



Updated High Environmental Value (HEV) Mapping in Byron Shire April 2023

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This plan has been prepared by EarthScapes Consulting Pty Ltd

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Acknowledgement

The People of the Bundjalung nation developed and maintained a deep and rich connection with the land of the Byron area. The land nourished all of the person, supplying physical, spiritual, cultural and identity necessities. We wish to acknowledge these First Peoples, and pay our respects to Elders - past, present and future.



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1. Objective

The objectives of this project are:

- Review High Environmental Criteria,(HEV) criteria to apply through a review of recent literature and discussions with DPE.
- Update Byron Shire HEV mapping based with updated criteria, biodiversity datasets and updated vegetation mapping.

2. Current HEV Mapping

The most recent Byron Shire HEV mapping was completed in 2016 by Landmark Ecological Services (Landmark) and updated in May 2017.

The report, *High Environmental Value Criteria May 2017 Revision* by Landmark outlines the methodology applied.

3. HEV Criteria

Discussions were held with staff and guidance provided from the Biodiversity and Conservation Division, Department of Planning and Environment in July 2022.

Appendix 1 details the criteria supplied by DPE to be applied for HEV mapping. BCD advise that the HEV criteria are referenced in the North Coast Regional Plan and are relevant at the shire wide scale for the purposes of regional strategic planning.

It should be noted, that this project maps HEV at a landscape scale, not a property scale. The output of the LGA mapping identifies likely areas of HEV, based on current data sets. Site-specific ground truthing may be required to confirm HEV polygons at property scale.

Table 1 summarises the criterion with reference to Byron Shire scale mapping.

Table 1 - HEV Criteria (provided by BCD, DPE).

Criterion	Criterion Details
1.1 Biodiversity Values Map	Version14_3_20221228 used.
2.1 Over-cleared vegetation types	Listing from National Vegetation Information System (NVIS).
2.2 Vegetation in over-cleared landscapes (Mitchell landscapes)	Version 3.1 used.
2.3 Threatened Ecological Communities	EPBC Act 1999. BC Act 2016. No TECs from FM Act 1994 found in Byron Shire.
2.4 100m buffer on Coastal Wetlands and Littoral Rainforest areas as per the Coastal Management SEPP 2018	Coastal Wetlands version 20181217 used. Littoral Rainforest version 20181217 used.
3.1 Key habitat for threatened species <ul style="list-style-type: none">• Key breeding habitats with known breeding occurrence.	Any known and verified breeding sites. Includes Koala breeding habitat.

● Core Koala Habitat	Byron Comprehensive Koala Plan of Management (KPOM) Persistent populations.
● Habitat for known populations of species-credit species	Core Mitchell Rainforest Snail Habitat. Hollow Dependant Fauna Habitat. Glossy Black Cockatoo feeding habitat.
● Key habitats for migratory species	
4.1 Nationally important wetlands	2010 Version of spatial data used.
4.2 Vulnerable Estuaries and ICOLLs	June 2022 Version of spatial data used.
5.1 Karst landscapes	Not found in Byron Shire
5.2 Sites of geological significance included in State Heritage Register or Heritage Inventory	Not found in Byron Shire

4. Methodology

4.1 Biodiversity Values Map

The Biodiversity Values (BV) Map identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing.

Sourced from: <https://datasets.seed.nsw.gov.au/dataset/biodiversity-values-map>

4.2 Over-cleared vegetation types

The list of over-cleared PCTs was generated from BioNet Vegetation Classification Database on 13/02/2023 (refer to Appendix 3).

The PCT polygons were clipped to the BSC vegetation mapping to improve the accuracy of the boundaries. Where the BSC mapping did not overlap the PCT mapping, the area was removed from the over-cleared vegetation layer.

Sourced from:

<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/about-bionet-vegetation-classification>

4.3 Vegetation in over-cleared landscapes (Mitchell landscapes)

Refers to over-cleared landscapes.

Sourced from: <https://datasets.seed.nsw.gov.au/dataset/nsw-mitchell-landscapes-version-3-1>

4.4 Threatened Ecological Communities

EPBC Communities:

These are ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

BSC vegetation mapping was used as well as the diagnostic criteria outlined in Approved Conservation Advice for each community (see Table 2).

List of communities sourced from: <https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

Appendix 2 lists the vegetation types identified in the Byron Shire Council 2021 mapping for each EPBC community.

Table 2 - EPBC Communities in Byron Shire.

Community	Category	Date of Listing	Minimum Patch Size	Condition/Canopy Criteria
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community	Endangered	20/03/2018	0.5 Ha	Refer to Earthscapes Consulting Pty Ltd Swamp Oak Report (2023). Categories A, B & C.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	08/12/2021	> 0.25 Ha	BSC Vegetation Condition 4 and Canopy D not included from Landmark HCV methods 2017 http://www.environment.gov.au/biodiversity/threatened/communities/pubs/171-conservation-advice.pdf coastal swamp oak
Lowland Rainforest of Subtropical Australia	Critically Endangered	25/11/2011	0.1 Ha	http://www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	10/08/2013	0.1 Ha	https://www.environment.gov.au/biodiversity/threatened/communities/pubs/118-conservation-advice.pdf
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	11/08/2022	0.5Ha	BSC Vegetation Condition 4 and Canopy D not included from Landmark HEV methods 2017
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	10/10/2008	0.1 Ha	https://www.environment.gov.au/biodiversity/threatened/communities/pubs/76-listing-advice.pdf
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	05/10/2022	> 0.5Ha	BSC Vegetation Condition 4 and Canopy D not included from Landmark HEV methods 2017. http://www.environment.gov.au/biodiversity/threatened/communities/pubs/179-conservation-advice.pdf

In their HEV mapping of 2016, Landmark applied the criteria shown in Table 3 for Lowland Rainforest of Subtropical Australia (EPBC Act, 1999). The same rules have been applied in the updated mapping of this community.

Table 3 - Candidate Lowland Rainforest (EPBC Act) criteria (Landmark, 2016)

	Canopy Cover			
Rainforests	A 81-100%	B 51-80%	C 31-50%	D 10-30%
1 Old growth ([LANDS_CO]= 1)	x	x		
2 Mature veg ([LANDS_CO]= 2)	x	x		
3 Advanced regrowth ([LANDS_CO]= 3)	x			
4 Regrowth ([LANDS_CO]= 4)				

BC Act 2016 Communities:

These are ecological communities listed under the *Biodiversity Conservation Act 2016*.

BSC vegetation mapping was used as well as the diagnostic criteria outlined in the NSW Threatened Species Scientific Committee determinations for each community (see Table 4). The Landmark Vegetation Description was used to identify the dominant vegetation community for each EEC. The exceptions were the Communities Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion and Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. For these communities, the vegetation assemblages were more complex and the PCT assignments in the BSC mapping were applied.

List of communities sourced from: <https://www.environment.nsw.gov.au/threatenedspeciesapp/>

Table 4 – Vegetation Communities listed under BC Act 2016 in Byron Shire

Community Name	BSC Vegetation Criteria
Byron Bay Dwarf Graminoid Clay Heath Community	Landmark Vegetation Description (LM_Veg) includes clay heath
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	PCT_class is Subtropical Rainforests and <70m ASL. https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10497
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	PCT_class is Littoral Rainforests https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10867
Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Not found or currently mapped in Byron Shire.
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	LM_Veg includes Rainforest https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2004-2007/lowland-rainforest-nsw-north-coast-sydney-basin-bioregion-endangered-ecological-community-listing
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	LM_Vegtype begins with 'Paperbark' and < 70m ASL. https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10786
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	LM_Veg includes Saltmarsh. For "Mangrove-Saltmarsh" - each polygon validated. https://www.environment.gov.au/biodiversity/threatened/communities/pubs/118-conservation-advice.pdf
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	LM_Veg includes Sedge, Reed, Eleocharis, Freshwater, Swamp grassland and each polygon validated. Open water not included. https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10929
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	LM_Veg starts with Swamp Oak. https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10945
Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	LM_Veg starts with Forest Red Gum, Grey Ironbark, Pink Bloodwood and < 250m ASL. https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10944

Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	LM_Vegtype includes Cypress. https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20081grey
White Gum Moist Forest in the NSW North Coast Bioregion	Not found in Byron Shire.
Grey Box—Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion	LM_Veg starts with Grey Gum https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=20115

4.5 100m buffer on Coastal Wetlands and Littoral Rainforest areas as per the Coastal Management SEPP 2018

This criteria relates to the State Environmental Planning Policy (Resilience and Hazards) 2021.

Coastal Wetlands - are identified as plant communities dominated by any of the following six vegetation types:

- Mangroves
- Salt marshes
- Melaleuca forests
- Casuarina forests
- Sedgelands
- Brackish and Freshwater swamps
- Wet meadows

Littoral Rainforest - are identified as plant communities dominated by any of the following five combinations of tree species:

- Riberry or Small Leaved Lilly Pilly
- Broad-leaved Lilly Pilly
- Tuckeroo
- Brushbox
- Yellow tulip
- Bauerella
- Red Olive Plum
- Plum Pine
- Other Lilly Pillies
- Various figs
- Cabbage palm and Plum pine

Littoral Rainforest determination follows Key diagnostic criteria

(<https://www.environment.gov.au/biodiversity/threatened/communities/pubs/76-listing-advice.pdf>)

The Coastal Wetlands and Littoral Rainforests Area also includes a 100-metre proximity area around the outer extent of the mapped coastal wetlands and littoral rainforests. The proximity area spatial datasets are known as the Proximity Area for Coastal Wetlands and the Proximity Area for Littoral Rainforests.

Tables 10 and 11 in Appendix 2 lists the BSC vegetation types found in the Coastal Management SEPP.

Sourced from:

<https://www.planningportal.nsw.gov.au/opendata/dataset/state-environmental-planning-policy-resilience-and-hazards-2021>

4.6 Key habitat for threatened species

- Key breeding habitats with known breeding occurrence

Vegetation (from BSC vegetation layer) where there have been breeding koalas recorded in the last 5 years have been mapped. Only the vegetation habitat was included, rather than the cadastral boundary used in the source data.

Sourced from: BSC Female koala mapping and BSC Vegetation Mapping

- Core Koala Habitat

Core Koala Habitat has been mapped in BSC's Byron Coast Comprehensive Koala Plan of Management (2016).

Sourced from:

<https://www.byron.nsw.gov.au/Services/Environment/Native-animals-and-plants/Koalas-in-Byron-Shire/Byron-Coast-Comprehensive-Koala-Plan-of-Management>

Persistent Koala Populations were mapped across the north coast as part of the draft Northern NSW Regional Koala Conservation Strategy by EarthScapes Consulting.

The data was created using a 1Km grid and analysing Bionet and ALA records since 1990. Persistent Koala Populations were defined as populations across three generations.

As recommended by DPE, all BSC vegetation types were included, with the exception of water bodies, exotics and wetland communities.

- Habitat for known populations of species-credit species

Core Mitchell's Rainforest Snail (*Thersites mitchellae*) habitat was mapped using the model output from the 2022 Potential Habitat Mapping of Mitchells Rainforest Snail *Thersites mitchellae* in Byron Shire by EarthScapes Consulting and BioNet records.

Glossy Black-Cockatoo (*Calyptorhynchus lathami*) habitat at recorded feed trees was mapped using data supplied by recent surveys conducted by WildBnB. BSC 2021 vegetation was used as the source of the habitat mapping, ie. The vegetation polygon that intersected the GBC record.

Hollow-dependent fauna require hollows as a key component of their habitat either on a daily or seasonal basis (DPE, 2014). Old growth forest mapping was used as a surrogate indicator of hollow-dependent fauna habitat. The BSC vegetation mapping undertaken by Landmark was the source of the old growth mapping.

- Migratory Species

Migratory species habitat mapping was informed by the following:

- BioNet records of migratory birds (see Table 5 for convention and agreement codes).
- Report: Byron Wetlands and Vallances Road Avifauna Survey (2021). Byron Bird Buddies.
- Report: Birds of Byron Wetlands and Belongil Estuary Report (2015). Byron Bird Buddies.
- Jan Olley of Byron Bird Buddies reviewed the draft migratory species habitat mapping and provided feedback on additional areas to be included; the ponds on the Elements property at Sunrise Beach, Little Wategos Beach, Belongil Beach and Brunswick River estuary. Byron Bird Buddies survey records demonstrate that these sites consistently support migratory bird species.

Table 5 - Migratory Bird Codes

Code	Description	Definition under the EPBC Act 1999, and Migratory Birds agreement.
C	CAMBA	China-Australia Migratory Bird Agreement: Refers to species listed in the Bilateral Agreement between the Government of Australia and the Government of the People's Republic of China for the protection of Migratory Birds and their Environment (Subdivision A of Division 1 of Part 5, Commonwealth EPBC Act 1999).
J	JAMBA	Japan-Australia Migratory Bird Agreement: Refers to species listed in the Bilateral Agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (Subdivision A of Division 1 of Part 5, Commonwealth EPBC Act 1999).
K	ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement: Refers to species listed in the Bilateral Agreement between the Government of Australia and the Government of the Republic of Korea for the protection of Migratory Birds and their Environment (Subdivision A of Division 1 of Part 5, Commonwealth EPBC Act 1999).

4.7 Nationally important wetlands

Directory of Important Wetlands in Australia identifies nationally important wetlands.

Sourced from: <https://datasets.seed.nsw.gov.au/dataset/directory-of-important-wetlands-in-australia>

4.8 Vulnerable Estuaries and ICOLLs

This dataset identifies estuaries that are vulnerable or susceptible to the impacts of land-based inputs of pollutants such as urban stormwater or agricultural runoff

Sourced from: <https://data.nsw.gov.au/data/dataset/vulnerableestuariesandicolls>

5. Results

Figure 1 shows the area of HEV after all of the criteria have been applied.

Appendix 4 includes maps of each of the criteria.

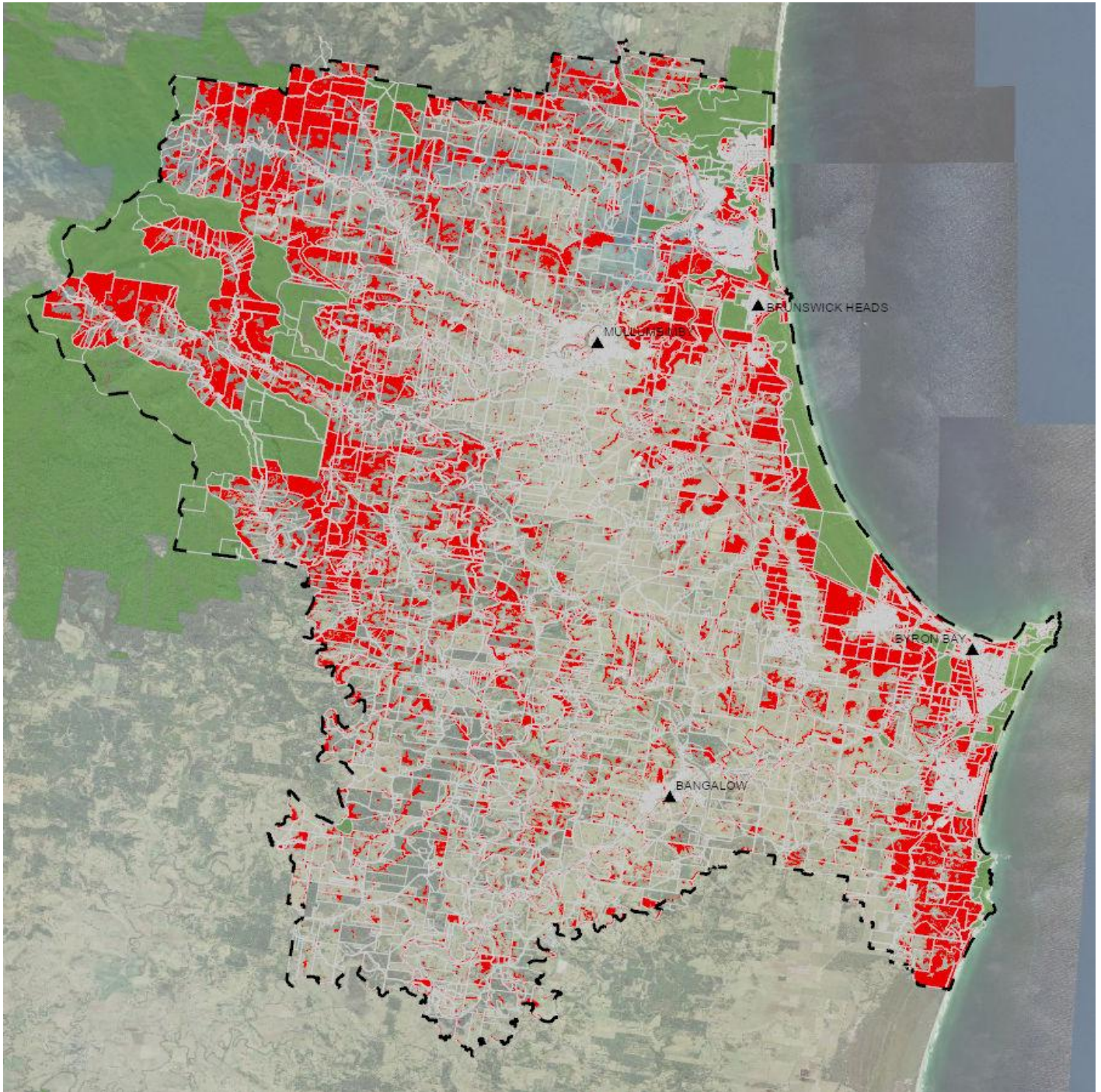


Figure 1 - 2023 HEV Mapping in Byron Shire.

Table 6 and Figure 2 show the difference in area between 2017 and 2023 mapping.

Table 6 - Total area of mapped HEV 2017 and 2023 mapping.

	Area (Ha)
2017 HEV Mapping	15,005
2023 HEV Mapping	16,635

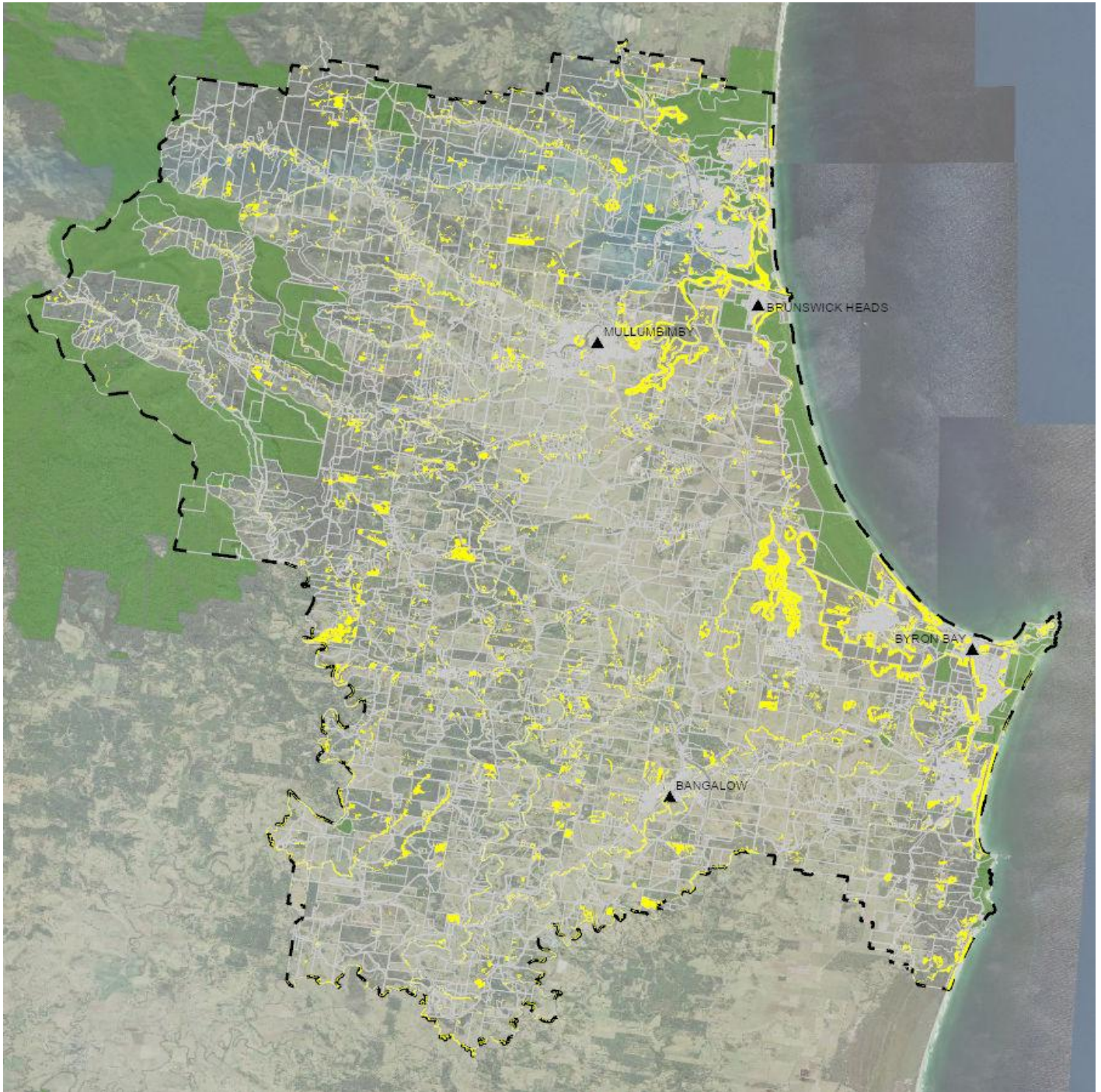


Figure 2 - Additional HEV area from 2017 mapping.

6. Discussion

The criteria used to map HEV across Byron Shire has changed since previously applied in 2015 and 2017 (refer to Appendix 1).

Whilst there are significant overlaps in the areas of HEV, there are an additional 1,630 hectares where HEV is likely to occur.

The key reasons for the increase in area are:

- New EECs listed under EPBC Act (see Table 7).
- Inclusion of 100m buffer of Coastal Wetland and Littoral Rainforest areas as per the Coastal Management SEPP 2018.
- Additional areas included in the Biodiversity Values Map.

Table 7 - New EEC Listings since 2017 (EPBC Act)

Community	Date of Listing
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community	20/03/2018
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	08/12/2021
Grey box-grey gum wet forest of subtropical eastern Australia	11/08/2022
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	05/10/2022

It is important to note that the results of applying HEV criteria are appropriate at landscape scale, however additional field verification is required at a property scale.

7. Recommendations

The key recommendations from this project include:

- Update HEV mapping, at least every 5 years with updated vegetation and other criteria mapping.
- Incorporate the outcomes of the 2023 *Review of Coastal Wetland and Littoral Rainforest Mapping within Byron Shire LGA*.
- Undertake more detailed assessment of EECs based on the diagnostic criteria outlined in the Conservation Advice for the following communities. This includes more detailed assessment of criteria such as percentage of understorey weeds. As with the recent updated mapping of Swamp Oak communities, review of current diagnostic criteria, desktop review (approximately 70%) and field surveys (approximately 30%) is required.
 - The Coastal Swamp Sclerophyll Forest
<http://www.environment.gov.au/biodiversity/threatened/communities/pubs/171-conservation-advice.pdf>
 - Lowland Rainforest of Subtropical Australia
<https://www.environment.gov.au/biodiversity/threatened/communities/pubs/101-listing-advice.pdf>
 - Littoral Rainforest and Coastal Vine Thickets of Eastern Australia
<http://www.environment.gov.au/biodiversity/threatened/communities/pubs/76-listing-advice.pdf>
 - Grey box-grey gum wet forest of subtropical eastern Australia
<https://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=181&status=Endangered>
 - Subtropical eucalypt floodplain forest and woodland
<http://www.environment.gov.au/biodiversity/threatened/communities/pubs/179-conservation-advice.pdf>

8. Data

The spatial data is available on BSC's data drives:

EEC spatial layer:

G:\EPS\NATURAL ENVIRONMENT_Biodiversity\GIS\Veg2022\HEV_mapping_2023\BSCEEC2023MGA56.shp

HEV spatial layer:

G:\EPS\NATURAL ENVIRONMENT_Biodiversity\GIS\Veg2022\HEV_mapping_2023\BSCHEV2023MGA56.shp

Note, the field HEV summarises the HEV criteria met.

BV - Biodiversity Values

OCVT - Over-cleared Vegetation Type

ML - Mitchell's Landscapes

EEC_EPBC - Endangered Ecological Community (EPBC Act)

EEC_BCT - Endangered Ecological Community (BC Act)

CW - Coastal Wetland

LrF - Littoral Rainforest

BrK - Breeding Koala Habitat

KPOM - BSC Koala Plan of Management

PKP - Persistent Koala Population.

HDF - Hollow-dependent Fauna Habitat

NIW - Nationally Important Wetland

VEICOLLS - Vulnerable Estuaries and ICOLLS

Metadata is included with the spatial data as per ANZLIC standards.

References

Department of Planning and environment (2014). Trees with Hollows - natural resource management information note.

Appendix 1 - BCD NE Branch HEV Criteria and Identification Methods at the Property Scale

Table 8 - HEV Criteria

High Environmental Value (HEV) Criteria and Components		Property Scale HEV Identification Method
Criterion 1. Sensitive Biodiversity Mapped on the Biodiversity Values Map		
1.1 Biodiversity Values Map		<ul style="list-style-type: none"> a. Identify the parts of the land on the Biodiversity Values map which can be viewed at https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/about-the-biodiversity-offsets-scheme/when-does-bos-apply/biodiversity-values-map. b. Inspect those mapped areas on the land to verify accuracy and map as HEV where the map is accurate.
Criterion 2. Native vegetation of high conservation value		
2.1 Over-cleared vegetation types		<ul style="list-style-type: none"> a. Identify Plant Community Types (PCTs) on the land through field work. b. Register and visit the Vegetation Information System (VIS) database at vis@environment.nsw.gov.au. c. Use the VIS to determine whether the % cleared status of the PCTs identified through field work on the land is above 70%. d. Map all PCTs on the land with the % cleared above 70% as HEV.
2.2 Vegetation in over-cleared landscapes (Mitchell landscapes)		<ul style="list-style-type: none"> a. Identify over-cleared Mitchell landscapes by viewing map data from the SEED portal https://www.seed.nsw.gov.au/ – selecting NSW (Mitchell Landscapes) – latest version, selecting Show on Seed Map and viewing the View Over Cleared Land Status. b. Map all native vegetation on the land as HEV if it is in an over-cleared Mitchell landscape.
2.3 Threatened Ecological Communities - any vulnerable, endangered, or critically endangered ecological community listed under the BC Act, the FM Act 1994 or the EPBC Act and not mapped on the BV map		<ul style="list-style-type: none"> a. Identify Plant Community Types (PCTs) on the land through field work. b. Register and visit the VIS database at vis@environment.nsw.gov.au. c. Use the VIS to determine whether the PCTs on the land have Threatened Ecological Community (TEC) Status. d. If not identified as a TEC from steps a – c above, then refer to the NSW Threatened Species Scientific Committee determinations to consider whether the any of the PCTs accords with the determinations. e. Map all PCTs on the land that are TECs as HEV.
2.4 100m buffer on Coastal Wetlands and Littoral Rainforest areas as per the Coastal Management SEPP 2018		<ul style="list-style-type: none"> a. Locate the land on the SEPP Coastal Management SEPP maps available at https://webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement b. Map any parts of the land shown as proximity areas for Coastal Wetlands and Littoral Rainforest as HEV.
Criterion 3. Threatened species		
3.1 Key habitat for threatened species (vulnerable, endangered, or critically endangered species listed under BC Act)	Key breeding habitats with known breeding occurrence	<ul style="list-style-type: none"> a. Search BioNet for threatened species records on and within 5km of the land b. Undertake field work to identify potential breeding habitats on the land for threatened species. c. Either assume breeding occurrence and map identified breeding habitats on the land as HEV or undertake targeted surveys during the breeding season and map these habitats as HEV if breeding occurs there.

	Core Koala Habitat	<ul style="list-style-type: none">a. Check council records for approved comprehensive or individual property Koala Plans of Management (KPoM).b. Identify areas of core koala habitat on the land mapped in any approved KPoM and map these areas as HEV.c. If there are no approved KPoMs, then undertake field work in accordance with the relevant State Environmental Planning Policy (SEPP) for koalas, e.g. SEPP (Koala Habitat Protection) 2020, to determine whether Core Koala Habitat is present on the land.d. Map any core koala habitat identified on the land through field work as HEV.
High Environmental Value (HEV) Criteria and Components		Property Scale HEV Identification Method
	Habitat for known populations of species-credit-species and SAIL entities (species-credit species and SAIL entities are identified in the Threatened Biodiversity Data Collection)	<ul style="list-style-type: none">a. Search BioNet for threatened species records on and within 5km of the land.b. Undertake field work to identify populations of threatened species credit species on the land and their habitats.c. Map all habitats of known populations of species credit species on the land as HEV. <p>The Biodiversity Assessment Method and the Department's survey assessment guidelines should be referred to for suitable habitat assessment methodologies.</p> <p>If a recent Biodiversity Development Assessment Report has been prepared for the land, then this could be referred to in support of demonstrating how this criterion has been considered.</p>
	Key habitats for migratory species	<ul style="list-style-type: none">a. Search BioNet for threatened migratory species records on and within 5km of the land.b. Undertake field work to identify habitats of threatened migratory species on the land.c. Map all habitats of threatened migratory species on the land as HEV.
Criterion 4. Wetlands, rivers, estuaries & coastal features of high environmental value		
4.1 Nationally important wetlands	Note: Rivers and their riparian areas comprising HEV are included in the Biodiversity Values Map under HEV Criterion 1 as protected riparian land	<ul style="list-style-type: none">a. Search the Directory of Important Wetlands in Australia for those occurring in NSW available at http://www.environment.gov.au/cgi-bin/wetlands/search.pl?smode=DOIW.b. Identify any nationally important wetlands listed in the directory that occur on the land and map these areas as HEV.
4.2 Vulnerable Estuaries and ICOLLs		<ul style="list-style-type: none">a. Identify whether any vulnerable estuaries or ICOLLs occur on, or in the vicinity of, the land by reviewing the maps available at https://datasets.seed.nsw.gov.au/dataset/vulnerableestuariesa ndicolls.b. Map any vulnerable estuaries or ICOLLs that occur on, or in the vicinity of, the land as HEV.
Criterion 5. Areas of geological significance		
5.1 Karst landscapes		<ul style="list-style-type: none">a. Identify whether limestone outcrops or caves occur on the land.b. Consider any additional Karst landscapes that occur in the vicinity of the land, with reference to the NSW Government's <i>Guide to New South Wales Karst and Caves</i> available at https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Land-and-soil/nsw-karst-cave-guide-110455.pdf and any other available karst mapping, such as karts maps associated with local environmental plans.c. Map any limestone outcrops or caves on the land and any other karst landscapes that occur in the vicinity of the land as HEV.
5.2 Sites of geological significance included in the State Heritage Register or Heritage Inventory		<ul style="list-style-type: none">a. Identify whether the land contains, or is in the vicinity of, the sites of geological significance listed in Appendix A.b. Map any sites of geological significance that occur on, or in the vicinity of, the land as HEV.

Appendix 2 - EPBC EECs and Byron Shire Vegetation Types

Table 9 - BSC Vegetation Types (EPBC EEC)

EPBC EEC	BSC Vegetation Type	Area (Ha)
Subtropical eucalypt floodplain forest and woodland	Forest Red Gum	0.8
	Forest Red Gum-Blackbutt-Flooded Gum-Tallowwood	0.8
	Forest Red Gum-Brush Box+Camphor	5.9
	Forest Red Gum-Brush Box+Tallowwood, Bloodwood	2.9
	Forest Red Gum-Flooded Gum-Tallowwood	3.8
	Forest Red Gum-Grey Gum-Grey Ironbark-Brush Box	7.5
	Forest Red Gum-Grey Ironbark-Blackbutt-Bloodwood	1.3
	Forest Red Gum-Grey Ironbark-Flooded Gum-Swamp Box	1.5
	Forest Red Gum-Littoral Rainforest	9.8
	Forest Red Gum-Paperbark	2.2
	Forest Red Gum-Paperbark-Swamp Oak	3.4
	Forest Red Gum-Paperbark+Rainforest	4.4
	Forest Red Gum-Pink Bloodwood-Swamp Box	3.3
	Forest Red Gum-Swamp Mahogany	0.6
	Forest Red Gum-Swamp Mahogany-Paperbark	4.2
	Forest Red Gum-Swamp Mahogany-Pink Bloodwood	2.4
	Forest Red Gum-Swamp Mahogany-Swamp Box	6.0
	Forest Red Gum-Swamp Mahogany+Swamp Box+Paperbark	0.9
	Forest Red Gum-Swamp Oak	1.2
	Forest Red Gum-Swamp Oak-Paperbark-Swamp Mahogany	0.6
	Forest Red Gum-Swamp Oak+Swamp Mahogany	4.7
	Forest Red Gum-Tallowwood	1.2
	Forest Red Gum-Tallowwood-Paperbark	1.1
	Forest Red Gum-Teatree	3.6
	Forest Red Gum+Brush Box, Bloodwood, Rainforest	0.6
	Forest Red Gum+Camphor Laurel	4.7
	Forest Red Gum+Coast Cypress Pine	3.4
	Forest Red Gum+Ironbark, Brush Box, Pink Bloodwood	1.9
	Forest Red Gum+Paperbark	1.0
	Forest Red Gum+Paperbark, Swamp Mahogany, Camphor	3.4
	Forest Red Gum+Pink Bloodwood	1.1
	Forest Red Gum+Rainforest, Brush Box	0.6
	Forest Red Gum+Swamp Box, Grey Ironbark	2.8
	Forest Red Gum+Swamp Oak, Paperbark, Swamp Box	0.8
	Forest Red Gum+Swamp Oak, Swamp Box, Paperbark	0.7
	Forest Red Gum+Tallowwood, GreyIronbark	0.8
	Forest Red Gum+Wattle	2.3
	Grey Ironbark-Blackbutt	1.5
	Grey Ironbark-Blackbutt-White Mahog-Pink Bloodwood	1.7
	Grey Ironbark-Brush Box	1.0
	Grey Ironbark-Brush Box-Rainforest	2.4
	Grey Ironbark-Forest Red Gum-Brush Box	13.8
	Grey Ironbark-Pink Bloodwood	3.6
	Grey Ironbark-White Mahogany-Brush Box+Tallowwood	1.3

	Grey Ironbark+Bloodwood, Brush Box, Camphor Laurel	2.1
	Grey Ironbark+Brush Box, Tallowwood, Bloodwood	1.8
	Pink Bloodwood	0.8
	Pink Bloodwood-Blackbutt	0.7
	Pink Bloodwood-Brush Ironbark Wattle-U Cheese Tree	1.9
	Pink Bloodwood-Forest Red Gum	0.5
	Pink Bloodwood-Grey Ironbark	1.2
	Pink Bloodwood-Rainforest	0.8
	Pink Bloodwood-Tallowwood	0.7
	Pink Bloodwood-Wattle-Rainforest	1.8
	Pink Bloodwood+Brush Box, Tallowwood, Ironbark	3.6
Grey box-grey gum wet forest	Grey Gum-Brush Box	31.8
	Grey Gum-Grey Ironbark-Pink Bloodwood	2.4
	Grey Gum-Tallowwood-Brush Box	12.3
	Grey Gum-Wattle-Grey Ironbark	2.1
Littoral Rainforest and Coastal Vine Thickets	Brush Box	4.1
	Brush Box-Bangalow Palm-Rainforest	5.7
	Brush Box-Coast Banksia-Rainforest	1.3
	Brush Box-Littoral Rainforest	0.2
	Brush Box-Pink Bloodwood-Rainforest	126.9
	Brush Box-Rainforest	0.7
	Brush Box headland rainforest	0.9
	Brush Box+Rainforest	0.2
	Coast Banksia	4.3
	Coast Banksia-Coast Wattle-Rainforest	0.9
	Coast Banksia-Coast Wattle-Tuckeroo	1.4
	Coast Banksia-Littoral Rainforest	10.0
	Coast Banksia-Rainforest	5.3
	Coast Banksia-Tuckeroo	0.4
	Coast Banksia-Tuckeroo-Mixed Regrowth	4.6
	Coast Banksia-Wattle-Tuckeroo	5.3
	Coast Banksia+Rainforest	3.0
	Coast Banksia+Tuckeroo, Swamp Box	2.1
	Coast Wattle-Coast Banksia-Rainforest	4.8
	Coast Wattle-Tuckeroo	0.1
	Cottonwood Hibiscus LRf	0.5
	Hoop Pine-Eucalypt-Rainforest	1.0
	Hoop Pine-Flooded Gum-Rainforest	1.1
	Hoop Pine-Rainforest	1.1
	Hoop Pine-Rainforest+Swamp Oak	0.2
	Hoop Pine-Swamp Oak	1.2
	Hoop Pine-Swamp Oak-Rainforest	41.3
	Littoral Rainforest	0.3
	Littoral Rainforest-Brush Box	0.3
	Littoral Rainforest-Coast Banksia	0.6
	Littoral Rainforest-Swamp sclerophyll	0.1
	Littoral Rainforest+Brush Box	1.3
	Littoral Rainforest+Eucalypt	0.2
	Littoral Rainforest+Paperbark	1.6
	Native Guava-Coast Banksia-Three-veined Laurel	0.4

	Paperbark-Rainforest	70.8
	Rainforest	14.0
	Rainforest-Coast Banksia	0.3
	Rainforest-Coast Cypress-Paperbark	0.7
	Rainforest-Hoop Pine	1.8
	Rainforest+10-50% Camphor Laurel	1.6
	Rainforest+Coast Banksia	2.7
	Tuckeroo-Coast Banksia	0.5
	Tuckeroo-Paperbark	0.1
	Tuckeroo-Rainforest	0.4
	Wattle+Tuckeroo, Beach Acronychia	0.7
Lowland Rainforest of Subtropical Australia	Bangalow Palm	26.5
	Bangalow Palm-Rainforest	2.4
	Bangalow Palm-Rainforest-Paperbark	55.8
	Brush Box	3.3
	Brush Box-Bloodwood-Rainforest	1.3
	Brush Box-Camphor Laurel+Hoop Pine	1.6
	Brush Box-Eucalypt-Hoop Pine-Camphor Laurel	1.5
	Brush Box-Eucalypt-Rainforest	1.6
	Brush Box-Flooded Gum-Rainforest	0.7
	Brush Box-Hoop Pine	6.3
	Brush Box-Hoop Pine-Rainforest	1.2
	Brush Box-Hoop Pine+Camphor Laurel	1.5
	Brush Box-Ironbark-Hoop Pine+Rainforest	343.0
	Brush Box-Rainforest	6.4
	Brush Box-Rainforest-Camphor Laurel	7.5
	Brush Box-Rainforest-Eucalypt	0.8
	Brush Box-Rainforest-Hoop Pine	3.3
	Brush Box-Rainforest+Hoop Pine	4.6
	Brush Box-Tallowwood-Hoop Pine	0.5
	Brush Box-Wattle-Camphor Laurel	2.7
	Brush Box+Camphor Laurel	4.5
	Brush Box+Camphor Laurel, Rainforest	86.1
	Brush Box+Rainforest	6.5
	Brush Box+Rainforest, Eucalypt	1.4
	Brush Cypress	0.2
	Coast Banksia-Littoral Rainforest	2.3
	Coast Banksia-Rainforest	5.2
	Eucalypt-Brush Box	3.1
	Eucalypt-Brush Box-Rainforest	6.2
	Ficus	3.7
	Ficus-Rainforest	0.5
	Ficus spp, Riberry, Murrogun	1.3
	Flooded Gum-Hoop Pine-Brush Box-Rainforest	4.0
	Hoop Pine	0.3
	Hoop Pine-Brush Box-Camphor Laurel	8.3
	Hoop Pine-Brush Box-Rainforest	0.4
	Hoop Pine-Ficus-Rainforest	0.3
	Hoop Pine-Pink Bloodwood	50.0
	Hoop Pine-Rainforest	6.1
	Hoop Pine-Rainforest-Brush Box	1.5

	Hoop Pine-Rainforest-Camphor Laurel	1.3
	Hoop Pine-Rainforest-Paperbark	4.1
	Hoop Pine-Rainforest+Brush Box	0.5
	Hoop Pine-Rainforest+Grey Ironbark, Flooded Gum	0.3
	Hoop Pine-Riberry-Weeping Lilly Pilly	2.5
	Mixed Eucalypt-Rainforest - Camphor laurel	0.6
	Planted Rainforest	1255.3
	Rainforest	0.4
	Rainforest-Bangalow Palm-Wattle	61.4
	Rainforest-Brush Box	0.7
	Rainforest-Brush Box-Camphor Laurel	0.8
	Rainforest-Brush Box-Wattle	6.0
	Rainforest-Coast Banksia	16.8
	Rainforest-Eucalypt	2.1
	Rainforest-Hoop Pine-Camphor Laurel	27.7
	Rainforest-Paperbark	0.3
	Rainforest-Paperbark-Camphor Laurel	6.6
	Rainforest-Privet	7.7
	Rainforest-Wattle	2.4
	Rainforest - Flooded Gum emergents	9.1
	Rainforest -Camphor Laurel+Hoop Pine	3.3
	Rainforest Regrowth.	569.7
	Rainforest+10-50% Camphor Laurel	0.4
	Rainforest+Bangalow Palm	110.9
	Rainforest+Brush Box	37.2
	Rainforest+Hoop Pine	5.6
	Rainforest+Hoop Pine, Brush Box	6.0
	Rainforest+Hoop Pine, Brush Box, Coast Banksia	3.0
	Rainforest+Paperbark	1.1
	Rainforest+Wattle	2.1
	Red Kamala-Red Ash	0.3
	Riberry-Ficus	5.9
	Subtropical Rainforest	0.5
	Umbrella Cheese Tree-Bangalow Palm--Rainforest	7.1
	Umbrella Cheese Tree-Bangalow Palm-Callicoma	1.1
	Umbrella Cheese Tree-Melicope	0.2
	Umbrella Cheese Tree-Paperbark	0.7
	Wattle-Rainforest	1.0
	Weeping Lilly Pilly-Hoop Pine-Rainforest	22.4
Subtropical and Temperate Coastal Saltmarsh	Saltmarsh	0.3
	Saltmarsh-Mangrove+Swamp Oak	0.2
	Saltmarsh grassland	0.2
	Saltmarsh+Paperbark	31.1
Coastal Swamp Oak (Casuarina glauca) Forest	Swamp Oak	4.1
	Swamp Oak-Cabbage Palm	0.2
	Swamp Oak-Camphor Laurel	0.7
	Swamp Oak-Eucalypt	2.9
	Swamp Oak-Mangrove	9.7
	Swamp Oak-Paperbark	1.6
	Swamp Oak-Paperbark-Willow Bottlebrush	4.2

	Swamp Oak-Rainforest	0.7
	Swamp Oak-Swamp Box-Rainforest	1.0
	Swamp Oak-Wattle-Paperbark	12.5
	Swamp Oak + Paperbark	0.7
	Swamp Oak+Mangrove	78.7
	Swamp Oak+Paperbark	3.1
	Swamp Oak+Paperbark, Eucalypt	1.1
	Swamp Oak+Paperbark, Rainforest	1.4
	Swamp Oak+Paperbark, Swamp Box	20.5
	Swamp Oak+Pink Bloodwood, Swamp Box	2.2
	Swamp Oak+Rainforest	0.2
	Swamp Oak+Saltmarsh, Mangrove	0.6
	Swamp Oak+Swamp Box	12.4
	Swamp Oak+Swamp Mahogany	685.6
Coastal Swamp Sclerophyll Forest	Paperbark	8.0
	Paperbark-Black Sheoak-Swamp Mahogany	0.6
	Paperbark-Brush Box-Rainforest	0.9
	Paperbark-Brush Box-Swamp Oak	12.6
	Paperbark-Camphor Laurel	4.4
	Paperbark-Camphor Laurel-Rainforest	1.5
	Paperbark-Cheese Tree	0.6
	Paperbark-Cheese Tree-Camphor Laurel	0.5
	Paperbark-Cheese Tree-Rainforest	0.3
	Paperbark-Coast Banksia	1.7
	Paperbark-Eucalypt	5.2
	Paperbark-Fernland	0.9
	Paperbark-Forest Red Gum	4.6
	Paperbark-Grass Tree	1.7
	Paperbark-Mixed eucalypt	1.1
	Paperbark-Pink Bloodwood-Swamp Mahogany	39.7
	Paperbark-Rainforest	2.7
	Paperbark-Rainforest-Brush Box	7.8
	Paperbark-Rainforest-Camphor Laurel	2.6
	Paperbark-Rainforest-Eucalypt-Brush Box	1.7
	Paperbark-Rainforest-Swamp Oak	2.0
	Paperbark-Rainforest regrowth	0.6
	Paperbark-Rainforest+Landscaping	0.9
	Paperbark-Rainforest+Swamp Oak	17.6
	Paperbark-Sedgeland	10.4
	Paperbark-Swamp Box	0.7
	Paperbark-Swamp Box-Camphor Laurel	7.1
	Paperbark-Swamp Box-Rainforest	3.7
	Paperbark-Swamp Box-Swamp Mahogany	1.9
	Paperbark-Swamp Box-Swamp Mahogany-Forest Red Gum	0.5
	Paperbark-Swamp Box-Swamp Mahogany-Teatree	1.5
	Paperbark-Swamp Box+Swamp Oak	18.9
	Paperbark-Swamp Mahogany	0.5
	Paperbark-Swamp Mahogany-Camphor Laurel	8.6
	Paperbark-Swamp Mahogany-Rainforest	2.4
	Paperbark-Swamp Mahogany-Swamp Box	0.6
	Paperbark-Swamp Mahogany-Wattle regrowth	0.7

	Paperbark-Swamp Mahogany+Teatree	9.3
	Paperbark-Swamp Oak	1.1
	Paperbark-Swamp Oak-Coast Banksia	4.3
	Paperbark-Swamp Oak-Swamp Box	3.2
	Paperbark-Swamp Oak-Swamp Mahogany	9.1
	Paperbark-Swamp Oak-Swamp Mahogany-Brush Box	18.9
	Paperbark-Teatree	1.6
	Paperbark-Teatree-Camphor Laurel-Rainforest	0.5
	Paperbark-Teatree-Rainforest	2.6
	Paperbark-Wattle	4.3
	Paperbark-Wattle-Cheese Tree	3.3
	Paperbark-Wattle-Rainforest	0.8
	Paperbark-Wattle-Swamp Box	6.7
	Paperbark-Willow Bottlebrush	0.5
	Paperbark-Willow Bottlebrush-Wattle	3.2
	Paperbark + Camphor Laurel	3.5
	Paperbark+Camphor Laurel	2.9
	Paperbark+Camphor Laurel, Weeping Lilly Pilly	1.2
	Paperbark+Coast Wattle, Tuckeroo	0.5
	Paperbark+Flooded Gum, Tallowwood	75.7
	Paperbark+Rainforest	0.8
	Paperbark+Rainforest, Forest Red Gum	2.6
	Paperbark+Rainforest, Swamp Mahogany	1.3
	Paperbark+Swamp Box	1.0
	Paperbark+Swamp Box, Blackbutt	2.1
	Paperbark+Swamp Box, Flooded Gum, Swamp Mahogany	9.0
	Paperbark+Swamp Box, Rainforest	9.2
	Paperbark+Swamp Box, Swamp Mahogany	8.1
	Paperbark+Swamp Mahogany	8.1
	Paperbark+Swamp Mahogany, Swamp Box	1.0
	Paperbark+Swamp Oak	0.5
	Paperbark+Swamp Oak, Rainforest	3.7
	Paperbark+Swamp Oak, Swamp Box, Rainforest	0.5
	Paperbark+Teatree	2.4
	Paperbark+Teatree, Rainforest	1.0

Table 10 - BSC Vegetation Types (Coastal Wetland SEPP)

BSC Vegetation Type	Area (Ha)
Saltmarsh-Fernland	0.1
Forest Red Gum-Swamp Mahogany-Paperbark	0.1
Coast Teatree-Tuckeroo	0.1
Coast Banksia-Bitou Bush	0.1
Hoop Pine-Swamp Oak-Rainforest	0.1
Paperbark-Brush Box-Swamp Oak	0.1
Swamp Oak+Paperbark, Rainforest	0.1
Rainforest-Coast Cypress-Eucalypt-Wattle	0.1
Brush Box on marine aeolian sands	0.1
Swamp Mahogany-Pink Bloodwood-Brush Box-Tallowwood	0.1
Umbrella Cheese Tree-Melicope	0.1
Wallum Banksia-Black She-oak	0.1

Brush Box-Wattle	0.1
Brush Box-Red Mahogany+Saw Banksia	0.1
Grey Ironbark-Brush Box-Rainforest	0.1
Brush Box-Camphor Laurel-Cabbage Palm	0.1
Swamp Box	0.1
Gahnia clarkei-Rhynchospora corymbosa	0.1
Swamp Oak on metasediments	0.1
Forest Red Gum-Tallowwood-Paperbark	0.1
Forest Red Gum+Coast Cypress Pine	0.1
Littoral Rainforest-Swamp sclerophyll	0.1
Swamp Mahogany-Rainforest	0.1
Blackbutt+Brush Box	0.2
Paperbark-Mangrove	0.2
Sedgeland-Forbland-Grassland	0.2
Saltmarsh grassland	0.2
Swamp Oak+Saltmarsh, Mangrove	0.2
Paperbark+Swamp Oak, Rainforest	0.2
Coast Banksia-Rainforest	0.2
Saltmarsh+Paperbark	0.2
Wattle-Cheese Tree	0.2
Tallowwood-Forest Red Gum+Pink Bloodwood,Blackbutt	0.2
Swamp Oak+Swamp Box, Forest Red Gum, Paperbark	0.2
Coast Teatree-Cypress Pine-Paperbark	0.2
Coast Cypress-Coast Banksia	0.2
Swamp Oak+Tuckeroo, Mangrove	0.2
PL	0.2
Swamp Oak-Sedgeland	0.2
Byron Bay Graminoid clay heath	0.3
Saltmarsh-Mangrove+Swamp Oak	0.3
Mixed Eucalypt-Brush Box	0.3
Rainforest-Coast Banksia	0.3
Brush Box-Swamp Oak	0.3
Swamp Mahogany-Brush Box	0.3
Coast Banksia+Rainforest	0.3
Swamp Oak+Littoral Rainforest	0.3
Sedgeland-Heath	0.3
Bangalow Palm-Rainforest-Paperbark	0.3
Paperbark-Coast Banksia	0.3
Mangrove+Paperbark	0.3
Swamp Box-Paperbark-Swamp Mahogany	0.3
Forest Red Gum-Swamp Mahogany-Pink Bloodwood	0.3
Fernland-Sedgeland	0.3
Swamp Mahogany-Swamp Box	0.3
Swamp Oak-Wattle	0.4
Seagrass	0.4
Swamp Oak-Camphor Laurel	0.4
Littoral Rainforest	0.4
Wallum Banksia-Scribbly Gum	0.4
Blackbutt - Flooded Gum	0.4
Swamp Mahogany-Paperbark-Rainforest	0.4
Brush Box-Rainforest	0.4

Teatree	0.4
Paperbark-Cheese Tree-Camphor Laurel	0.5
Brush Box	0.5
Swamp Sclerophyll	0.5
Rainforest-Swamp Oak-Mangrove	0.5
Mangrove-Saltmarsh	0.5
Coast Cypress	0.5
Forest Red Gum-Swamp Oak	0.6
Hoop Pine-Rainforest	0.6
Blackbutt	0.6
Cladium procerum sedgeland	0.6
Swamp grassland	0.6
Forest Red Gum-Swamp Mahogany	0.6
open water-Sedgeland	0.7
Tallowwood-Brush Box+Bloodwood, Swamp Mahogany	0.7
Paperbark-Rainforest-Eucalypt-Brush Box	0.7
Swamp Oak-Swamp Box-Rainforest	0.7
Brush Box+Rainforest	0.7
Mangrove+Rainforest	0.7
Eucalypt	0.7
Common Reed-Setaria-Vasey Grass	0.8
Swamp Oak-Eucalypt	0.8
Eleocharis equisetina-Leersia hexandra	0.9
Rainforest+Paperbark	0.9
Paperbark-Cheese Tree	0.9
Forest Red Gum	0.9
Common Reed-Batswing Fern	1.0
Swamp Oak+Swamp Box	1.0
Scribbly Gum-Swamp Mahogany-Wallum Banksia	1.0
Paperbark+Swamp Box, Swamp Mahogany	1.0
Swamp Oak-Wattle-Paperbark	1.0
Forest Red Gum-Paperbark	1.0
Swamp Oak-Paperbark-Wattle	1.1
Paperbark-Swamp Oak-Coast Banksia	1.1
Coast Wattle-Swamp Oak	1.1
Paperbark-Sedgeland	1.1
Paperbark-Willow Bottlebrush	1.1
Mangrove +Forest Red Gum, Rainforest	1.2
Camphor Laurel 51-80%	1.2
Swamp Mahogany	1.3
open water-Forbland-Sedgeland	1.3
Scribbly Gum+Red Mahogany, Swamp Mahogany	1.3
Rainforest+10-50% Camphor Laurel	1.4
Paperbark+Swamp Mahogany	1.5
Swamp Oak+Paperbark, Swamp Box	1.5
Swamp Oak-Paperbark-Willow Bottlebrush	1.6
Swamp Oak+Rainforest	1.6
Swamp Mahogany-Swamp Box+Scribbly Gum	1.7
Swamp Mahogany-Paperbark	1.8
Paperbark-Rainforest regrowth	1.8
Paperbark-Mixed eucalypt	1.9

Scribbly Gum	1.9
Swamp Oak+Mangrove	2.1
Grassland-Sedgeland	2.2
Freshwater wetland	2.4
Coast Banksia-Paperbark	2.4
Paperbark-Sedgeland-Wet meadow	2.4
Salt Couch	2.4
Mangrove+Saltmarsh	2.5
Swamp Box-Swamp Mahogany-Paperbark	2.6
River Mangrove	2.8
Paperbark-Swamp Oak-Swamp Mahogany-Brush Box	2.8
Paperbark-Teatree	3.0
Swamp Oak+Paperbark, Eucalypt	3.5
Paperbark-Rainforest	3.5
Sedgeland-Grassland-open water	3.5
Swamp Oak-Cabbage Palm	4.1
Paperbark-Fernland	4.1
Rainforest	4.3
Paperbark-Wattle-Cheese Tree	4.3
Paperbark-Swamp Oak-Swamp Box	4.3
Paperbark-Grass Tree	4.6
Grassland-Forbland	4.6
Grey Mangrove	5.2
Paperbark+Swamp Oak	5.4
Swamp Oak-Rainforest	5.4
Swamp Mahogany-Swamp Box-Paperbark	5.5
Mixed Eucalypt	6.1
Paperbark-Swamp Oak	6.2
Mangrove-Swamp Oak	6.2
Paperbark-Swamp Box	6.7
Grey Mangrove-River Mangrove	7.5
Swamp Oak-Mangrove	8.2
Sedgeland	8.7
Paperbark+Rainforest	9.5
Paperbark-Swamp Mahogany	10.5
Swamp Oak-Paperbark	11.4
Swamp Oak+Swamp Mahogany	12.7
Sedgeland-Fernland-Grassland	14.4
Sedgeland-Fernland	15.4
Rainforest-Paperbark	15.5
Sedgeland-Grassland	15.7
Grassland-Sedgeland-Forbland (wetland)	17.6
open water	21.5
Mangrove	21.5
Saltmarsh	21.7
Swamp Oak	41.4
Swamp Oak+Paperbark	78.6
Paperbark	357.0

Table 11 - BSC Vegetation Types (Coastal Wetland SEPP)

BSC Vegetation Type	Area (Ha)
Brush Box	0.2
Brush Box-Grey Ironbark-Pink Bloodwood	0.2
Brush Box-Littoral Rainforest	0.3
Brush Box-Rainforest	4.6
Brush Box headland rainforest	0.2
Brush Box+Rainforest	0.9
Hoop Pine-Rainforest	2.5
Littoral Rainforest	49.2
Pandanus+Coast Banksia	0.0
Paperbark	0.2
Paperbark+Hoop Pine	0.0
Paperbark+Rainforest	0.1
Rainforest	3.5
Rainforest-Coast Banksia	0.0
Riberry-Brown Kurrajong-Coast Banksia-Lilly Pilly	0.2

Appendix 3 - Over-Cleared Vegetation Types

Table 12 - Over-cleared Vegetation Types (Generated from BioNet 13/02/2023).

PCTID	PCT Name	status	Classification Confidence Level	Vegetation Class	Vegetation Formation	IBRA	IBRAS Subregion	county
3001	Lismore Basalt Subtropical Rainforest	Approved	High	Subtropical Rainforests	Rainforests	South Eastern Queensland	Scenic Rim	BALLINA; BYRON; LISMORE;
3002	Lower Richmond Hills Dry-Subtropical Rainforest	Approved	High	Subtropical Rainforests	Rainforests	South Eastern Queensland	Burringbar-Conondale Ranges; Clarence Lowlands; Scenic Rim	BALLINA; BYRON; KYOGLE; LISMORE; TWEED;
3004	Far North Bangalow Palm Swamp Forest	Approved	High	Subtropical Rainforests	Rainforests	South Eastern Queensland	Burringbar-Conondale Ranges; Clarence Lowlands; Scenic Rim; Sunshine Coast-Gold Coast Lowlands	BALLINA; BYRON; TWEED;
3005	Far North Floodplain Subtropical Rainforest	Approved	Very Low	Subtropical Rainforests	Rainforests	South Eastern Queensland	Burringbar-Conondale Ranges; Clarence Lowlands	BALLINA; BYRON;
3012	Far North Waterhousea Riparian Rainforest	Approved	Very Low	Subtropical Rainforests	Rainforests	South Eastern Queensland	Burringbar-Conondale Ranges	BYRON;
3016	Lower Tweed Hills Subtropical Dry Rainforest	Approved	High	Subtropical Rainforests	Rainforests	South Eastern Queensland	Burringbar-Conondale Ranges; Sunshine Coast-Gold Coast Lowlands	BYRON; TWEED;
3123	Far North Sands Coastal Cypress Littoral Rainforest	Approved	High	Littoral Rainforests	Rainforests	NSW North Coast; South Eastern Queensland	Yuraygir; Burringbar-Conondale Ranges; Clarence Lowlands; Scenic Rim	BALLINA; BYRON; CLARENCE VALLEY; RICHMOND VALLEY;
3410	Spinifex Strandline Grassland	Approved	High	Maritime Grasslands	Grasslands	NSW North Coast; South Eastern Queensland; Sydney Basin	Coffs Coast and Escarpment; Karuah Manning; Burringbar-Conondale Ranges; Clarence Lowlands; Pittwater; Wyong	BYRON; CENTRAL COAST; COFFS HARBOUR; LAKE MACQUARIE; MID-COAST; NORTHERN BEACHES; PORT STEPHENS; RICHMOND VALLEY;
3553	Northern Sands Bloodwood-Swamp Turpentine Forest	Approved	High	Coastal Dune Dry	Dry Sclerophyll	NSW North Coast; South	Macleay Hastings; Yuraygir; Burringbar-	BALLINA; BYRON; COFFS HARBOUR;

				Sclerophyll Forests	Forests (Shrubby sub-formation)	Eastern Queensland	Conondale Ranges; Clarence Lowlands	KEMPSEY; PORT MACQUARIE-HASTINGS;
3791	Far North Headland-Dune Scrub	Approved	High	Coastal Headland Heaths	Heathlands	NSW North Coast; South Eastern Queensland	Coffs Coast and Escarpment; Burringbar-Conondale Ranges; Scenic Rim; Sunshine Coast-Gold Coast Lowlands	BYRON; COFFS HARBOUR; TWEED;
3911	Northern Sand Swale Fernland	Approved	Very Low	Coastal Heath Swamps	Freshwater Wetlands	NSW North Coast; South Eastern Queensland	Macleay Hastings; Burringbar-Conondale Ranges; Clarence Lowlands	BYRON; CLARENCE VALLEY; PORT MACQUARIE-HASTINGS;
3963	Estuarine Reedland	Approved	High	Coastal Freshwater Lagoons	Freshwater Wetlands	NSW North Coast; South Eastern Queensland; Sydney Basin	Karuah Manning; Macleay Hastings; Burringbar-Conondale Ranges; Scenic Rim; Illawarra; Jervis; Pittwater; Wyong	BYRON; CENTRAL COAST; NORTHERN BEACHES; PORT MACQUARIE-HASTINGS; PORT STEPHENS; SHOALHAVEN; TWEED; WOLLONGONG;
3990	Far North Paperbark Gahnia Swamp Forest	Approved	High	Coastal Swamp Forests	Forested Wetlands	NSW North Coast; South Eastern Queensland	Yuraygir; Burringbar-Conondale Ranges; Clarence Lowlands; Clarence Sandstones; Scenic Rim; Sunshine Coast-Gold Coast Lowlands	BALLINA; BYRON; CLARENCE VALLEY; LISMORE; RICHMOND VALLEY; TWEED;
3993	Far North Swamp Oak-Paperbark Tidal Forest	Approved	High	Coastal Swamp Forests	Forested Wetlands	South Eastern Queensland	Burringbar-Conondale Ranges; Clarence Lowlands; Sunshine Coast-Gold Coast Lowlands	BALLINA; BYRON; LISMORE; TWEED;
4026	Estuarine Sea Rush Swamp Oak Forest	Approved	High	Coastal Floodplain Wetlands	Forested Wetlands	NSW North Coast; South East Corner; South Eastern Queensland; Sydney Basin	Coffs Coast and Escarpment; Karuah Manning; Macleay Hastings; Bateman; East Gippsland Lowlands; South East Coastal Ranges; Burringbar-Conondale Ranges; Cumberland; Illawarra; Pittwater; Sydney Cataract; Wyong; Yengo	BEGA VALLEY; BYRON; CENTRAL COAST; COFFS HARBOUR; EUROBODALLA; KEMPSEY; LAKE MACQUARIE; LIVERPOOL; MID-COAST; NAMBUCCA; PORT MACQUARIE-HASTINGS; PORT STEPHENS; SHOALHAVEN;

								SUTHERLAND; TWEED;
4034	Far North Swamp Oak-Tuckeroo Swamp Fringe Forest	Approved	High	Coastal Floodplain Wetlands	Forested Wetlands	NSW North Coast;South Eastern Queensland	Coffs Coast and Escarpment;Macleay Hastings;Burringbar-Conondale Ranges;Clarence Lowlands;Clarence Sandstones	BALLINA; BYRON; CLARENCE VALLEY; COFFS HARBOUR; LISMORE; NAMBUCCA; RICHMOND VALLEY; TWEED;

Appendix 4 - HEV Criteria Maps

Figure 3 - Biodiversity Values Map

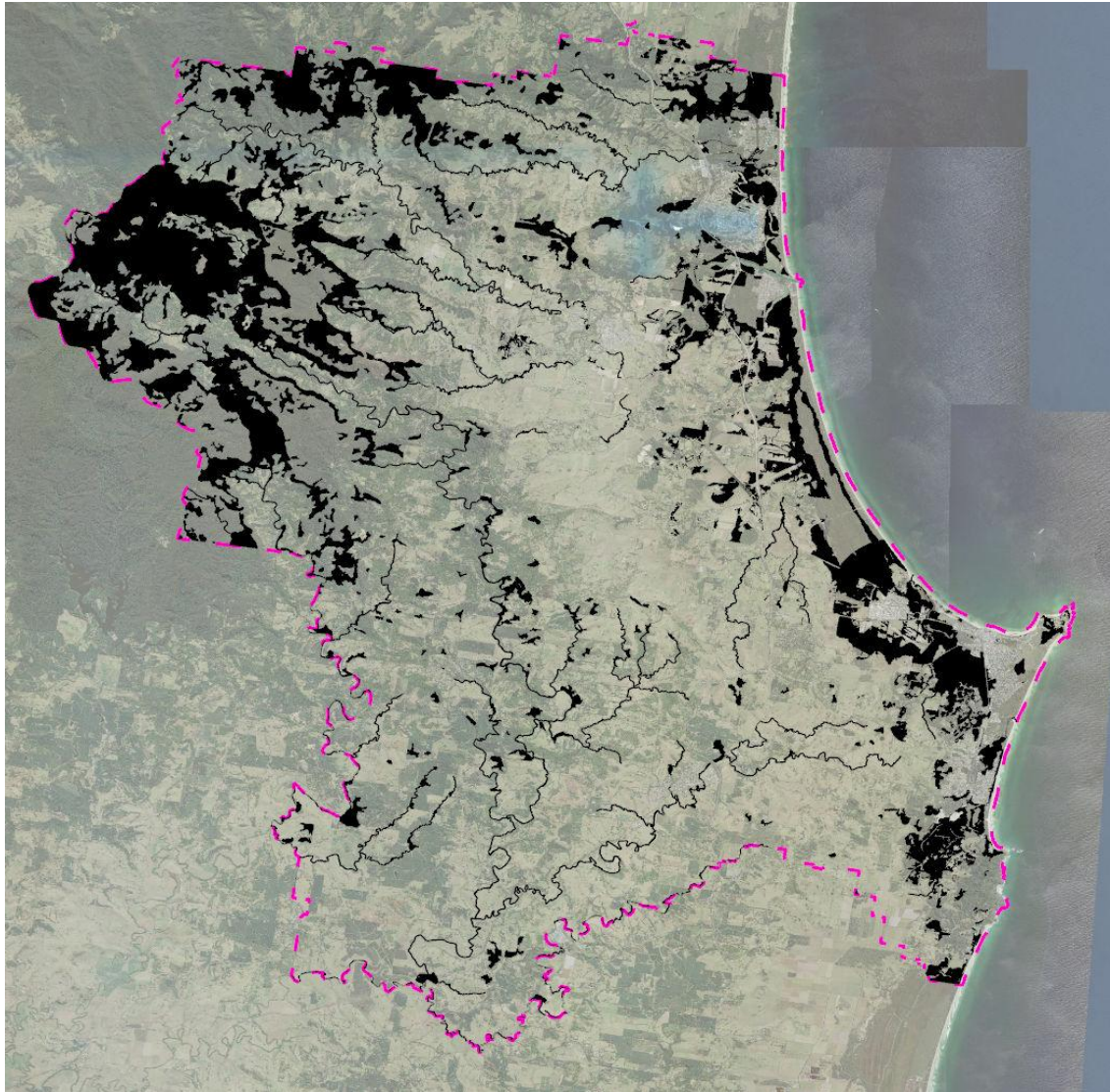


Figure 4 - Over-cleared vegetation types (based on BSC 2021 Vegetation mapping and NSW Government SVTM mapping)

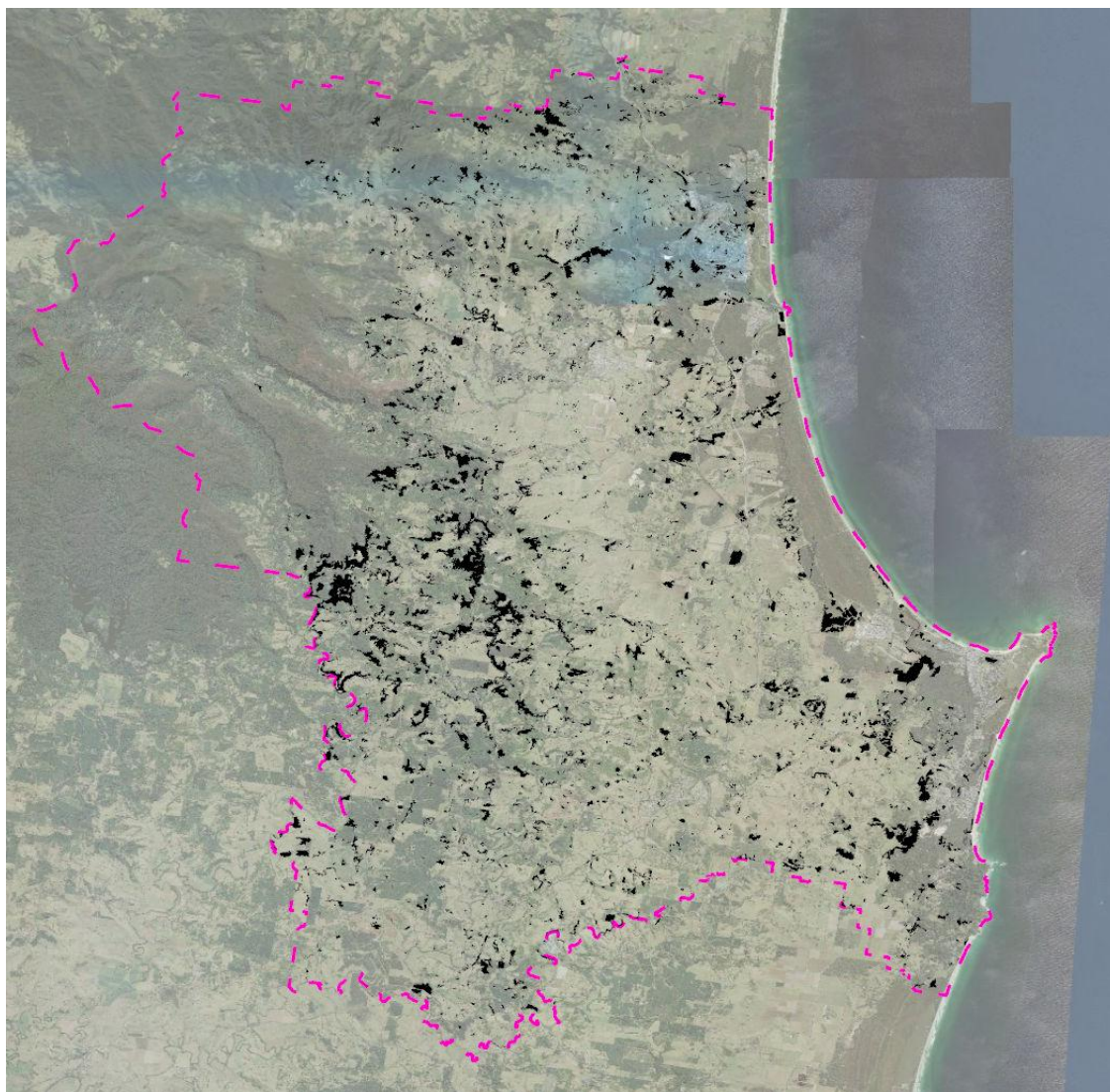


Figure 5 - Vegetation in over-cleared landscapes (Mitchell landscapes). (Based on BSC 2021 Vegetation mapping).

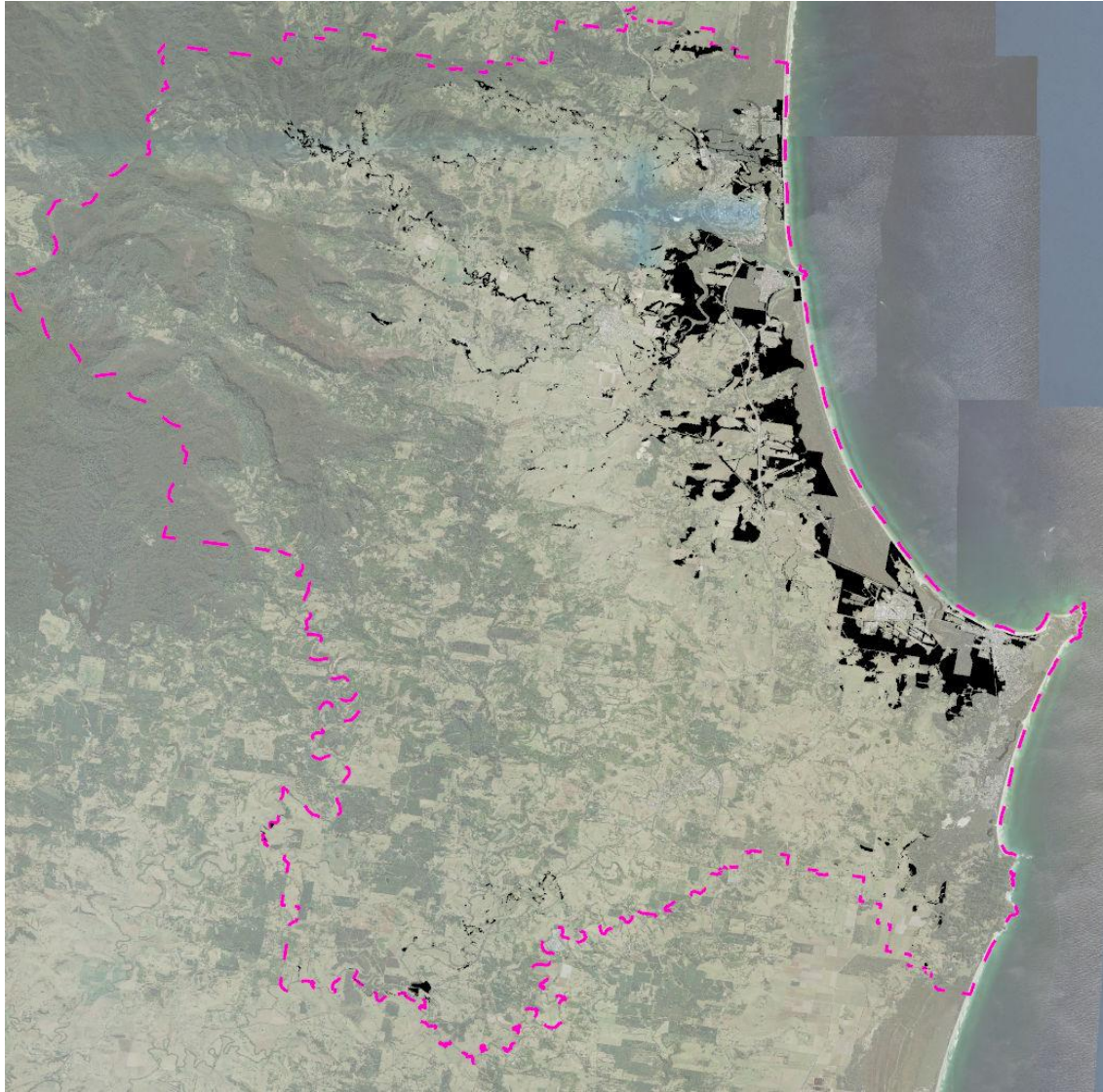


Figure 6 - Threatened Ecological Communities (based on BSC 2021 Vegetation mapping).

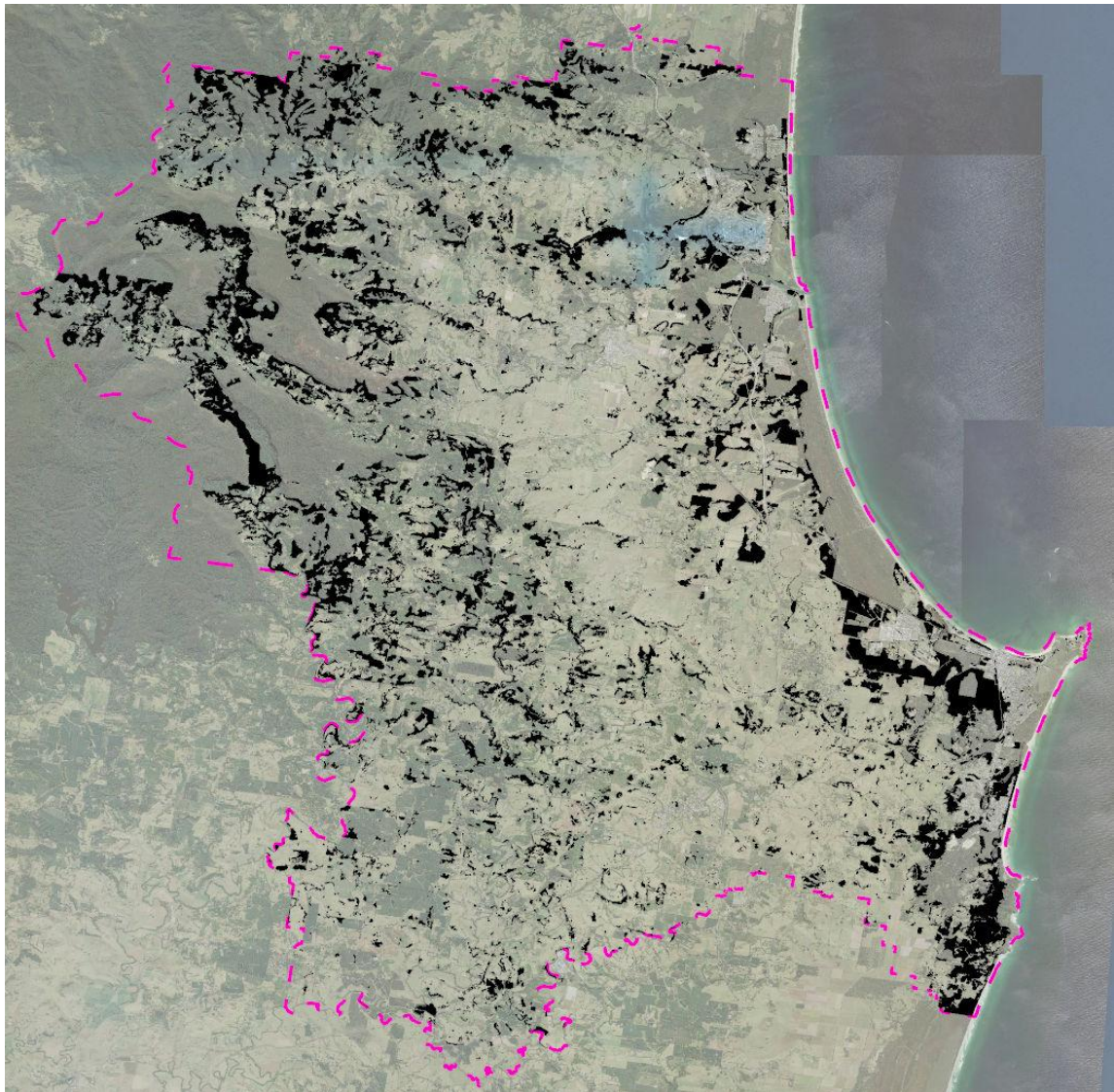


Figure 7 - 100m buffer on Coastal Wetlands

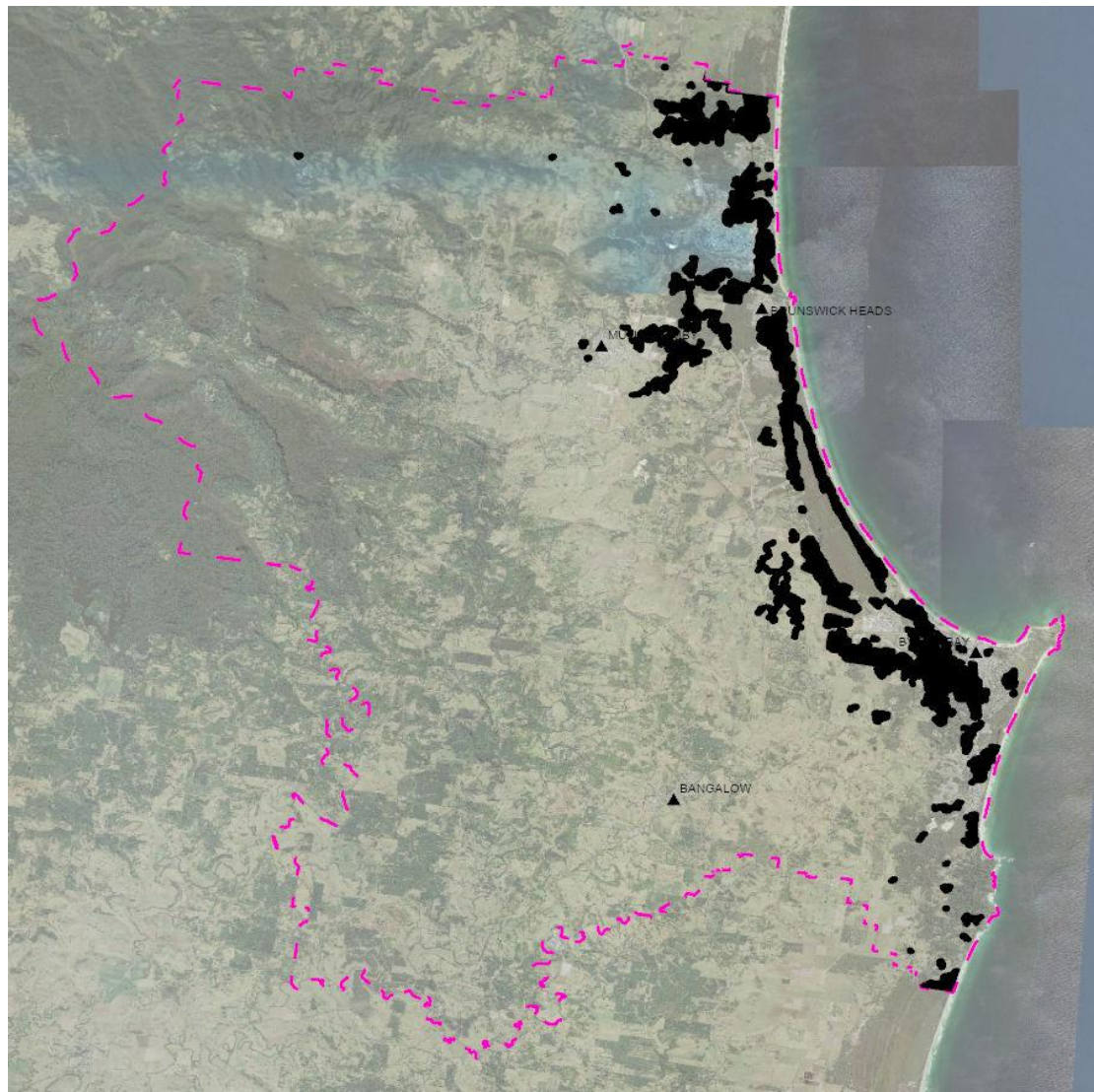
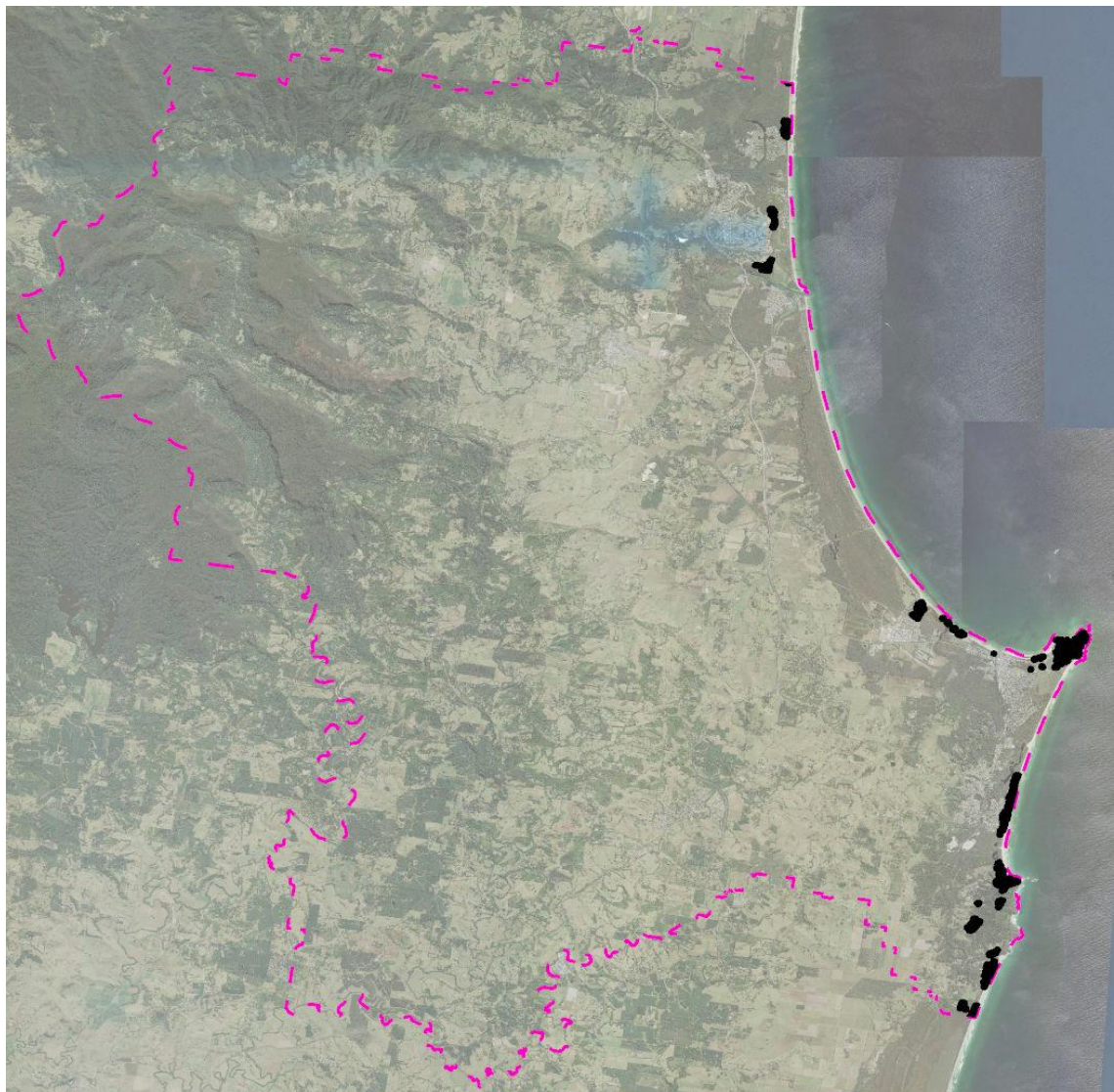
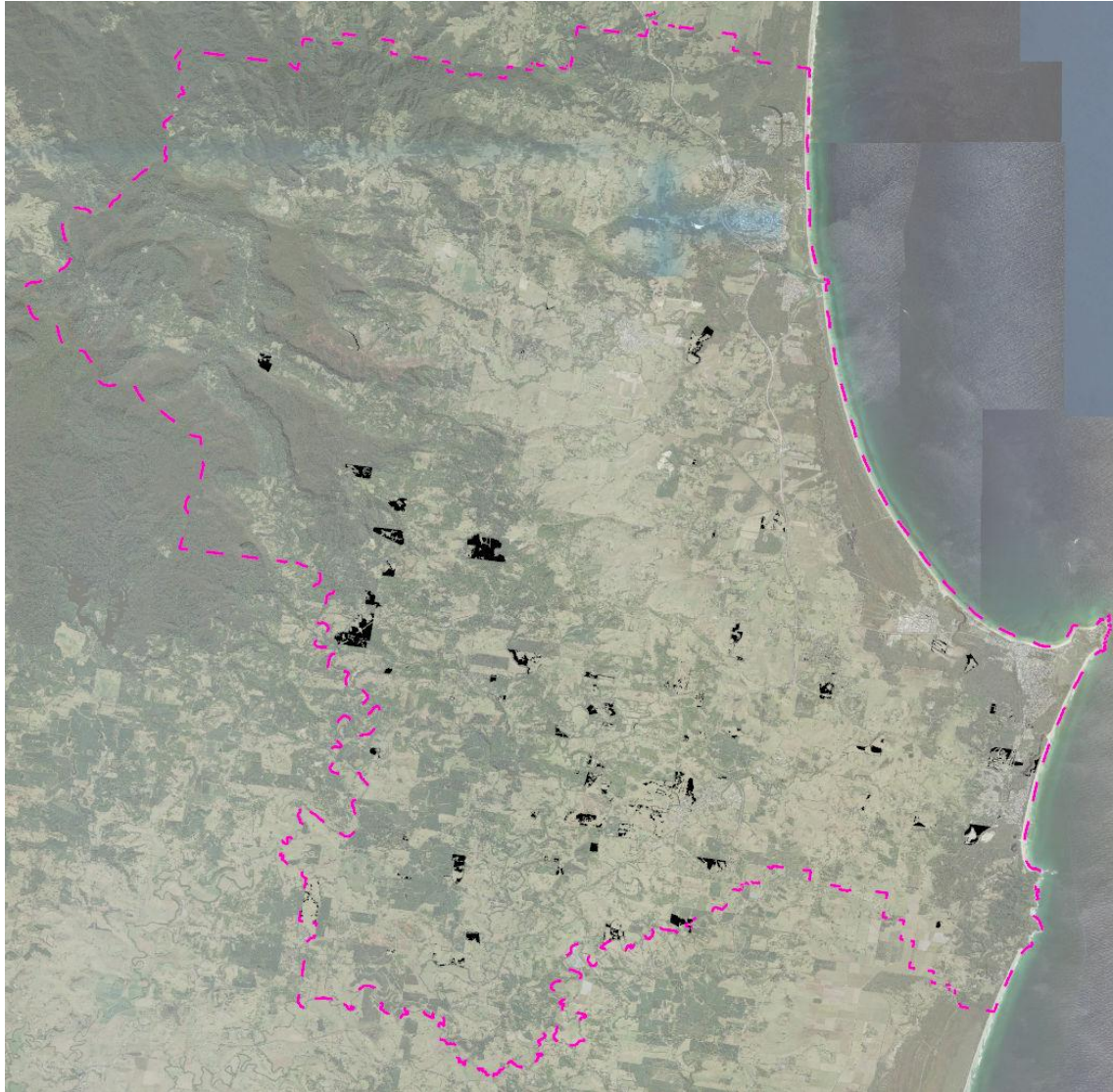


Figure 8 - 100m buffer on Littoral Rainforest



Key breeding habitats with known breeding occurrence

Figure 9 - Koala Breeding Habitat (BSC vegetation mapping). (Based on BSC 2021 Vegetation mapping).



Core Koala Habitat

Figure 10 - Byron Shire KPOM (based on BSC 2021 Vegetation mapping).

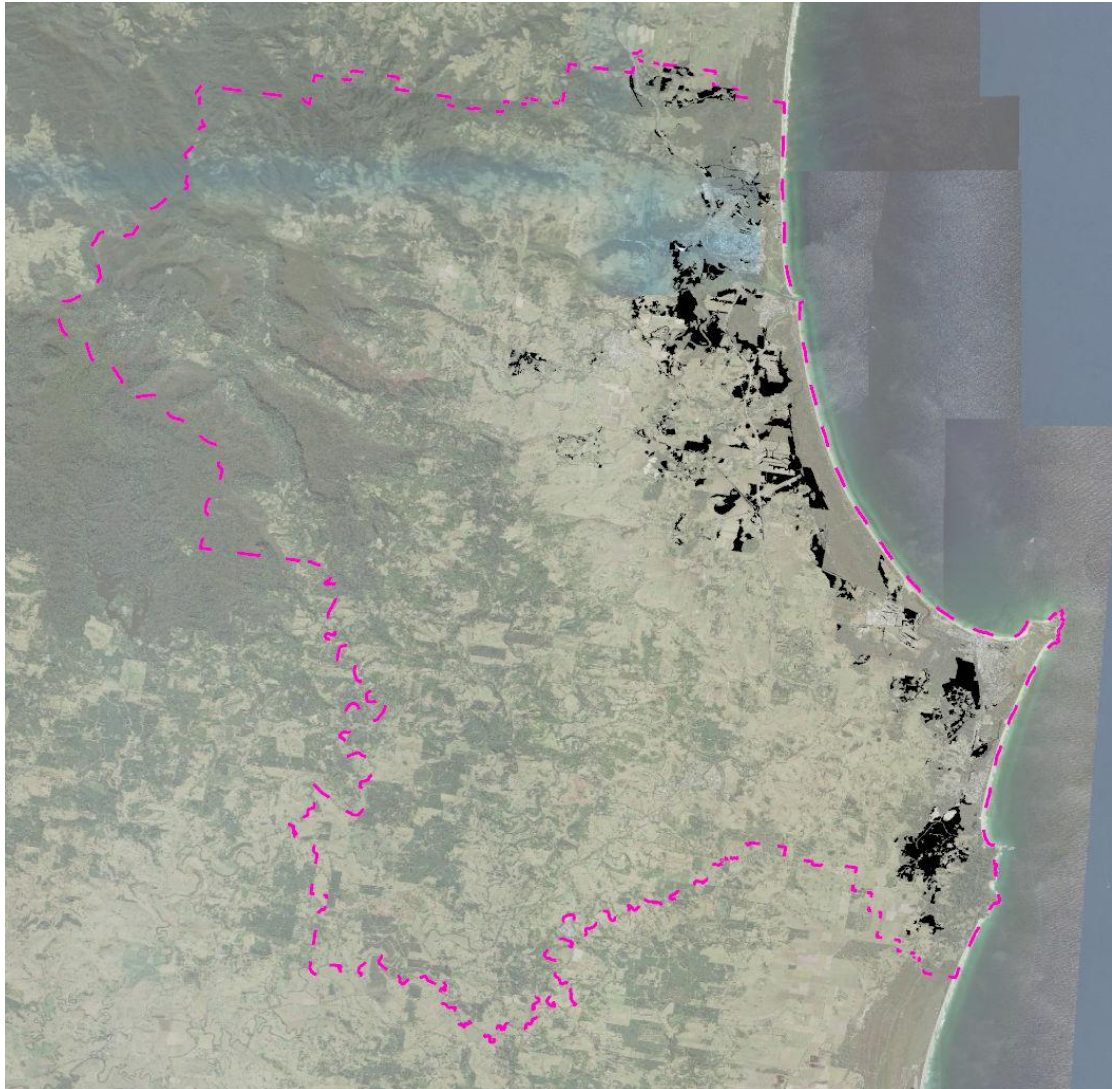
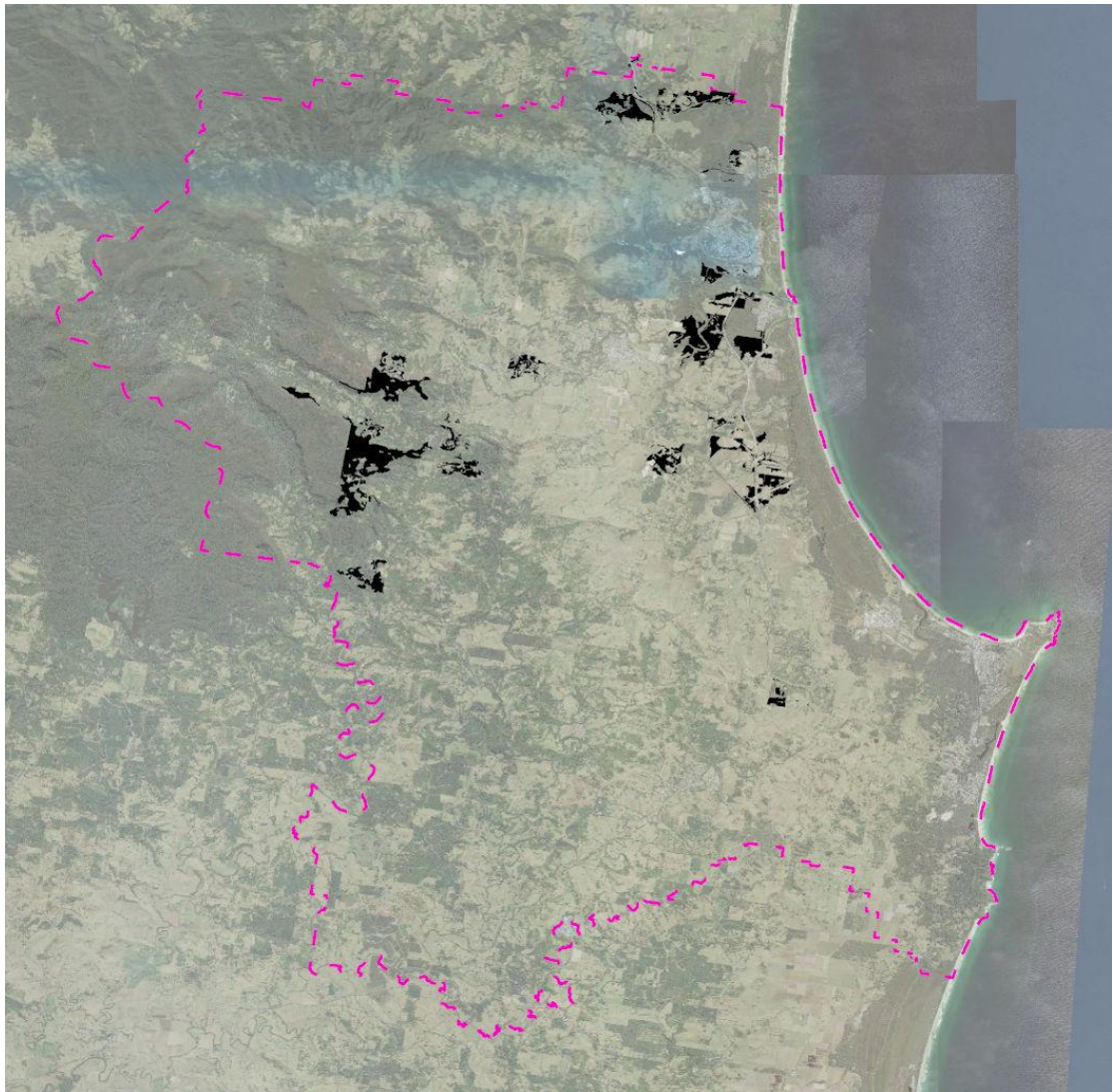


Figure 11 - Persistent Koala Populations((based on BSC 2021 Vegetation mapping).



Habitat for known populations of species-credit species

Figure 12 - Hollow dependent fauna habitat (based on BSC 2021 Vegetation mapping).

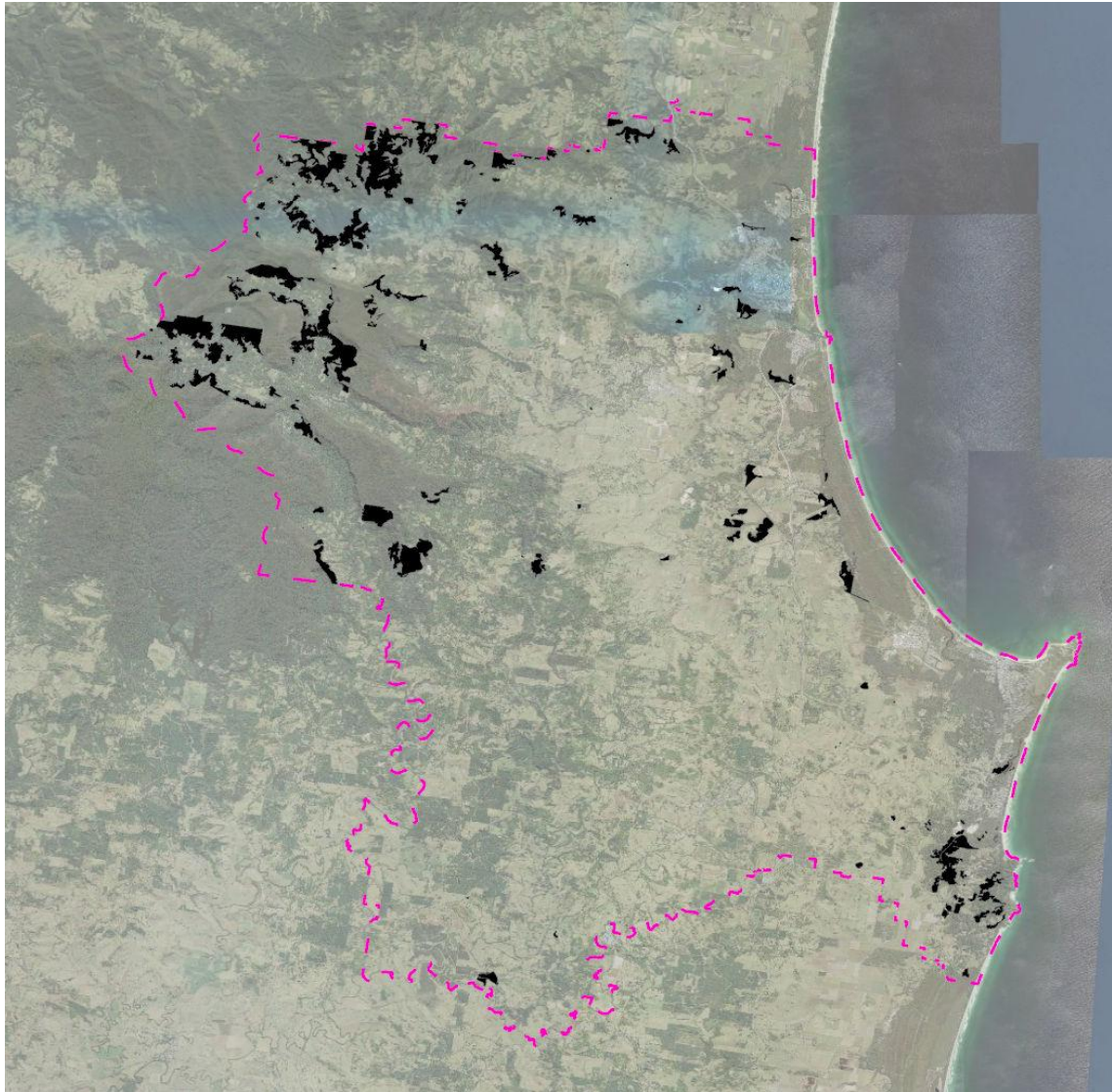


Figure 13 - Mitchell Rainforest Snail Core Habitat (based on BSC 2021 Vegetation mapping).

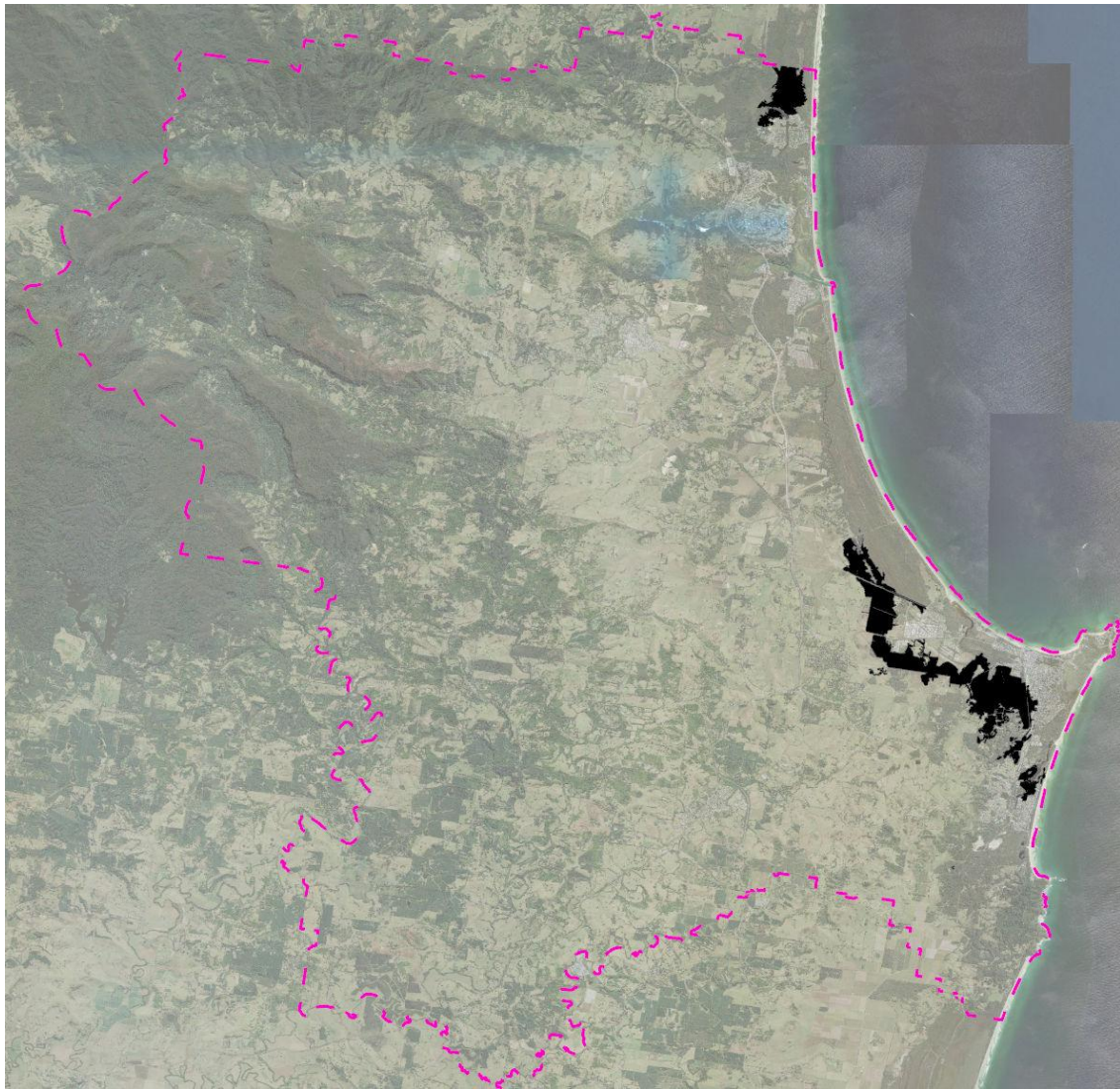


Figure 14 - Key habitats for migratory species

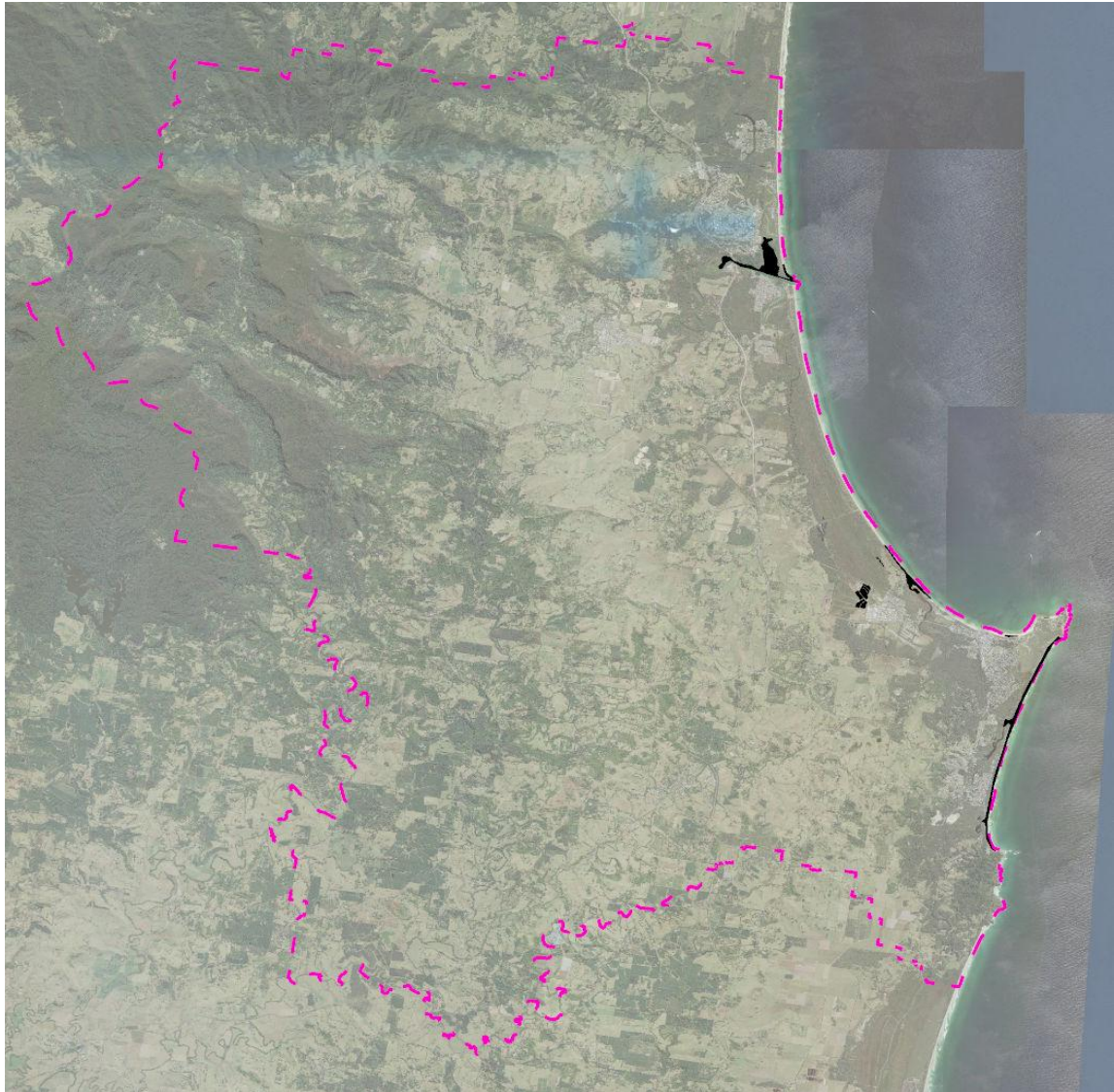


Figure 15 - Nationally important wetlands

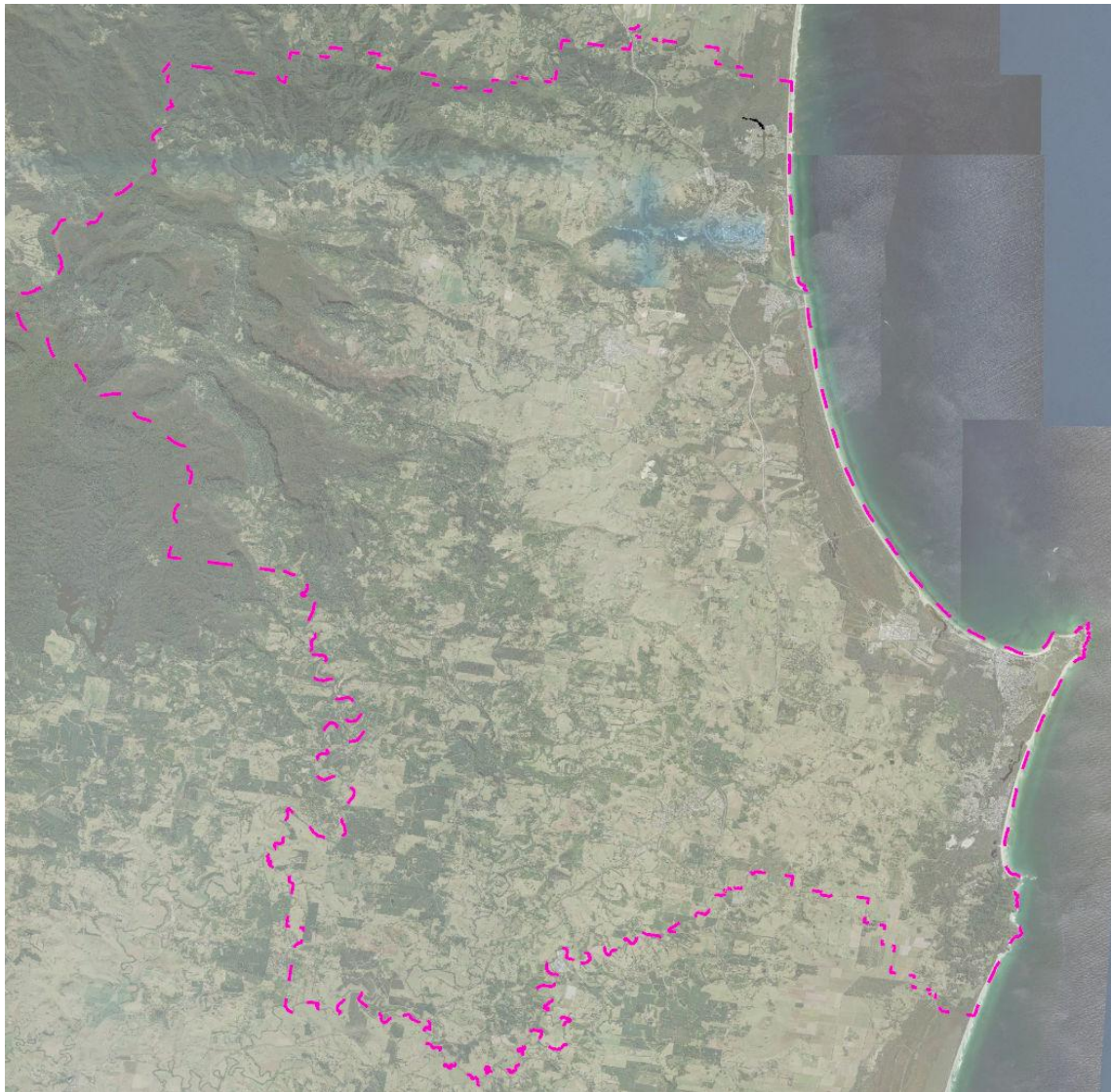


Figure 16 - Vulnerable Estuaries and ICOLLs

