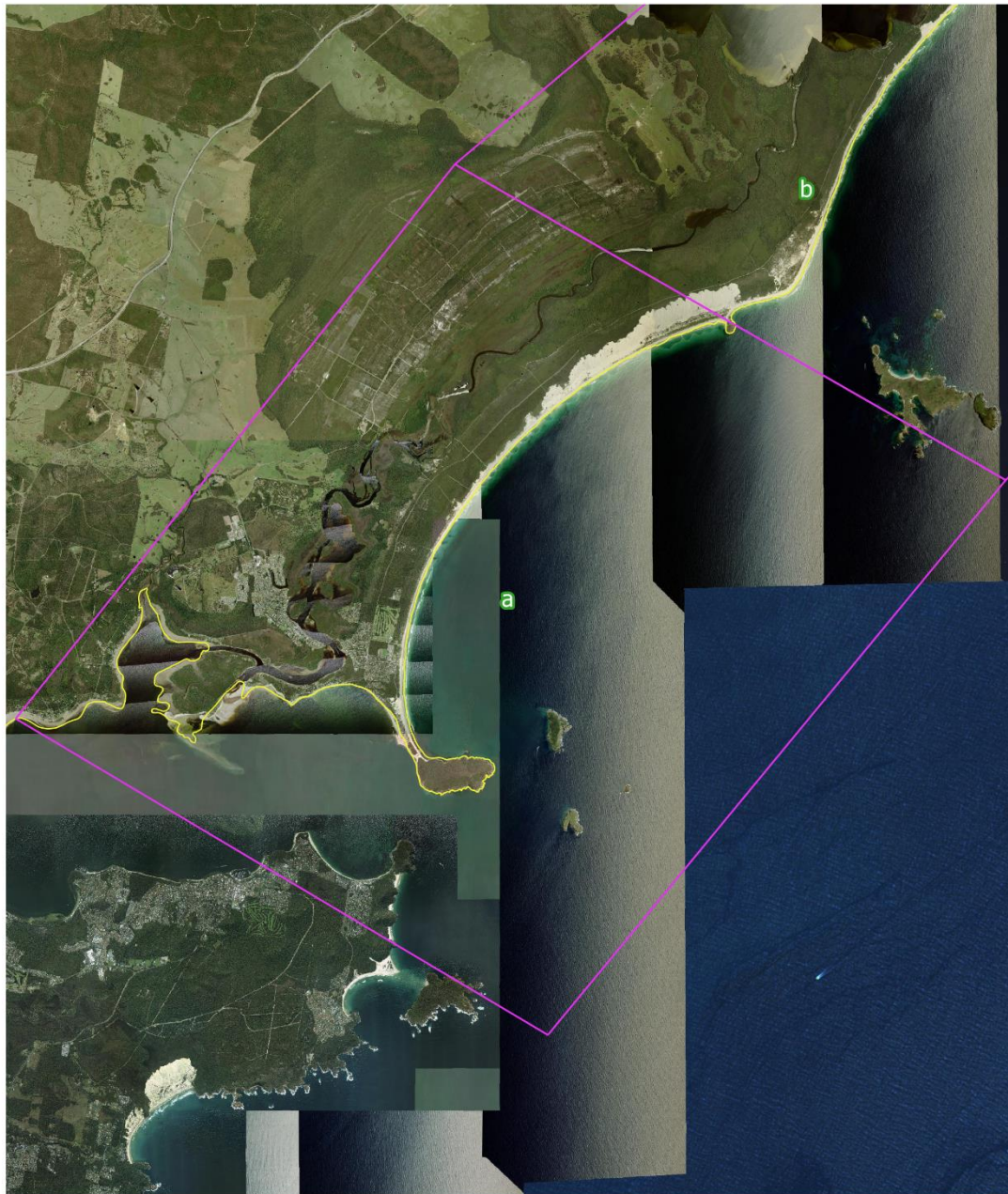
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