PLANZ Town Planning
CREATING GREAT PLACES FOR PEOPLE

KELLY REASTON kr DEVELOPMENT & PROPERTY SERVICES

AUTHORED BY:
NIKKI HUDDY & KELLY REASTON

FINAL REPORT | JUNE 2021

the role of local government in the preservation and recovery of threatened species and ecological communities

Contents

Document Control

Revision	Date	Reason	Author	Checked
A	16 April 2021	Initial version	NH	KR
B	10 May 2021	Draft	KR	NH
C	30 June 2021	Final Draft	KR	NH
D	14 January 2022	Final Draft for distribution	KR	NH
E				

Acknowledgments

Kelly Reaston Development & Property Services would like to thank the following organisations for their contributions to this strategy:

- Planz Town Planning Pty Ltd
- Cairns Regional Council
- Cassowary Coast Regional Council
- Cook Shire Council
- Croydon Shire Council
- Douglas Shire Council
- Hinchinbrook Shire Council
- CSIRO
- Wet Tropics Management
- Barron River Catchment
- Ngadjon-jii traditional owner
- Mareeba Shire Council
- Tablelands Regional Council
- Yarrabah Aboriginal Council
- Far North Queensland Region of Councils
- Terrain NRM
- QPWS
- Wadjanbarra Tableland Yidinji Aboriginal Corporation
- Department of Environment and Science
- Tolga Bat Hospital
- Choorichillum Mabi Action Group
- Mamu Elder
- Conservation & Population Management Zoo and Aquarium Association Australia
- Mandaburra People
- Jaragun

A special thanks to the FNQROC Regional Planner's Forum and Natural Areas Management group members for taking the time to complete surveys and meet with the consultants to talk through their thoughts and visions for the ongoing protection and preservation of threatened species and ecological communities in the region. It was heartening to see consistently the desire to work collaboratively across the region and all had a similar vision.

We would like to acknowledge the Traditional Owner groups who openly welcomed us on to Country and warmly shared stories, experience and land management practices which have informed our recommendations.

Acknowledgement of Country

We acknowledge the Traditional Owners of the lands, waterways and sea country from across Far North Queensland and pay respects to the Elders, past, present and emerging, for they hold the memories, the traditions, the culture and hopes of Aboriginal and Torres Strait Islander people throughout the region.

1.0 Executive Summary

FNQROC in partnership with Terrain NRM commissioned a review ("Review") into the current practice of protection and preservation of target species and ecological communities in the Far North Queensland region.

The purpose of the Review is to develop practical and contemporary approaches for Local Government and their community to preserve and aid the recovery of –

- The Southern Cassowary and its Habitat
- Littoral Rainforest
- Mabi Forest

Local Government is the level of Government with the greatest level of connectivity to its people, places, and region. Local Government practices and policies can have immediate and effective impacts on Local issues. The role of Local Government is fundamental to the success of habitat protection and restoration initiatives as Local Governments are the custodians of large areas of endangered habitat and are directly responsible for habitat protection through policy and natural areas management.

The targeted species and ecological communities are listed as either endangered or critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and extensive Recovery Plans have been developed to ensure their protection.

Each identified species and ecological community has unique attributes and threats. An important aspect of this Review was understanding the significant threats to each species and ecological community as it strongly influences the most appropriate planning and/or Local Government response.

The Review comprised three (3) elements –

1. Desktop analysis and mapping GAP analysis;
2. Research on global best practice initiatives; and
3. Consultation with Regional Planners, Natural resource and recovery groups, and Traditional Owners.

The Review provides an overview of the current level of protection afforded to these species and communities and draws insight from regional case studies, best practice examples, and other planning and policy approaches to preservation (e.g. Heritage) that have application in an environmental context.

The Review findings are not intended to be an exhaustive list of mechanisms for habitat protection but an overview of opportunities available to Local Governments and their communities to improve responsiveness to the protection of the identified habitats.

Development and implementation of the findings will assist in the preservation and recovery of the identified species and ecological communities and ultimately enable the success of the implementation to be measured and quantified on a per hectare basis providing tangible data on which to continue to refine the project outcomes.

Management for landscape connectivity occurs within a social and political context and although not always recognised by biologists and ecologists, local factors and socio-political considerations are often as important as ecological theory and field research in the design and effectiveness of linkages *(Newmark 1993, in Terrain NRM Ecological Connectivity Story Map).*

1.1 Report purpose

This review was commissioned to recognise the fundamental role Local Government plays in habitat protection outcomes for threatened species and ecological communities. The broader project aims to work with Local Government to co-design and implement effective ways to improve habitat protection in our region.

The purpose of this Report is to present the findings of the Review and make recommendations as to which contemporary planning and local government tools should be developed further and implemented to ensure the ongoing preservation and recovery of the targeted species and ecological communities.

The Report explores approaches which are currently used in the Wet Tropics to manage development impacts on the target species and ecological communities and an evaluation of the planning outcomes delivered.

It considers other options or mechanism to deliver habitat protection outcomes at a local and regional scale for areas of Cassowary Habitat, Littoral Rainforest, and Mabi Forest that are not currently afforded protection from Matters of State Environment Significance (MSES) or Matters of National Environmental Significance (MNES) mapping and provisions.

1.2 Outcomes of Project

The outcomes of this project have been identified in direct response to feedback provided from the following parties:

- Traditional Owner Groups
- Local Government Officers (Planners)
- Local Government Officers (Natural Areas Management)
- Recovery Teams and Action Groups for threatened species and ecological communities

The following findings have informed the conclusions and recommendations outlined in **Part 6** of this Report.

Project Findings:

1. **Tenure:** The identified habitats and ecological communities are found on freehold private tenure and public reserves. The mapping review suggests significant land holdings (containing the in scope habitat and ecological communities) by Local and State Government (approximately 70%). This lends itself to opportunities for improved habitat protection through natural areas management initiatives. Land in private tenure is at the margins of the habitat and provides an opportunity to improve connectivity between habitat locations and an opportunity to prevent further encroachment of development or agricultural practices into the targeted habitats.

2. **Mapping:** Broad Scale Mapping is NOT the answer. There is a growing frustration with inaccurate mapping and Assessment Managers are placing less weight on the protection afforded by mapping. Fine scale mapping is an option that should be explored based on identified priority areas. Fine scale mapping should be limited to areas within regions where it is necessary and will have a demonstrated net positive effect on habitat protection. The criteria for these areas will need to be carefully established.

3. **Not "One Size Fits All":** Each habitat has a different risk and threat profile, and each Local Government area has a different appetite and resource allocation for natural areas management initiatives. The most appropriate solution for each local government should be tailored based on the location and species of habitat and the policy direction of the current Council. There is an opportunity in all Local Government areas to acknowledge the importance of habitat protection and reduction in fragmentation in the Strategic and purpose statements of a Planning Scheme.

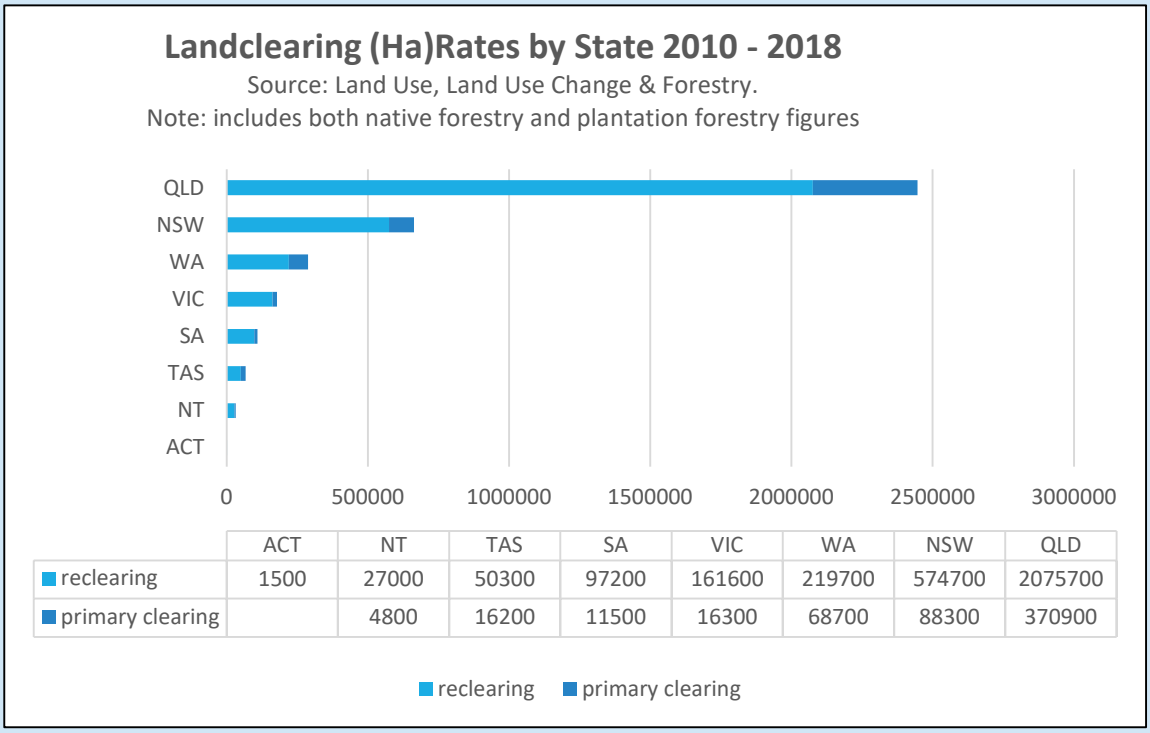
4. **Community Specific Solutions:** The solution for each species/ecological community will be different based on the cause of loss of habitat/fragmentation. As such, a detailed analysis of each species/ecological community in provided in this report to assist in informing Local Government officers, particularly planning officers, as to how best address the risks and threats within their planning scheme and planning scheme policies.

5. **Natural Areas Management:** Local Governments have a role in practical on the ground solutions. It does appear that Local Governments could do more to acknowledge the importance of the role they plan in Habitat Protection in Corporate and operational plans to ensure adequate project planning and operational budgets.

6. **Traditional Owner Engagement:** Traditional Owners have a deep relationship with the land and a culture that is symbiotic with protection of the identified habitats. Story telling has the opportunity to greatly improve education and community awareness, and traditional land management practices have an important role in ongoing habitat protection and restoration. The Local Government areas that genuinely engage with Traditional Owner groups and actively partner with indigenous ranger programs appear to have a deeper understanding of the value of the habitat to the region.

7. **Education:** Educating the community and Councillors is central to improved habitat protection outcomes and understanding the value of these ecosystems to Far North Queensland. This Review focused on specific vegetation types for identified threatened habitats. These habitats have both an

ecological and economic benefit to the region. This link may be critical to aligning economic and environmental priorities and go a long way to reducing the historical conflict between economic and environmental outcomes.



	ACT	NT	TAS	SA	VIC	WA	NSW	QLD
reclearing	1500	27000	50300	97200	161600	219700	574700	2075700
primary clearing		4800	16200	11500	16300	68700	88300	370900

Figure 1: Land clearing (Ha) rates by State 2010 – 2018

8. **Trust:** There is an inherent distrust in the vegetation protection framework from the general community, agricultural industry, and development industry. This distrust is strengthened by an ongoing frustration from all parties as the legislative framework is constantly subject to review based on each change of Government. Equally, conservation groups often form the view that "lip-service" is paid to conservation provisions and that they are often overlooked for the economic benefits associated with farming and development. This is understandable given the rates of primary clearing and reclearing in Queensland compared to the balance of the States and Territories (see Figure 1). There is a challenge in balancing the expectation of community and environmental groups with the expectations of industry sectors.

2.0 Legislative Framework

Matters of National Environmental Significance (MNES) are regulated by the *Environment Protection and Biodiversity Conversation Act 1999* (EPBC Act). It regulates Applications for clearing vegetation that will have a significant impact on species listed as –

- extinct in the wild
- critically endangered
- endangered, or
- vulnerable

An ecological community listed as critically endangered or endangered will require Federal approval under the EPBC Act.

Matters of State Environmental Significance (MSES) are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP). MSES includes certain environmental values that are protected under Queensland legislation including the:

- *Nature Conservation Act 1992*
- *Environmental Protection Act 1994*
- *Regional Interests Planning Act 2014*
- *Vegetation Management Act 1999*
- *Environmental Offsets Act 2014.*

MSES mapping generates more than 17 individual layers using information from data including, but not limited to:

- regulated vegetation mapping
- legally secured offsets included in the 'offsets register'
- essential habitat mapping.

https://environment.des.qld.gov.au/management/planning-guidelines/method-mapping-mses

Mapped Vegetation is predominantly regulated by the, *EPBC Act and Vegetation Management Act 1999* (VMA), in conjunction with the *Planning Act 2016* and subordinate legislation.

If mapped, the requirements for clearing of Littoral Rainforest, Southern Cassowary Habitat, and Mabi Forest are extensive and unlikely to be supported at a Federal or State level without substantial justification and supporting environmental reports and audits including flora and fauna surveys. Note: Littoral Rainforest is not always classified as a an endangered community under the VMA.

It is important to understand the planning and legislative framework that protects these ecological communities when considering the value of introducing additional mapping and/or regulatory provisions in a Local Government Planning Scheme.

To ascertain the value of this approach a GAP analysis has been undertaken to determine the extent of the ecological communities not currently mapped by VMA, MSES, or MNES mapping. This is explored in the **Mapping** section of each Species Overview in **Part 3.**

3.0 Species Overview

The Southern Cassowary, Littoral Rainforest and Mabi Forest are listed as endangered and critically endangered under the Australian Government *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Each habitat has a Recovery plan prepared in response to the EPBC listing, and this section provides a summary of these recovery plans.

It is important, particularly for the Planning profession, to understand the species, location and key threats to habitat. This ensures that a planning response is targeted and accurate in its approach and site-specific assessments are well informed.

3.1 Southern Cassowary

Key points:

- The cassowary is found in three broad populations between Cooktown and the Paluma Range (There are two other species of Cassowary found in New Guinea, which are not part of this project).
- There are between 4000 - 6000 cassowaries remaining in the wild in Australia, most of which are in FNQ.
- 70 to 100 species of plant depend almost entirely on the cassowary to disperse their seeds
- Of the estimated 12 million hectares of Cassowary Habitat in Queensland only 14% is held in private freehold ownership. This equates to over 200,000ha of Cassowary Habitat, some of which is in strategic locations providing corridors between National Parks and other reserves.
- The Wet Tropics cassowary population is impacted upon by eight main threats.

Recommendations:

The Recovery plan recommendations include:

1. complete the mapping of essential cassowary habitat and identify areas and corridors to protect, restore and manage
2. develop and implement Cassowary Conservation Local Area Plans as part of local planning
3. involve community in cassowary conservation.

3.1.1 What

The southern cassowary (Casuarius casuarius johnsonii) is a large flightless bird, which is 'unmistakeable' in that it is unlikely to be misidentified for another species. The female is slightly larger than the male, weighing up to 75 kilograms and growing as tall as 170 centimetres.

The cassowary is a usually solitary animal and is mostly active between dawn and dusk. The cassowary plays an important role in maintaining rainforest diversity as Cassowaries eat fleshy fruits of over 200 species of plants, dispersing seeds long distances in the process. It has been estimated that 70 to 100 species of plant depend almost entirely on the cassowary to disperse their seeds. Its short digestive system allows it to eat the fruits of poisonous plants, and seeds that are so large other animals cannot swallow and disperse them. Accordingly, the cassowary is often referred to as a 'keystone species' in seed dispersal.

It is estimated that there are between 4000 - 6000 cassowaries remaining in the wild in Australia, most of which are in FNQ.

3.1.2 Where

The southern cassowary is found in north Queensland rainforests and associated vegetation mosaics. That is, while the southern cassowary lives mostly in dense, tropical rainforests that provide a supply of fruit all year round, it can also be found in melaleuca swamps, mangrove forests and even on beaches and in cleared areas. These areas are used for intermittent food sources and as connecting habitat between rainforest areas.

The cassowary is found in three broad populations between Cooktown and the Paluma Range (**Figure 1**):

1. In the Wet Tropics it is distributed widely from Cooktown to just north of Townsville.
2. Core habitat is coastal lowlands between Ingham and Mossman, and uplands in the southern Atherton Tablelands and other ranges.
3. On Cape York, it occurs as two disjunct populations in vine-forest communities: one in MacIlwraith and Iron Ranges, the other in Shelburne Bay.

There are also two other species of Cassowary found in New Guinea, which are not part of this project.

3.1.3 Threats

The southern cassowary is listed as 'Endangered' under the Commonwealth Environment Protection and *Biodiversity Conservation Act 1999*. Under the *Queensland Nature Conservation Act 1992*, the Wet Tropics population is listed as 'Endangered' and the Cape York populations are listed as 'Vulnerable'. The traditional feeding grounds of the cassowary, particularly the coastal lowlands, have been significantly reduced and fragmented by land clearing for agriculture, urban and rural residential style development.

Approaching cars or wandering through residential areas has resulted in road kills being one of the major causes of adult cassowary deaths. Dog attacks affect survival rates of chicks and juveniles and feral pigs also impact the species by damaging its habitat. Cyclones have damaged large areas of habitat, causing temporary food shortages.

The Wet Tropics cassowary population is impacted upon by eight main threats. These same threats are absent or of lesser significance for the Cape York population. The underlined threats are directly related to the outcome of this Review.

1. Habitat loss from clearing: more than 80 per cent of coastal lowland habitat has gone.
2. Habitat fragmentation: remaining habitat is fragmented, isolating groups and disrupting movement.
3. Habitat degradation: through invasion of weeds such as pond apple and changed fire regimes.
4. Roads and traffic: cassowaries are killed by vehicles on roads.
5. Dog attacks: urban development brings more domestic dogs.
6. Hand feeding: brings cassowaries closer to vehicle traffic and dogs.
7. Diseases: aspergillosis, avian tuberculosis and parasites.
8. Natural catastrophic events: cyclones.

3.1.4 Mapping

3.1.4.1 Tenure

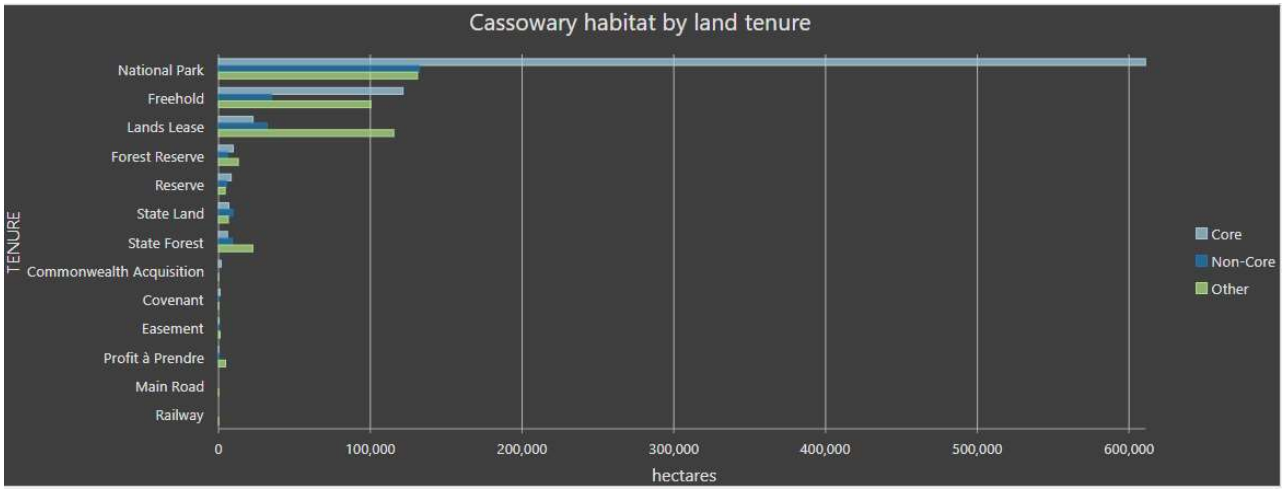


Figure 2: Cassowary Habitat by land tenure*

*Note: The interaction between Cassowary Habitat and Littoral Rainforest is considered in **part 2.2.4** below.

Of the estimated 12 million hectares of Cassowary Habitat in Queensland only 14% is held in private freehold ownership. Freehold ownership still equates to over 200,000ha of Cassowary Habitat, some of which is in strategic locations providing corridors between National Parks and other reserves.

3.1.4.2 Habitat Mapping

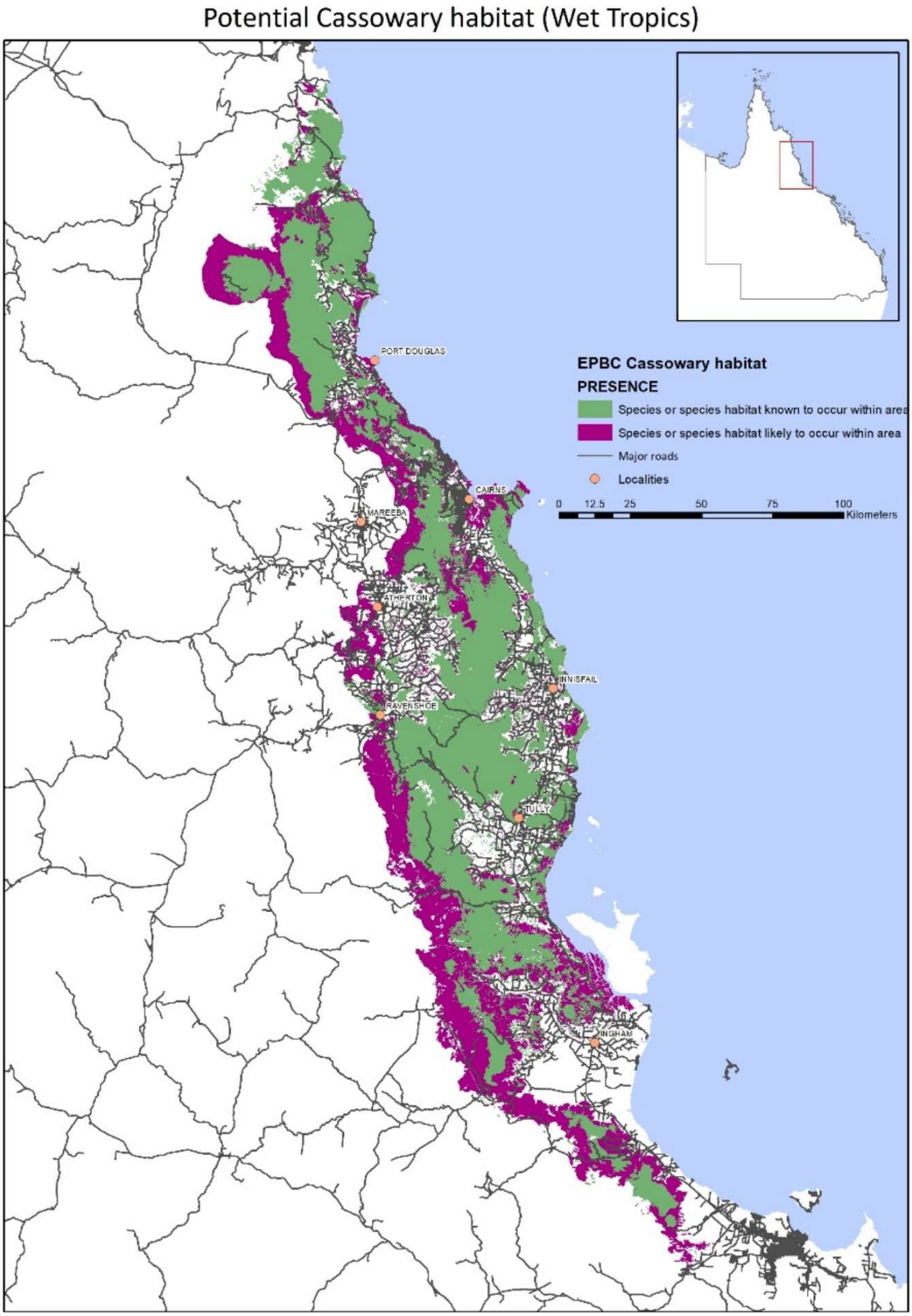


Figure 3: EPBC Cassowary habitat (Matters of National Environmental Significance)

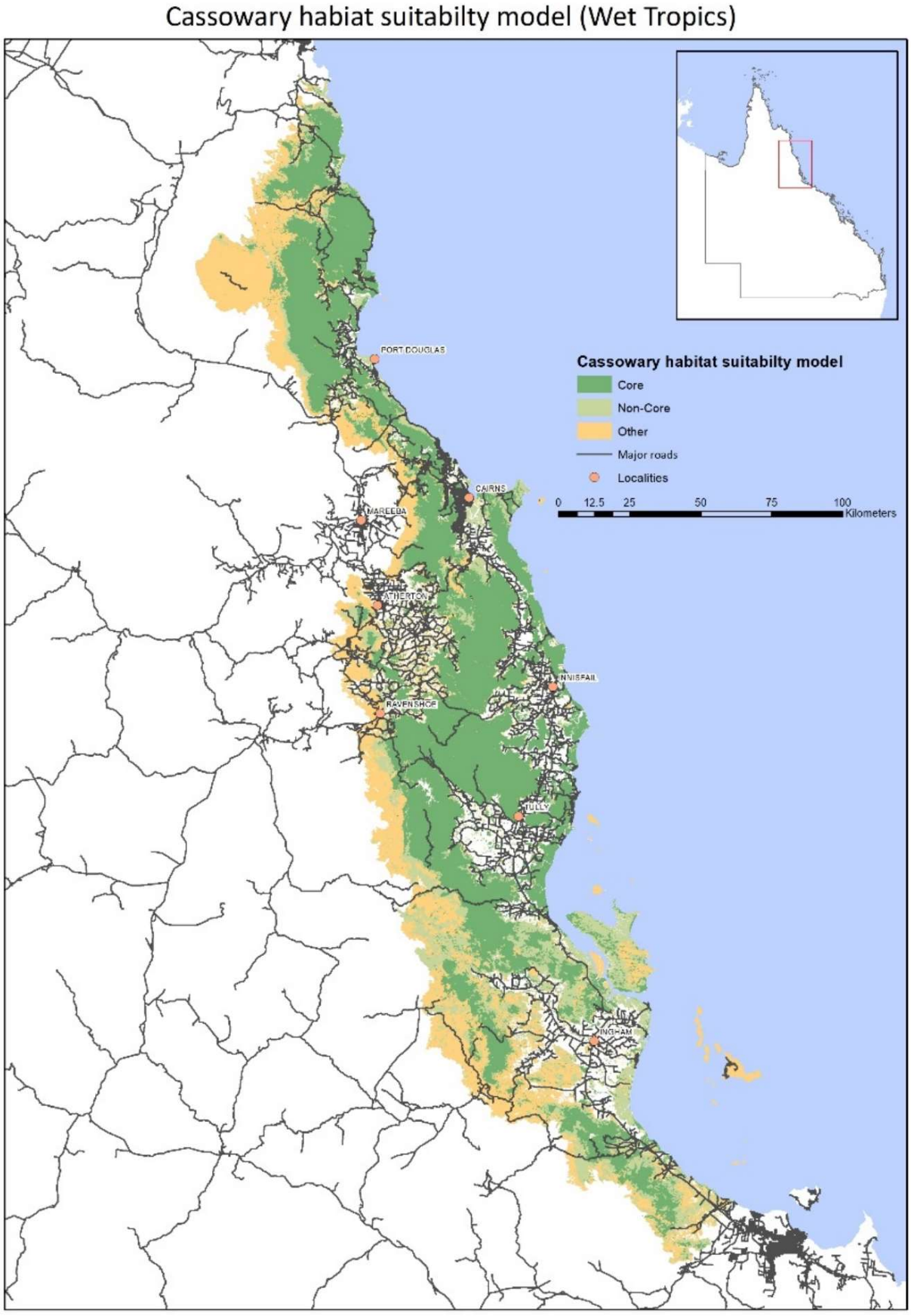


Figure 4a: Cassowary habitat (Matters of State Environmental Significance)

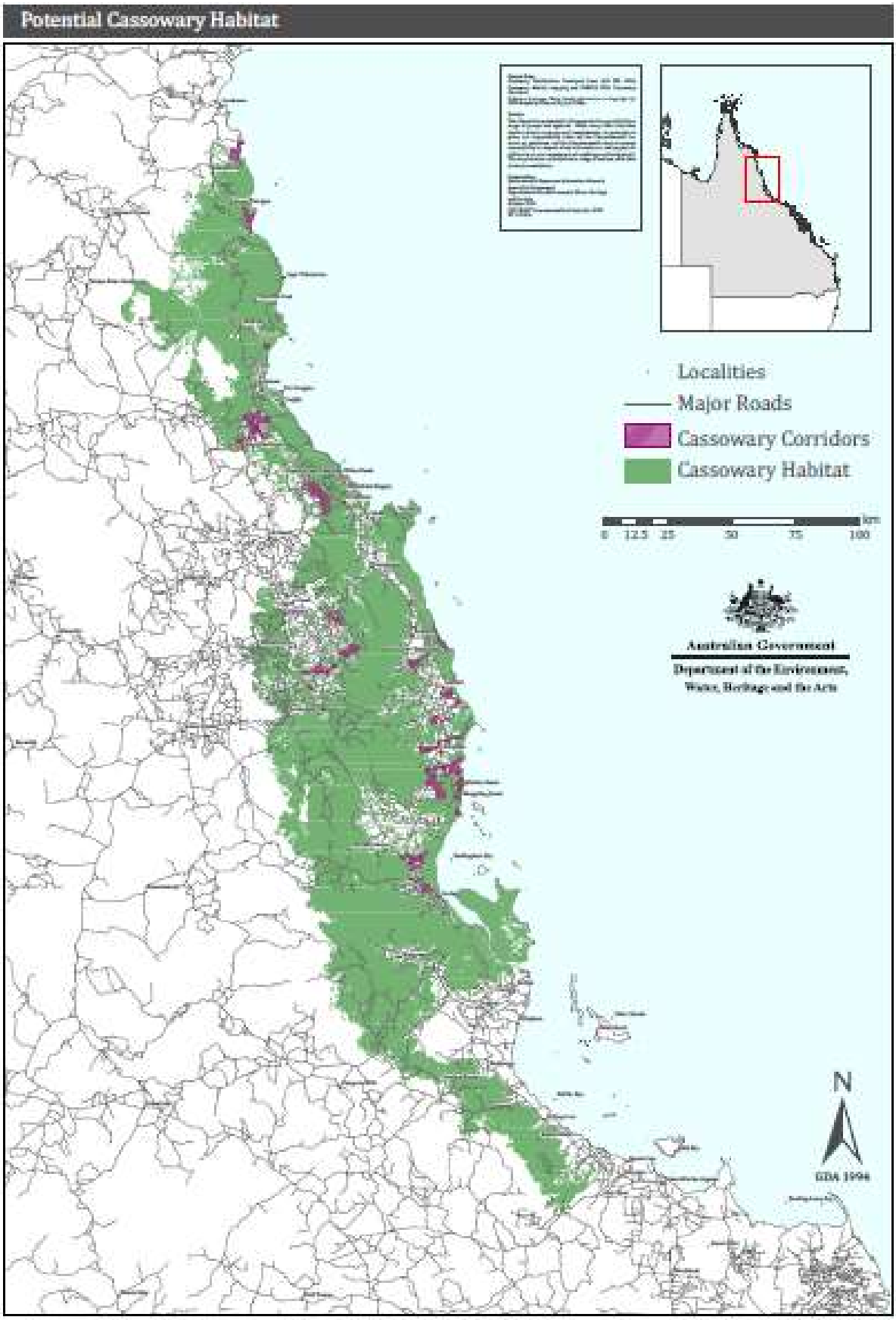


Figure 4b: Potential Cassowary habitat (including potential corridors)

3.1.5 Extent of current protection

Eight key Wet Tropics areas identified in the *Recovery Plan for the Southern Cassowary Casuarius casuarius johnsonii* (Link) are still seriously threatened by development pressures. Populations in these areas are therefore considered to be under the greatest threat:

- Mission Beach
- Daintree/Mossman lowlands
- Kuranda/Black Mountain corridor
- Cairns hill slopes
- Mulgrave Valley/Malbon-Thompson Range
- southern Atherton Tablelands
- Graham/Palmerston/Moresby Range
- Kennedy Valley/Murray River floodplain

The Cape York populations are considered to be under less threat than the Wet Tropics population.

The Cassowary habitat protection mapping is extensive and is afforded protection by both Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) mapping.

The extent of mapping differs however, between MNES and MSES mapping for both core Cassowary habitat and non-core Cassowary habitat. When overlayed, the area of protection is substantially less than both the individual MNES and MSES mapping. There is an opportunity to improve this mapping by aligning the State and National mapping. It is acknowledged that local ground truthing is likely to be required to support this alignment.

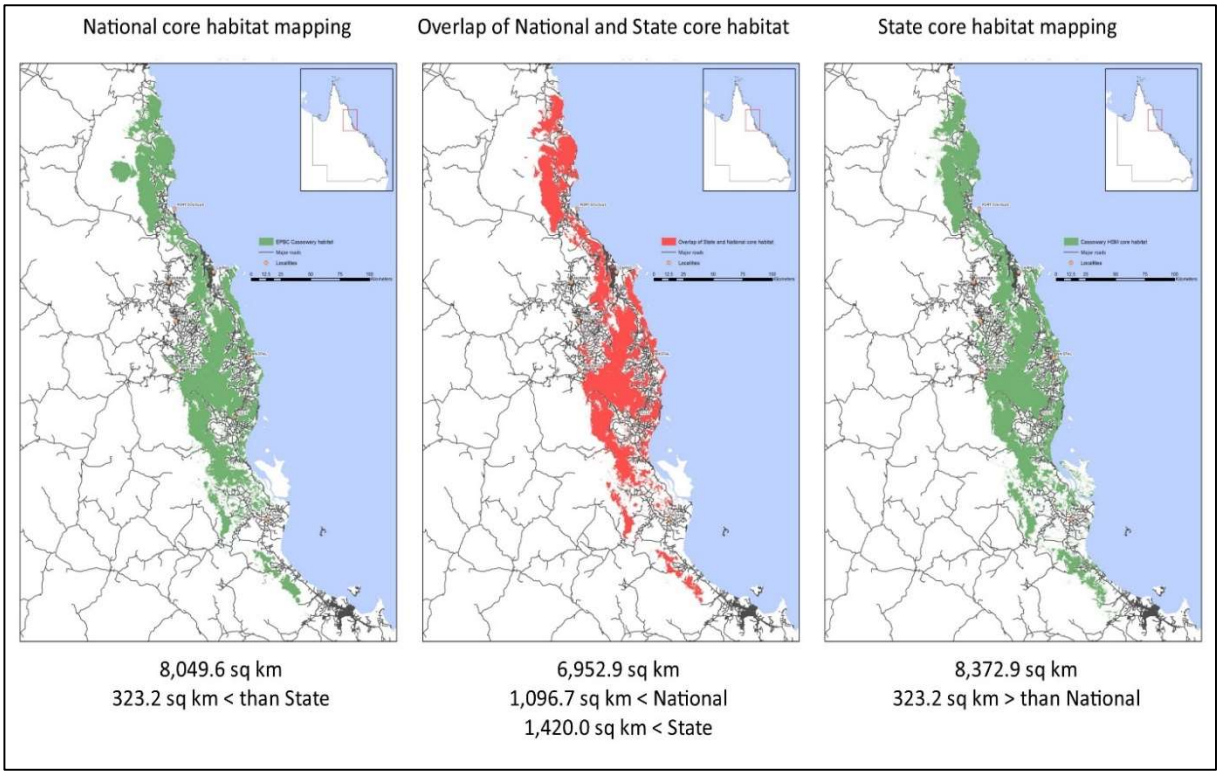


Figure 5: Mapping comparison National and State Core Habitat.

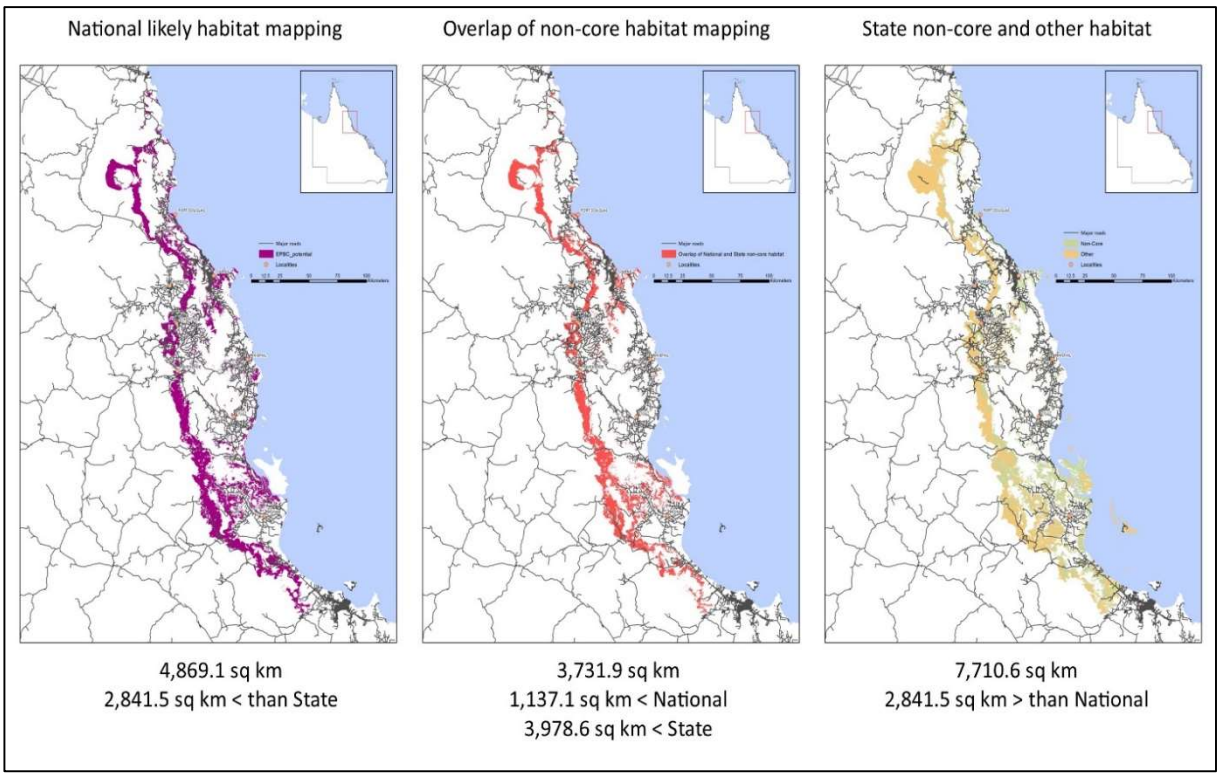


Figure 6: Mapping comparison National and State non-core Habitat.

3.1.6 Current approaches to protection

The priorities listed here are derived from Latch (2007), with some amendments made by contributing experts based on new information. Identification of these priorities in this document is for information purposes only and is non-statutory. It is noted that many of the priorities listed are not specifically focused on habitat protection. Those focused on habitat protection are provided below.

Data collection:

- Monitor trends at selected high-profile sites in the wet tropics using improved versions of the DNA –based tools developed by Westcott et al. (2014).
- Identify areas and corridors to protect, restore, manage, develop, and implement Cassowary Conservation Local Area Plans as part of local planning
- Assess impact of cyclones on affected cassowary populations and if necessary, develop a post-cyclone response plans to maximise persistence of cassowaries and minimise harmful interactions with people.

Management actions:

- Plant and restore cassowary habitat in priority corridors to create movement corridors for the species.
- Improve engagement, education, regulation, and compliance to improve dog management in cassowary habitat and corridors.
- Implement post-cyclone response plans.
- Engage Traditional Owners more fully in management of cassowary habitat.
- Coordinate and enhance voluntary conservation agreements and/or buy back of priority habitat and corridors on private land.

Between 2015 and 2020, the Australian Government has secured over $10 million in initiatives supporting the southern cassowary, including eighteen (18) Green Army teams and $6 million in projects that directly protect and restore its habitat in an action-based approach to protecting and recovering this threatened species.

The following recovery actions are identified in the Recovery plan:

1. complete the mapping of essential cassowary habitat and identify areas and corridors to protect, restore and manage
2. develop and implement Cassowary Conservation Local Area Plans as part of local planning
3. minimise cassowary road deaths and dog attacks, and assess impact of pigs
4. implement a translocation plan as part of rescue, rehabilitation and release
5. establish a monitoring programme in key habitats
6. develop and implement a population survey methodology based on faecal DNA
7. study cassowary population at Mission Beach and determine genetic structure and
8. involve community in cassowary conservation.

Specifically, the Recovery Plan identifies ***Recovery Objectives, Performance Criteria, and Actions*** relevant to this Project.

Action 2.1 Strengthen linkages with other planning mechanisms to ensure an integrated and more consistent approach to cassowary conservation

Performance criterion 2.1 Review of effectiveness of current planning instruments completed with recommendations implemented

A number of local, regional, state and national strategic NRM plans complement, support and/or guide development and implementation of cassowary recovery actions. These include:

- FNQ Regional Plan
- Wet Tropics NRM Plan
- Local government planning schemes
- Regional Coastal Management Plans
- Wet Tropics Conservation Strategy
- Wet Tropics Aboriginal Cultural and Natural Resource Management Plan and
- Draft Mahogany Glider Recovery Plan and the draft Mabi Forest Recovery Plan.

This action aims to better integrate cassowary recovery with natural resource planning and investment at the regional and local levels through improved consultation with stakeholders and promotion of the recovery plan as the major strategic document directing cassowary conservation effort. The recovery team will engage all planning bodies to develop a consistent approach to cassowary conservation. This process will also examine opportunities for sharing resources and for submitting shared competitive funding bids as opportunities arise. This action will audit cassowary protection within local government planning and help develop better planning scheme mechanisms to protect cassowary habitat. The outcome will complement development of Cassowary Conservation Local Area Plans and Action 2.3.

Action 2.2 Develop and implement Cassowary Conservation Local Area Plans

Performance criterion 2.2 Three Cassowary Conservation Local Area Plans developed, endorsed by recovery team and implemented

This action provides a mechanism to build upon the outcomes of Actions 1.2, 1.3 and 1.4 to implement on-ground protection and conservation actions through a coordinated Cassowary Conservation Local Area Plan. These plans will be non-statutory and rely on partnership arrangements between stakeholders. These plans will also build upon earlier regional cassowary management plans.

The planning process will ensure all stakeholders are involved and that local issues are addressed within the context of broader cassowary conservation priorities. The local community will retain ownership of the plan. A local planning group should be formed for each area, comprising representatives from state and local government, community conservation groups, private landholders, Aboriginal groups and industry.

Plans will prioritise actions, assign costs and identify potential participants and funding sources. In the life of this plan, it is envisaged that at least three plans be developed and implemented on a priority basis. A Mission Beach Local Area Plan is to be developed as a priority. Other plans will be developed and will be identified through Action 1.2. The progress and impact of the Mission Beach Habitat Network Action Plan has been considered as a Case Study in Section 4.0.

Potential contributors: Terrain NRM, EPA, WTMA, ARF, local councils, community and conservation groups, Aboriginal groups, industry.

Action 2.3 Investigate development of other statutory planning instruments to minimise impacts of development on cassowaries

Performance criterion 2.3 Report prepared outlining options for development of statutory planning instruments to minimise impacts of development on cassowaries

It is the preferred intent of this recovery plan to develop non-statutory mechanisms to protect and manage cassowary habitat and reduce threats through a consultative local planning process (Actions 2.1 and 2.2). However, in response to ongoing development pressures on habitat in some of the more urbanised areas the development of a new appropriate statutory planning instrument may also be required to ensure development is compatible with cassowary conservation. One such instrument could be a State Planning Policy (SPP). Developed under the *Planning Act (2016)* a SPP could provide a high level of direction and support to government and others called on to make planning decisions on development relevant to cassowary conservation. The anticipated outcome of a SPP would be to ensure that future development in cassowary habitat is compatible with conservation of the species. It may also provide protection measures to address issues arising from new developments including incremental habitat loss, the impacts of roads, dog control and the provision and protection of habitat links.

3.2 Littoral

Key points:

- Most littoral rainforest is mapped within the bounds of other remnant vegetation so it is afforded some protection from development; very little of it occurs within category X (unless as isolated trees or copses). However, case work conducted in a parallel project demonstrated that

without the benefit of a field-based and fine scale mapping process in place, a large proportion is not identified within the Regional Ecosystem mapping by its' relevant assemblage. As a result many areas of significance are mapped as 'least concern' under the VMA and as such may be more vulnerable (than warranted for a Nationally listed ecological community) to development.

- Littoral rainforest on sea wind influenced aspects (on rocky coastlines) occurs at a much higher elevation ~ 30m to those communities on sand, coral rubble and pumice. As such it is likely to have a greater potential to adapt to sea level rise and sustain the ecological community into the future than those on esplanades and dunes.
- Field- based fine-scale mapping substantially improves the resolution and mapped extent of littoral rainforest ecological communities. Planning mechanisms which allow for local assessment and delineation of littoral rainforest is likely to be the most effective means of ensuring it is adequately protected in land subject to development. Fine scale mapping will also assist in the development of appropriate land management practices.
- Littoral rainforest frequently co-occurs with Cassowary habitat.
- There are currently no Nature Refuges containing significant littoral rainforest but many National Parks and other state/local government lands include mapped stands (as well as potential stands).

Recommendations:

1. Undertake systematic field-based assessment of coastal vegetation communities which may be subject to development into the future.
2. Develop basic guidelines for the identification and management of littoral rainforest in the Wet Tropics context (landholders, consultants, land managers).
3. Include resilient littoral rainforest ecological communities into Coastal Hazard Adaptation Planning as future refugia.
4. Consider in more detail the role of *Casuarina equesitifolia* foreshore vegetation communities in the buffering or transitioning of littoral rainforest ecological communities.

3.2.1 What

The 'Littoral Rainforest and Coastal Vine Thickets of Eastern Australia' represents a complex of rainforest and coastal vine thickets, including some that are deciduous, on the east coast of Australia. Typically, the ecological community occurs within two kilometres of the coast or adjacent to a large salt water body, such as an estuary and, thus, is influenced by the sea. It is naturally distributed as a series of disjunct and localised stands occurring on a range of landforms derived from coastal processes that can include dunes and flats, cheniers, berms, cobbles, headlands, scree, seacliffs, marginal bluffs, spits, deltaic deposits, coral rubble and islands. As a result, the ecological community is not associated with a particular soil type and can occur on a variety of geological substrata.

The ecological community is defined by habitat expressed in terms of structure, floristic composition and ecology in response to coastal processes. The unifying feature of its habitat is the salinity, derived from the ecological community's proximity to the sea. Saline influence is delivered via aerosols, saline water-tables or occasional inundation.

Whilst the ecological community's canopy species are well adapted to coastal exposure (e.g. strong and persistent salt-laden winds and storm events), the canopy protects less tolerant species and propagules in the understorey. The canopy height varies with the degree of exposure and can range from dwarf to

medium (<1-25 m). Due to extreme exposure to salt laden winds, the canopy often demonstrates a continuum of heights. Highly exposed patches will display the effect of windshear in the canopy. In more sheltered sites, for example, around estuaries, wind shear may not be evident in the canopy.

Nationally, the diversity of plant taxa (particularly canopy species) generally declines in a north to south direction, i.e. with increasing latitude. However, species richness of adjacent patches may vary considerably within one latitudinal zone. Wet Tropics has greatest extent, diversity, and connectivity of littoral rainforest in Eastern Australia

The ecological community provides important stepping stones along the eastern Australian coast for various migratory and marine birds. For example, the nationally listed marine species Ducula bicolor (Pied Imperial Pigeon), a migratory species from north of New Guinea, feeds on fruit associated with mainland littoral rainforests and disperses the seeds on offshore islands where it roosts. Given its proximity to the sea, seabirds may also be associated with some stands of littoral rainforest.

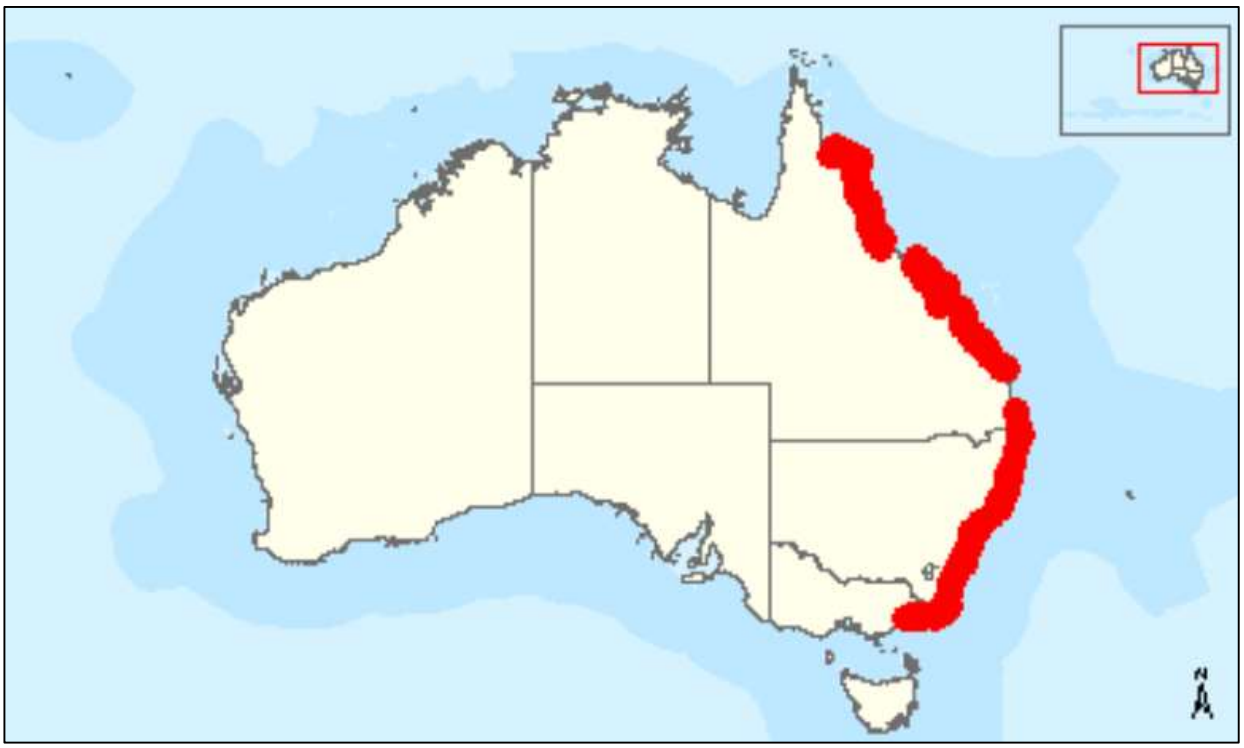


Figure 7: Map of the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community.

3.2.2 Where

The ecological community is listed as critically endangered. The ecological community occurs within 2 km of the eastern coastline of Australia, including offshore islands, from Princess Charlotte Bay, Cape York Peninsula to the Gippsland Lakes in Victoria.

The Northern Australian Environmental Resources Hub NESP project titled "Mapping to underpin recovery planning for Littoral Rainforest and Coastal Vine Thickets (LRCVT) in the Wet Tropics" (Link) specifically mapped Littoral Rainforest in the Wet Tropics. Further extrapolation of mapping resources by FNQROC (2021) is provided below, and sourced from the following spatial layers:

- LRCVT vegetation that 'wholly-equates' to the EPBC Listing Advice; and
- 'Potential' LRCVT delineating areas consistent with broad characteristics of the community

described in the EPBC Listing.

The mapping highlights areas where existing LRCVT lies within the path of coastal retreat and highlights areas where LRCVT could play an important role in protecting settlements/ or enabling transition to other coastal/wetland ecological communities.

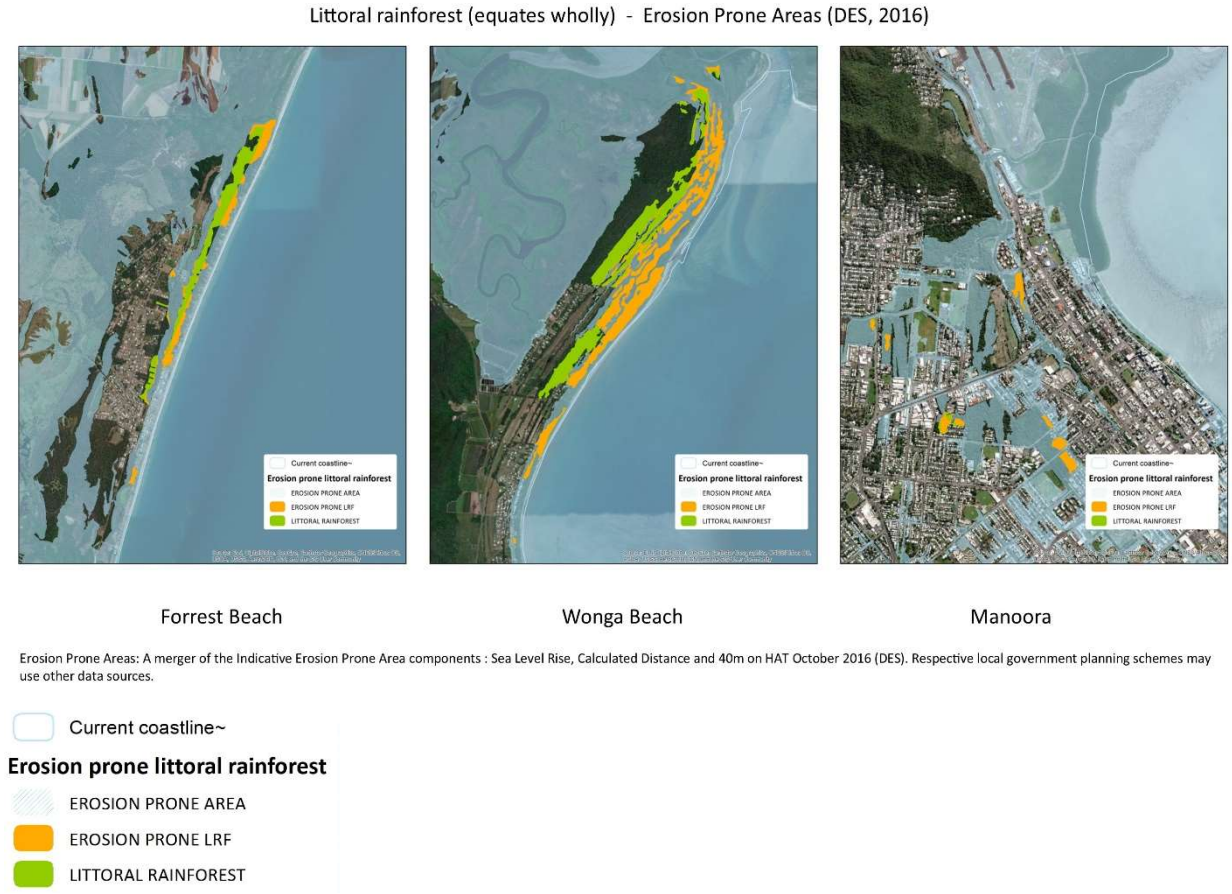


Figure 8: 3 Mapped Examples of Erosion Prone Littoral Rainforest

3.2.3 Threats

Littoral Rainforest was listed as Critically Endangered because its geographic distribution is severely fragmented and primarily consists of numerous small and disjunct patches, there are demonstrable threats impacting upon it and there have been very severe reductions in the integrity of the ecological community.

The key historic and ongoing threat to Littoral Rainforest is **coastal development** and, given its distribution, Littoral Rainforest is also highly susceptible to the interacting effects of **climate change and sea level rise**, both of which exacerbate the existing threats of habitat fragmentation and invasion by transformer weeds. Littoral Rainforest also continues to be reduced and fragmented by land clearance, weed invasion, recreational disturbance, animal browsing/grazing, fire and natural disturbance.

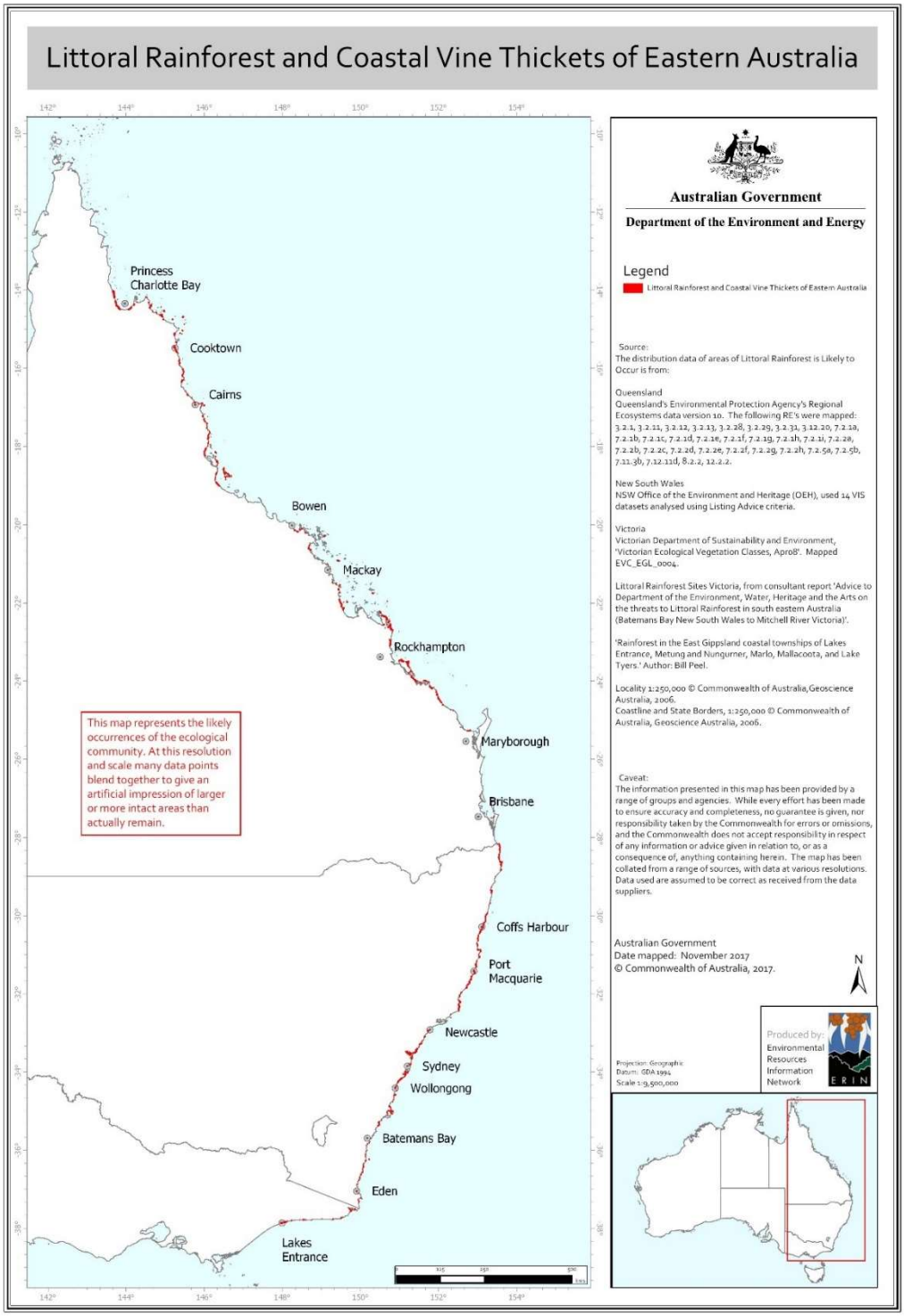


Figure 9: Map of the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia ecological community.

3.2.4 Mapping

Tenure

Within the Wet Tropics bioregion Littoral Rainforest, certain regional ecosystems have been identified which equate wholly to the vegetation community. (Regional Ecosystems are 7.2.1a-i, 7.2.2a-h, 7.2.5a, 7.2.6b, 7.11.3b, and 7.12.11d).

Cassowary Coast and Douglas Local Government Areas contain the majority of currently mapped littoral rainforest, followed by Hinchinbrook and Cairns. National Park tenure contains the highest proportion of Littoral Rainforest for the Wet Tropics Region, followed by Freehold.

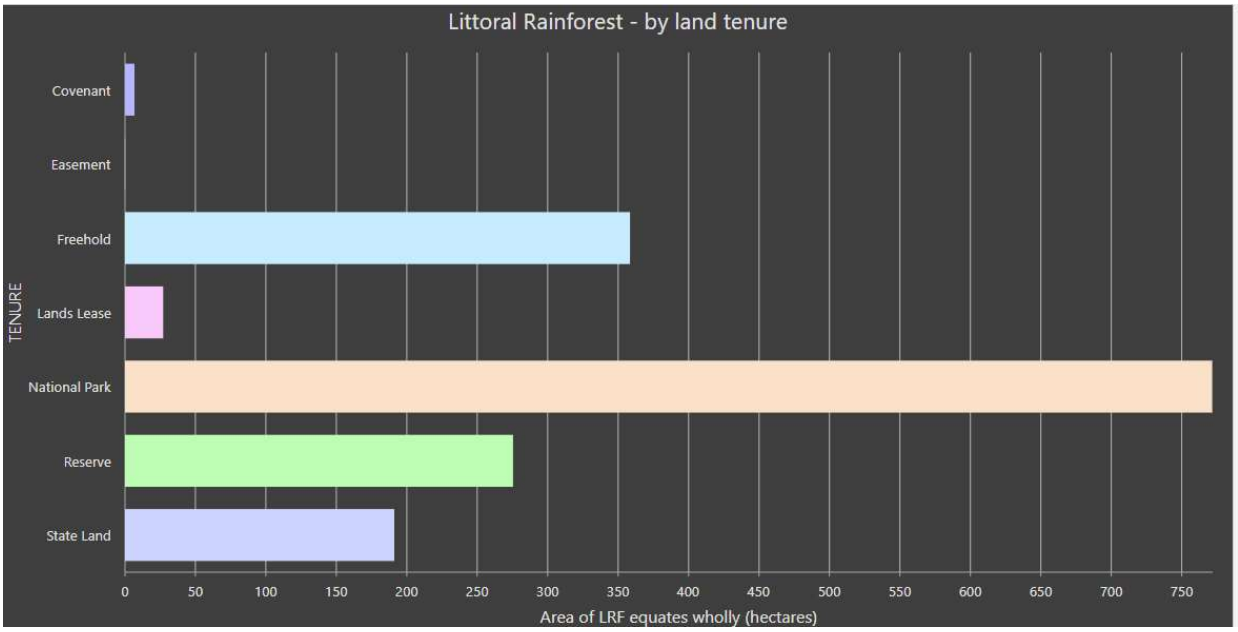


Figure 10: Littoral Rainforest by land tenure

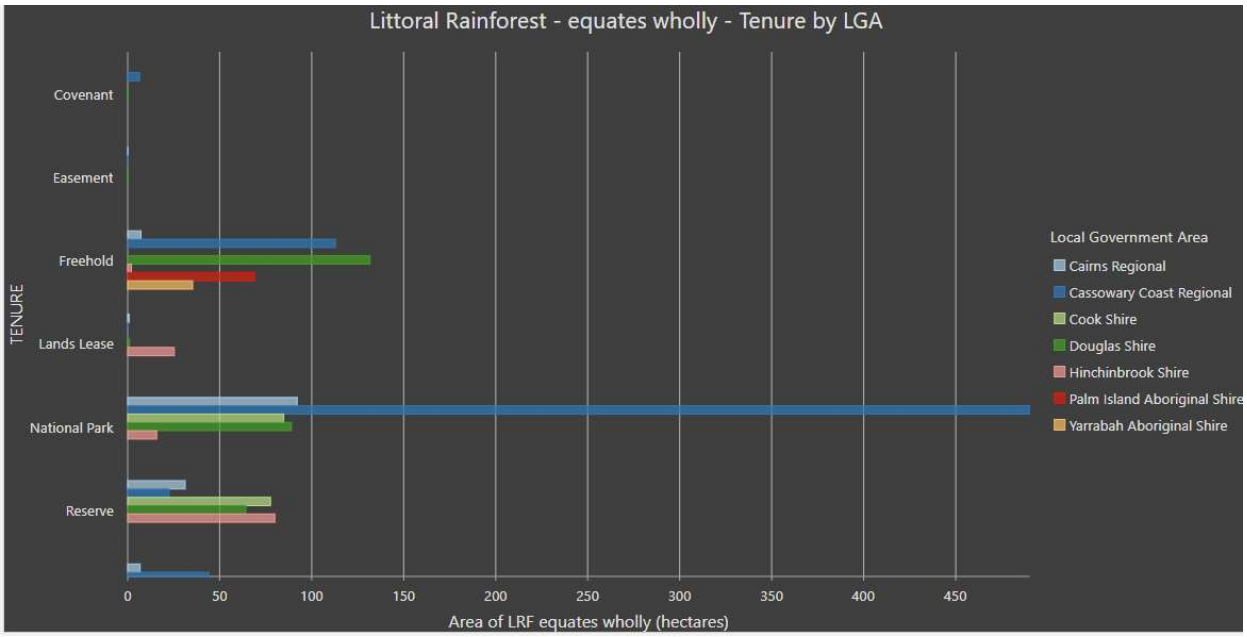


Figure 11: Littoral Rainforest by Local Government Area and tenure.

TENURE	Area (hectares)
Covenant	6.69
Easement	0.24

Freehold	358.40
Lands Lease	27.10
National Park	771.63
Reserve	275.38
State Land	191.11
Waterways/Esplanade	67.15
TOTAL	**1697.70**

Table 1: Area (Ha) Littoral Rainforest by Tenure

TENURE	LGA	HECTARES
Covenant	Cassowary Coast Regional	6.47
	Douglas Shire	0.22
	Easement	0.24
	Cairns Regional	0.00
	Cassowary Coast Regional	0.12
	Douglas Shire	0.12
Freehold	Cairns Regional	7.25
	Cassowary Coast Regional	112.90
	Douglas Shire	131.71
	Hinchinbrook Shire	2.04
	Palm Island Aboriginal Shire	69.20
	Yarrabah Aboriginal Shire	35.29
Lands Lease	Cairns Regional	0.77
	Cassowary Coast Regional	0.00
	Douglas Shire	0.99
	Hinchinbrook Shire	25.34
National Park	Cairns Regional	92.13
	Cassowary Coast Regional	490.04
	Cook Shire	84.81
	Douglas Shire	88.90
	Hinchinbrook Shire	15.74
Reserve	Cairns Regional	31.23
	Cassowary Coast Regional	22.43
	Cook Shire	77.64
	Douglas Shire	64.19
	Hinchinbrook Shire	79.90
State Land	Cairns Regional	6.74
	Cassowary Coast Regional	43.93
	Douglas Shire	116.05
	Hinchinbrook Shire	24.39
Waterways/Esplanade	Cairns Regional	7.15
	Cassowary Coast Regional	19.42
	Cook Shire	3.25
	Douglas Shire	29.04
	Hinchinbrook Shire	8.29
	Palm Island Aboriginal Shire	0.01

	Total	**1697.70**

Table 2: Area (Ha) Littoral Rainforest by Tenure and Local Government Area

Nature Refuges

There are currently no Nature Refuges which contain Littoral Rainforest equates wholly.

Cassowary utility of Littoral Rainforest

The EPBC mapping advice for Cassowary habitat indicates a strong correlation between Littoral Rainforest and known Cassowary habitat. Queensland Habitat Suitability Modelling for Cassowary demonstrates a strong correlation between core habitat and currently mapped Littoral Rainforest.

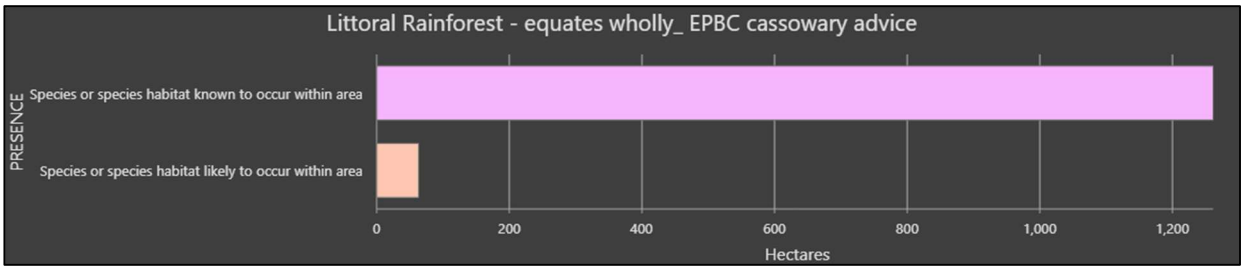


Figure 12: Littoral Rainforest correlation with Cassowary Habitat

Queensland Habitat Suitability Modelling for Cassowary demonstrates a strong correlation between core habitat and currently mapped Littoral Rainforest.

3.2.5 Extent of current protection

Patch sizes for Littoral Rainforest vary from < 1 ha to > 100 ha, although large patches are now rare. The loss of, or disturbance to, the highest quality patches, or habitat critical to the survival of Littoral Rainforest, is highly likely to lead to a long-term loss in the overall extent of the ecological community. Small patches can be resilient and viable, but minimum size of a patch needs to be 0.1 ha or greater to be recognised by EPBC.

Development related activities such as vegetation clearing, excavation and earthworks within and adjacent to Littoral Rainforest are highly likely to adversely affect the ecological community, if not directly then indirectly through impacts to individual sites and the subsequent accumulated losses across the ecological community as a whole.

These activities reduce the size of patches and the extent of Littoral Rainforest by directly affecting small clumps or indirectly destroying or degrading the quality of habitat. This further disrupts connectivity and effective functionality of Littoral Rainforest and its component parts, including species prevalence and habitat structure.

Of the three species that are the subject of this review, Littoral Rainforest is afforded the least amount of protection from current vegetation mapping. Despite the EPBC listing advice describing the broad characteristics of the community, definitive mapping for the community is not available for the majority of the Queensland coast, putting littoral rainforest at risk from ongoing impacts despite its protected

status. Examples of urban encroachment into mapped Littoral Rainforest are frequent. Furthermore, the widespread nature of this ecosystem along the east coast of Australia, provides opportunities to share management experiences and learn from practices elsewhere.

Habitat Mapping

Littoral rainforest is categorised by three (3) types- Leading-edge, Buffer, and Refugial.

Leading Edge: Exposed to inundation frequently, can be critical in protecting human communities from the effects of storm-surge, sea-level rise and extreme weather events.

Buffer: Inundated moderately frequently and plays a very important role in connecting Refugial and Leading-edge rainforests.

Refugial: Not often inundated and can persist even under extreme weather conditions.

Leading edge classification is the most dominant status of Littoral Rainforest which equates wholly. A significant portion of currently mapped Littoral Rainforest is significantly vulnerable to impacts from sea level rise. In the longer-term Buffer followed by Refugial Littoral Rainforest are expected to sustain the vegetation community into the future. Both are compiled primarily of Endangered and Of Concern Remnant vegetation.

With the exception of <5 mapped vegetation polygons, all currently mapped littoral rainforest is classified as Category B under the *Vegetation Management Act 1999* (VMA). The exceptions are mapped as Category R and may warrant investigation or survey to confirm their status.

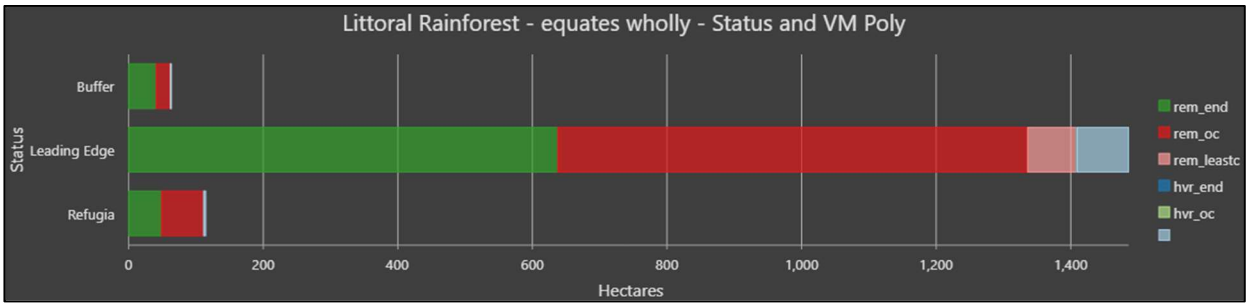


Figure 13: Type of Littoral Rainforest Classification and level of protection afforded

VMA Class	Area (hectares)
Endangered	724.94
Least Concern	73.57
Of Concern	808.84
High Value Regrowth (HVR) Of Concern/Endangered	10.30
Not classified (Palm Island)	80.05
Total	**1697.70**

Table 3: Area (Ha) Littoral Rainforest by VMA Status

Biodiversity Status	Area (hectares)

Endangered	1060.08
HRV Endangered	10.30
Of Concern	547.27
Blank (Palm Island)	80.05
Total	**1697.70**

Table 4: Area (Ha) Littoral Rainforest by Biodiversity status.

3.2.6 Current approaches to protection

The primary threats to Littoral Rainforest are human mediated as they are either a direct result of human activity (e.g. habitat clearing, degradation from human activity) or an indirect consequence of human actions (e.g. feral animals and weeds, climate change).

The national recovery plan (Link) (Australian Government 2019) which establishes a national framework to guide and coordinate the implementation of research and management actions to assist the recovery of the ecological community throughout its range. The objective of the plan is to abate identified threats and prevent further decline in the extent, condition and functional integrity of the ecological community.

The **national recovery plan – recovery strategies** have been designed with the following outcomes in mind:

- Protect – actions that prevent further decline in the conservation status of Littoral Rainforest, principally its size, condition and functional integrity.
- Manage and restore– actions that improve the quality of patches or increase the extent of Littoral Rainforest, thus increasing the resilience of the ecological community and maximising its chances of long-term survival in nature.
- Communicate – actions that tell the story about what is happening to Littoral Rainforest, and increase knowledge of its biodiversity and socio-economic values, conservation status, actual and potential changes, management and information needs.
- Research – actions that fill any gaps in our knowledge of Littoral Rainforest, including increasing understanding of its biodiversity values and socio-economic values, the relevant impact of threatening processes and the effectiveness of various management interventions.
- Monitor / report – actions that measure the condition of Littoral Rainforest, and any changes to its conservation trajectory, and report outcomes to relevant management agencies / organisations

The National Recovery Plan recommends buffers to the existing Littoral Rainforest is one of several approaches to protection. The option of a buffer and its width depends on the local landscape context and patch sizes. Decisions on buffer size should be informed by local variants and an investigation of the project area. A buffer zone is not part of the ecological community; so whilst having a buffer zone is strongly recommended as part of the National Recovery Plan, it is not formally protected as a Matter of National Environmental Significance. The recommended minimum buffer zone is 100 m from the outer edge of a patch, unless a scientific justifiable alternative buffer can be identified.

The primary way to prevent the decline of Littoral Rainforest is to protect remnant patches that meet the condition thresholds in the Listing Advice. This includes not undertaking activities within close proximity that could impact on the extent, quality and functionality of Littoral Rainforest. The primary goal should be to avoid all impacts to patches of Littoral Rainforest. Offsets should be considered a last resort after

all avoidance and mitigation measures have been exhausted and residual impacts remain. Offsets do not mean proposals with unacceptable impacts will be approved.

Nevertheless, **restoration and revegetation** activities are valuable options for patches lost or degraded by significant impacts. This requires an understanding of the value of the patch to be lost, based on the condition thresholds specified in the Listing Advice (i.e. its size, species composition and structure, and the prevalence of transformer weeds). Any proposals to restore or revegetate habitat to offset the loss of an existing patch need to consider carefully how and where best to implement the action and must include monitoring to ensure its success.

The National Recovery Plan (2019) recommends the following strategies-

Strategy 1: Implement planning, regulatory policies and actions to protect Littoral Rainforest
Protect the remaining distribution of Littoral Rainforest and its surrounds from:

- coastal development and land use change, including urban development, mining and industrial development
- climate change, particularly sea level rise impacts.

Strategy 2: Implement management strategies and actions to reduce threats to Littoral Rainforest
Relevant for: Australian, State and local government, Indigenous land managers, NRM bodies, community organisations, researchers.

Reduce threats to Littoral Rainforest posed by:

- livestock grazing
- feral animal activity
- invasive weeds
- pathogens and disease
- changes in fire regime (particularly increased frequency)
- damage and degradation by recreational and other use (vehicles, camping)
- damage and degradation by storm surge events and extreme tides, and
- hydrological change (e.g. to drainage and runoff from adjacent areas).

Strategy 3: Restore and extend Littoral Rainforest

Implement the following:

- Rehabilitation and restoration activities to restore vegetation structure and control invasive plant species, and
- Actions to increase connectivity, enhance migration and create natural buffers

Strategy 4: Engage with the public to increase awareness and community involvement in management and rehabilitation
Carry out the following:

- Engage with Indigenous land managers to help protect and rehabilitate Littoral Rainforest on country
- Engage with the public and local land owners/managers to promote the values of Littoral Rainforest and drive community involvement in management, and
- Assist with funding applications for management and rehabilitation activities.

Strategy 5: Improve knowledge on the distribution and condition of Littoral Rainforest, and monitor and report on the status of the ecological community.

Comment: The widespread nature of this ecosystem provides opportunities to share management experiences and learn from practices elsewhere along the east coast of Australia.

3.3 Mabi

Key points:

- All nationally listed Mabi forest is identified as Category B/endangered in the MSES. A small proportion is also located within the extent of Category R which provides additional protections or considerations in planning. As such it is well represented in a legislative context.
- Given that it is comprised of many small and often separate fragments; Mabi is very vulnerable to impacts from adjoining land use and management practices.
- Most Mabi fragments have management actions and objectives identified against them. The Mabi Action Group is active in the management of the ecological community across its entire range.
- Based on an independent vegetation assessment, the Mabi action group has recommended the removal of outlier populations at Shipton's' Flat, Millstream and Wooroonooran from the recovery/conservation advice.
- All Mabi forest is identified as essential Cassowary habitat, to some degree.

Recommendations:

1. Include rehabilitation and restoration zones within the review of the conservation advice.
2. Consider options for inclusion in strategic framework and offsets policy for TRC going forward.
3. Investigate within strategic framework/offsets policy options for consideration of impacts/opportunities from adjoining/surrounding land use zones on mapped remnants, particularly smaller or isolated fragments.
4. Investigate in conjunction with the review of the conservation advice where restoration and habitat protection measures will be most effective in addressing impacts or enabling opportunities.
5. Consider development of a recognition strategy for local landholder undertaking voluntary action to manage the values of or threats to Mabi forest on private land.

3.3.1 What

Mabi Forest or Complex Notophyll Vine Forest Type 5b is listed as 'Critically Endangered' under the Commonwealth Environment Protection and *Biodiversity Conservation Act 1999* (EPBC Act). Under the EPBC Act, Mabi Forest is defined as those areas of Regional Ecosystem 7.8.3 and other patches identified as Complex Notophyll Vine Forest 5b in the Wet Tropics bioregion.

The Queensland Regional Ecosystem framework identifies Mabi Forest as Regional Ecosystems. Both regional ecosystems are listed under the *Queensland Vegetation Management Act 1999* as 'Endangered' (EPA 2005):

- 7.8.3 (Complex Semi-Evergreen Notophyll Vine Forest of uplands on basalt)
- 7.3.37 (Complex Semi-Evergreen Notophyll Vine Forest of uplands on alluvium).

3.3.2 Where

Mabi Forest occurs within a restricted geographical range primarily on the Atherton Tableland Prior to European settlement, Mabi Forest on the Atherton Tableland occurred as continuous forest between Yungaburra in the east, Kairi-Cullamungie Pocket (now separated by Tinaroo Dam) to the north, Tolga in the west and past Wongabel State Forest in the south. Extensive clearing of Mabi Forest began around 1900 and greatly reduced its extent. After being cleared only small fragments of Mabi Forest remain located between the towns of Atherton, Kairi, Yungaburra and Malanda.

It is likely that one of the most well-known areas of Mabi Forest is the 'Tolga Scrub'.

Figure 14: Map of Mabi Forest

3.3.3 Threats

Clearing of Mabi Forest has left a severely fragmented and modified landscape, comprising remnant patches of various sizes, shapes, connectivity and condition. Fragmentation has allowed penetration by a range of serious weed species displacing native species and degrading habitat. Ecological processes such as seed dispersal are under threat, as fragments no longer support populations of the southern cassowary and musky rat-kangaroo; key seed dispersers in the Wet Tropics rainforests. Feral and domestic animals continue to threaten Mabi Forest wildlife due to predation. Grazing and other incompatible land management practices in the landscape, contribute to ongoing degradation of Mabi

Forest remnants. Highly fragmented ecosystems like Mabi Forest, with their abrupt boundaries and high edge-to-area ratios, are vulnerable to the destructive forces of a severe cyclone.

3.3.4 Mapping

Tenure

Containing Mabi

Figure 15: Mabi Forest by Land Tenure

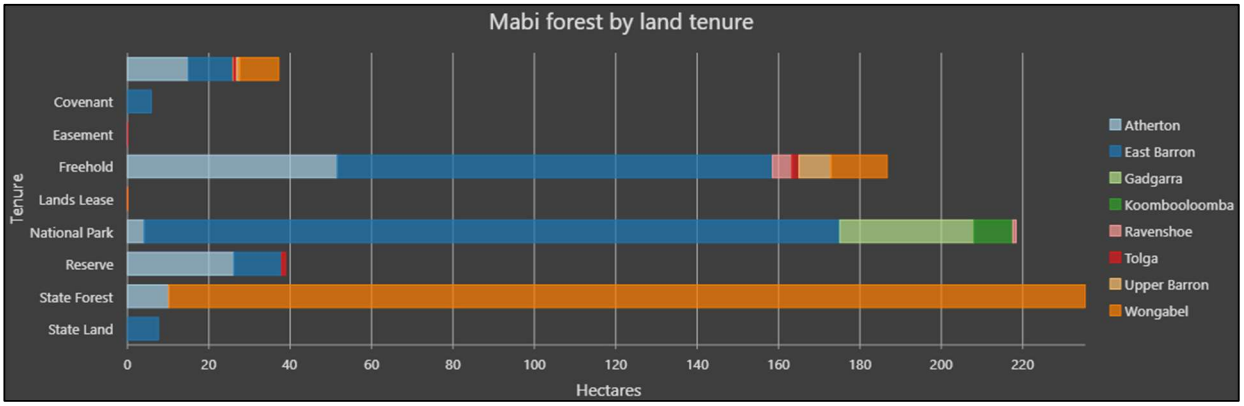


Figure 16: Mabi Forest by Land Tenure and Locality

Tenure by Regional Ecosystem	Mabi Forest Area (ha)	% Total Mabi Forest	% Individual Mabi RE
7.3.37	**9.82**	**1.13**	
Easement	0.00		0.01
Yungaburra	0.00		0.01
Freehold	4.64	**0.53**	47.32
Atherton	3.93		40.04
East Barron	0.10		0.98
Peeramon	0.57		5.80
Yungaburra	0.05		0.50
Reserve	0.66	**0.08**	6.72
East Barron	0.66		6.72
Esplanade/Waterway	4.51	**0.52**	45.96
Atherton	2.13		21.70

Tenure by Regional Ecosystem	Mabi Forest Area (ha)	% Total Mabi Forest	% Individual Mabi RE
East Barron	1.48		15.10
Peeramon	0.13		1.32
Yungaburra	0.77		7.83
7.8.3a (Basalt)	**861.47**	**98.87**	
Covenant	7.21		0.84
East Barron	7.21		0.84
Easement	0.17	**0.02**	0.02
Atherton	0.03		0.00
East Barron	0.09		0.01
Tolga	0.04		0.00
Yungaburra	0.00		0.00
Freehold	284.59	**32.66**	33.04
Atherton	64.69		7.51
East Barron	148.65		17.25
Kairi	1.30		0.15
Lake Tinaroo	7.59		0.88
Peeramon	28.15		3.27
Tolga	3.79		0.44
Upper Barron	16.90		1.96
Wongabel	13.06		1.52
Yungaburra	0.47		0.05
Lands Lease	3.02	**0.35**	0.35
Atherton	0.27		0.03
Lake Tinaroo	2.71		0.31
Tolga	0.03		0.00
Wongabel	0.00		0.00
National Park	216.33	**24.83**	25.11
Atherton	5.61		0.65
East Barron	177.65		20.62
Gadgarra	33.07		3.84
Upper Barron	0.00		0.00
Reserve	38.63	**4.43**	4.48
Atherton	25.98		3.02
East Barron	11.52		1.34
Tolga	0.95		0.11
Yungaburra	0.18		0.02
State Forest	248.42	**28.51**	28.84
Atherton	10.15		1.18
Wongabel	238.27		27.66
State Land	8.01	**0.92**	0.93
East Barron	8.01		0.93
Waterway/Esplanade	55.10	**6.32**	6.40

Tenure by Regional Ecosystem	Mabi Forest Area (ha)	% Total Mabi Forest	% Individual Mabi RE
Atherton	17.01		1.97
East Barron	17.88		2.08
Tolga	0.74		0.09
Upper Barron	6.86		0.80
Wongabel	12.10		1.40
Yungaburra	0.51		0.06
Grand Total	**871.29**		

Table 5: Regional ecosystem Tenure by Area (Ha)

Adjacent to Mabi

Parcels adjoining Mabi remnants are in the majority freehold land. The next largest categories are easements and reserves.

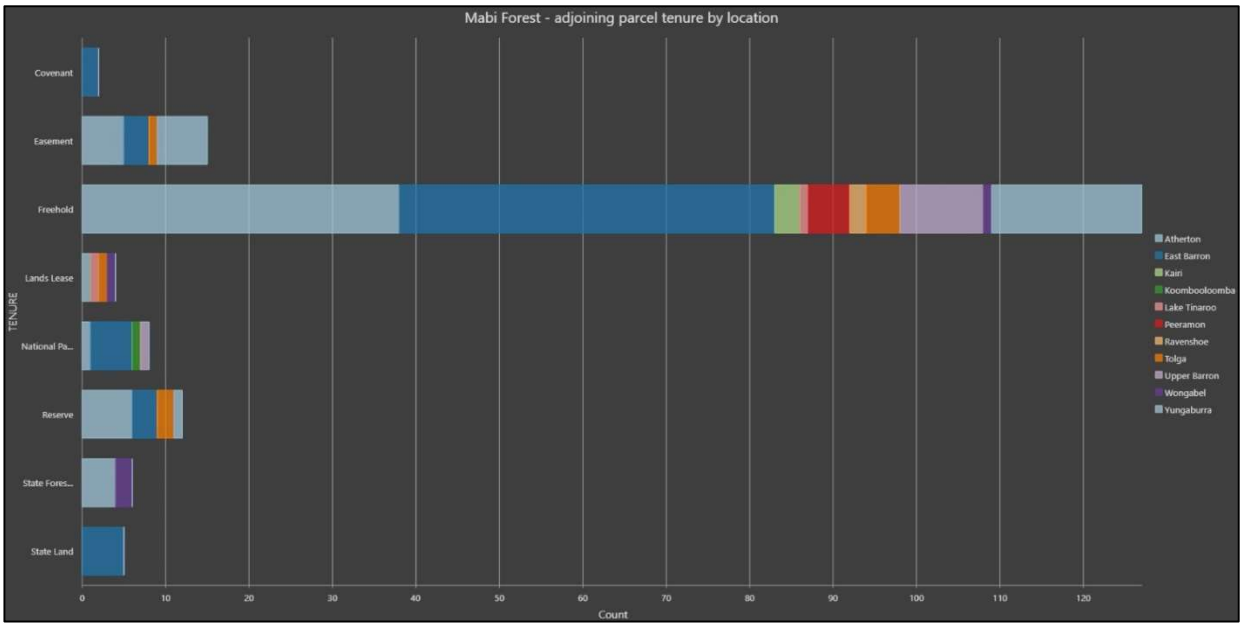


Figure 17: Parcels adjoining Mabi Forest by Land Tenure

Regional ecosystem statistics

Regional ecosystem	Description	Number of fragments	Total area	Nature refuges	VMA category	MSES essential habitat (Cassowary)	Intersect EPBC essential habitat. (Cassowary known or likely)
7.8.3a	(Complex semi-evergreen notophyll vine forest of uplands on basalt)	50	861.47 ha	Mount Quincan 29.60 ha Nassers 31.08 ha	B (100%)	100%	All but 2 small fragments
7.3.37	(Complex semi-evergreen notophyll vine forest on alluvium).	3	9.82 ha	0	B (100%)	100%	All

Table 6: Regional ecosystem statistics Mabi Forest

3.3.5 Extent of current protection

The Mabi Forest patch sizes range from 0.26 to 271.5 hectares. The current extent of Mabi Forest is 861.9ha on the Atherton Tableland. It was previously considered to be 954.7ha (EPA 2005)

- 77.4ha at Shipton's Flat near Cooktown (no longer considered Mabi).
- 15.4ha in the Ravenshoe Region (no longer considered Mabi).
- 861.9ha on the Atherton Tableland.

Mabi Forest is mapped in its entirety as remnant vegetation, Category B in the VMA. This does not account for areas smaller than 1 hectare in size; or for areas which are either restoration or natural succession into Mabi Forest. Future work will be required to analyse the margins of forest remnants to determine either expansion or contraction over time. Floristic integrity, successional state; and habitat quality of known remnants have been analysed in two separate studies-

- McKenna, S., Jensen, R. and Wannan, B. (2007) Mabi Vegetation Survey. Environmental Protection Agency, Atherton.
- Jensen R. and Wannan, B (2008) Mabi Forest - Conservation Assessment of Fragments and Priorities for Action. Environmental Protection Agency, Atherton.

Shipton's Flat and Ravenshoe outliers have been determined by vegetation survey not to be Mabi and on the recovery team's recommendation were not included in recovery plan (2007). This is not currently updated in the Conservation Advice, however it is expected the recommendation will be adopted. Alternative Regional Ecosystem descriptions have been allocated to these remnants. This analysis provided in **Part 2.3.4 Mapping** does not include outliers.

The Tablelands Regional Council Planning Scheme has predominantly zoned land containing Mabi Forest as Conservation. **Figure 18** identifies sites that are Mabi Forest and not afforded protection by the Planning Scheme. These areas could benefit from a localised review of zoning.

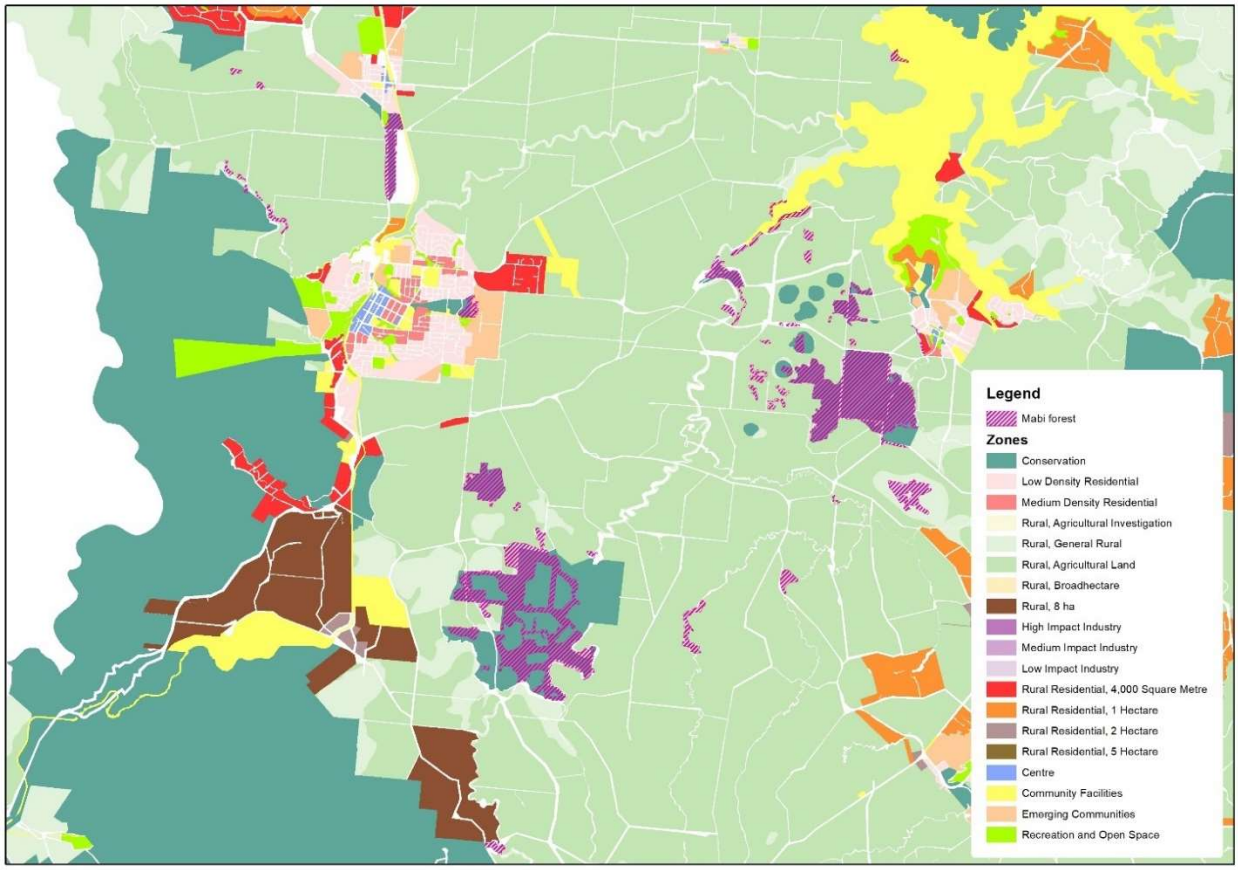


Figure 18: Extract Tablelands Regional Council Planning Scheme zoning overlayed with Mabi Forest mapping.

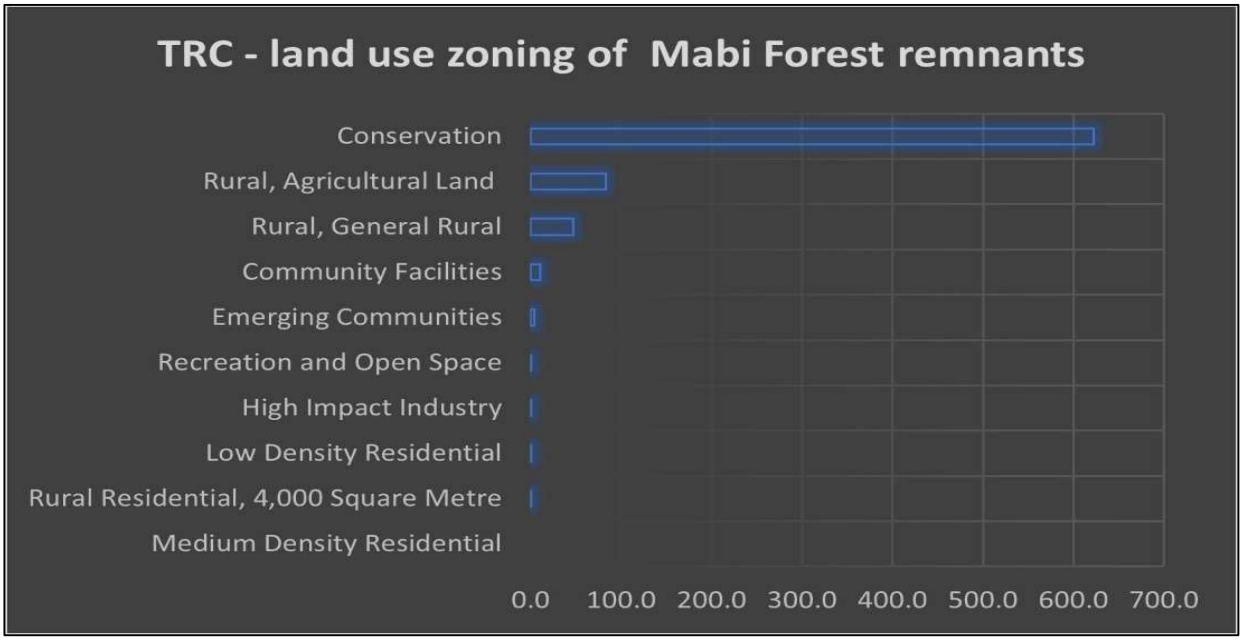


Figure 19: Land use zoning of Mabi Forest Remnants – Tablelands Regional Council

3.3.6 Current approaches to protection

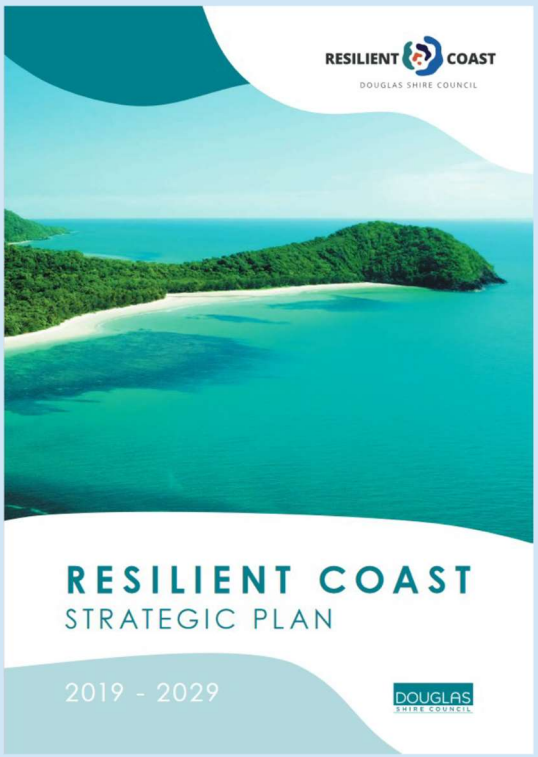
The recovery plan identifies the following actions to assist in the recovery of Mabi Forest:

- Mapping the extent of remnant and rehabilitating Mabi Forest.
- Undertaking biodiversity surveys of Mabi Forest fragments to assess condition for priority protection and management.
- Reviewing and evaluating the regional planning framework to ensure that conservation of Mabi Forest is promoted and incorporated appropriately in planning, management and development assessment;
- Developing strategies to enhance protection and management of Mabi Forest on private lands.
- Rehabilitating disturbed areas and corridors of Mabi Forest based on established priorities; developing and implementing a weed management strategy.
- Implementing a feral and domestic dog control program.
- Minimising the impacts of roads and vehicles on Mabi Forest wildlife.
- Encouraging landholders to develop and implement land management practices that are compatible with Mabi Forest recovery and agricultural sustainability.
- Identifying information needs and design and conduct research on Mabi Forest.
- Promoting and facilitating community and landholder involvement in recovery actions by raising community awareness; and
- Facilitating Aboriginal participation in implementation of actions and the use of traditional knowledge in Mabi Forest recovery.

4.0 Case studies

4.1 Littoral rainforest role in Coastal Hazard Adaptation - Wonga Beach

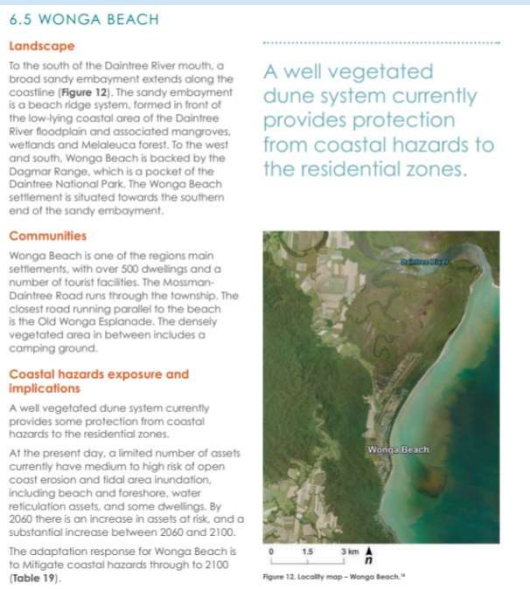
Local governments along the Queensland coastline are preparing Coastal Hazard Adaptation Strategies to prepare communities for projected changes and increasing hazards under climate change. The first of these to be completed was Douglas Shire Councils Resilient Coast Strategic Plan 2019 - 2029.



The purpose of the Strategic Plan is to:

- Inform future decisions regarding the protection and management of our coast and foreshore
- Inform future land use planning
- Guide the management of public utilities and facilities
- Guide the management of areas of environmental and cultural significance
- Foster collaboration and the shared care of our coastline.

The Strategic Plan includes Shire-wide actions as well as location summaries which outline local actions to maintain and facilitate resilience in coastal communities. In Wonga Beach littoral rainforest is the dominant remnant vegetation type; modelling by CSIRO projects that this ecological community is likely to expand into new areas as coastal influence on vegetation increases in accordance with projected rates and levels of sea level rise. Events such as cyclones and storm surge are predicted to accelerate this process. Whilst it is projected to increase in distribution in response to coastal processes, littoral rainforest will also succumb to extreme weather events, coastal inundation and erosion. As such it forms an important consideration for the local communities response to change in the coastal zone providing both temporary and longer terms level of protection to the foreshore, infrastructure and private assets. Vegetation management and planning responses are in the plan.


6.5 WONGA BEACH

Landscape

To the south of the Daintree River mouth, a broad sandy embayment extends along the coastline (**Figure 12**). The sandy embayment is a beach ridge system, formed in front of the low-lying coastal area of the Daintree River floodplain and associated mangroves, wetlands and Melaleuca forest. To the west and south, Wonga Beach is backed by the Dagmar Range, which is a pocket of the Daintree National Park. The Wonga Beach settlement is situated towards the southern end of the sandy embayment.

A well vegetated dune system currently provides protection from coastal hazards to the residential zones.

Communities

Wonga Beach is one of the regions main settlements, with over 500 dwellings and a number of tourist facilities. The Mossman-Daintree Road runs through the township. The closest road running parallel to the beach is the Old Wonga Esplanade. The densely vegetated area in between includes a camping ground.

Coastal hazards exposure and implications

A well vegetated dune system currently provides some protection from coastal hazards to the residential zones.

At the present day, a limited number of assets currently have medium to high risk of open coast erosion and tidal area inundation, including beach and foreshore, water reticulation assets, and some dwellings. By 2060 there is an increase in assets at risk, and a substantial increase between 2060 and 2100.

The adaptation response for Wonga Beach is to Mitigate coastal hazards through to 2100 (**Table 19**).

Figure 12. Locality map – Wonga Beach.[14]

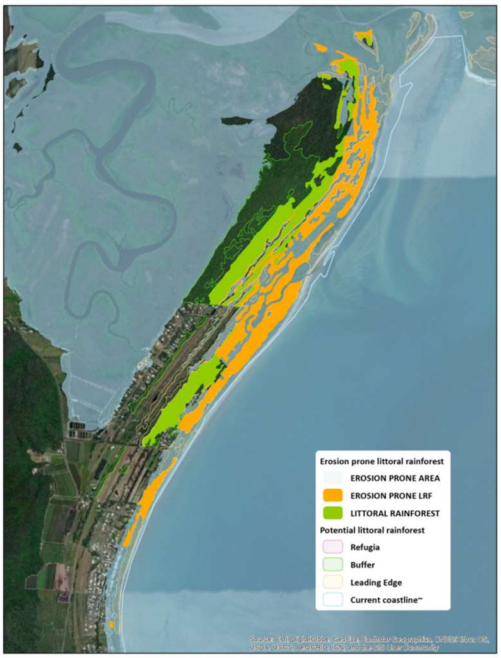
Dune protection and maintenance forms the first line of defence to the sea for the local community. The strategy outlines immediate steps over the current decade to consolidate dune vegetation communities.

The planning scheme is called into preparing for coastal hazards through consideration of zoning, development approvals and conditions. The planning scheme will also need to facilitate a transition response which will be enacted in response to triggers on the ground.

Littoral rainforest, along with other coastal vegetation such as mangroves provide the essential ecosystem service of coastal protection.

The adjoining figure outlines the current (solid) and future (hatched) distribution of littoral rainforest. Of the current littoral rainforest vegetation over half (solid orange) occurs within an Erosion Prone Area (DES). The remainder (solid green) is outside those projections. Vegetation communities which are likely to contain littoral rainforests into the future (hatched) were classified by CSIRO into three functional categories of vegetation:

1. **Leading-edge vegetation** (orange) is exposed to inundation frequently; it becomes inundated at 80 cm sea-level rise and at ARIs between 20 and 100 years. Often this vegetation is closest to the foreshore or in depressions behind the foreshore.
2. **Buffering vegetation** (green) is inundated moderately frequently (i.e. in ARIs from 200 to 1000 years). In some areas buffer vegetation occurs behind leading-edge vegetation or other coastal vegetation types (e.g. mangroves); however it may also occur as the first line of vegetation on slightly elevated dunes.
3. **Refugial areas** (purple) of LRCVT are found in areas that are not frequently inundated and have the capacity to persist in the long-term, even under fairly extreme storm tide and sea level rise conditions.



The recommended management actions from Murphy et al. 2016 (The role of LRCVT in the landscape and relevant management actions) provides guidance for recovery actions for the ecological community in the National Recovery Plan; they are also able to be integrated into a 'green infrastructure' or nature based solutions approach to coastal hazard adaptation.

For more information visit Council's Resilient Coast website (link)

4.2 Littoral vegetation in Storm Surge mitigation

When Cyclone Yasi impacted the Cassowary Coast Region on 3 February 2011 as a Category 5 severe tropical cyclone it had substantial impacts on the coastal topography of the region.

There is a substantial body of literature highlighting the value of natural coastal vegetation in disaster risk reduction, particularly in wave attenuation and mitigating the effects of cyclonic winds, storm-surge and inundation associated with severe storms. It is recognised that Littoral rainforest (LRCVT) along the Cassowary Coast assisted in "breaking the surge" caused by the impact of the tropical storm.

The Cassowary Coast Regional Council recognised the benefits of LRCVT and the role it plays in extreme weather events and replanted substantial areas of coastal vegetation as part of its foreshore rehabilitation program.

The residents, having had their properties significantly damaged by vegetation during the event, were not supportive of the revegetation efforts. Vegetation was seen to be a greater risk than benefit and had negative impacts on household insurance prices.

The Cassowary Coast Regional Council replanted the vegetation several times, but residents came back regularly at night and damaged root systems to prevent the vegetation becoming established.

Observations:

- There is a lack of community education in the value of LRCVT in responding to extreme weather events and sea level rise.
- In the property market there is still a greater value placed on a "view" than coastal hazard protection.

Opportunities (Extract from Recovery Plan):

Habitat clearance is a major threatening process to Littoral Rainforest. Due to the distribution of the ecological community along the east coast of Australia, often in proximity to urban development and agriculture, remnant Littoral Rainforest could be adversely affected by habitat degradation arising from anthropogenic activities.

As habitat critical to the survival of the ecological community is identified as all remaining sites meeting the criteria for the listed community, as well as derived native vegetation structures that adjoin, buffer or connect high integrity remnants, there is potential for developments to be restricted under the EPBC Act assessment and approval process:

- Any measures to assist recovery of Littoral Rainforest that involve restrictions on the use of coastal areas **may result in economic impacts** to affected industries.
- Conversely, habitat improvement of Littoral Rainforest from increased protection may address community concerns and **may be economically and socially advantageous**.

Increased public awareness of Littoral Rainforest and associated species may bring social and economic advantages to local communities through tourism and natural disaster resilience.

Local communities, including Traditional Owners, may benefit from involvement in recovery actions.

4.3 Littoral Rainforest – Fine Scale Mapping Case Study: Island Arks Project (Terrain NRM - National Landcare Program)

FIELD BASED SURVEY AND FINE SCALE MAPPING OF LITTORAL RAINFOREST.

Littoral rainforest classification

Littoral rainforest descriptions in Queensland (and the national listing advice) have previously been described via Regional Ecosystem types which equate wholly to the vegetation community. Field experience in managing the vegetation community identified shortcomings in the approach which in effect meant that within the Wet Tropics region littoral rainforest vegetation was frequently unmapped or misidentified as other vegetation communities. Work undertaken in a pilot study (Metcalf et al. 2011) and a subsequent regionwide analysis (Murphy et al. 2016) defined more comprehensive definition of littoral rainforest for coastal region spanning from Cooktown to Townsville. These guidelines are referenced in *National Recovery Plan for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia Ecological Community* Commonwealth of Australia 2019. The littoral rainforest descriptions in this report are based on the updated methods and definitions.

Field work undertaken as part of the Island Arks Project (Terrain NRM - National Landcare Program) investigated the effectiveness of fine-scale mapping approaches on two local government managed reserves within the Great Barrier Reef Marine Park; Garden Island, managed by Cassowary Coast Regional Council; and Pelorus Island, managed by Hinchinbrook Shire Council.

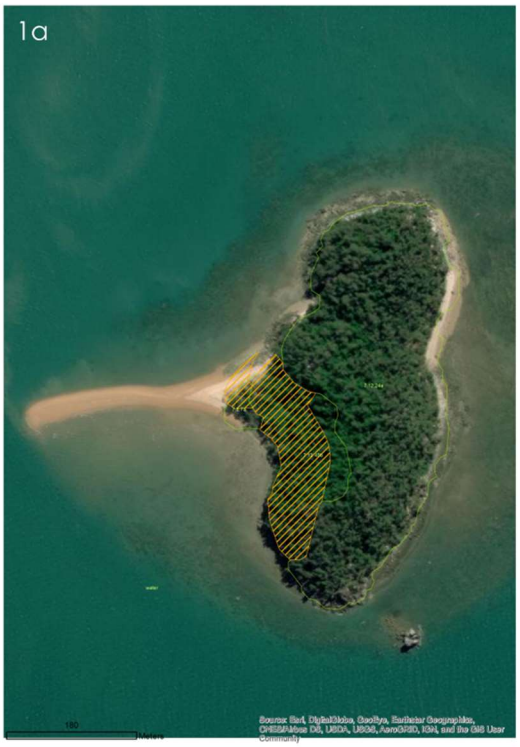
Prior to the field work commissioned for this report no vegetation on Garden Island was described as littoral rainforest community, meaning that no Regional Ecosystems (RE) mapped on the Island were of an RE which 'equated wholly' to littoral rainforest. The mapping analysis by Murphy et al. 2016, identified an area potentially sustaining littoral rainforest on the southern side of the island (Figure 1a). For Pelorus Island 3.4 Ha (8 patches) of Regional Ecosystems which 'equate wholly' were mapped as per the listing advice (Figure 2a); no areas were identified as potential littoral rainforest by (Murphy et al. 2016)

Survey method

The island was traversed on foot and all discreet littoral rainforest areas were delineated and described. In addition, other major vegetation types were delineated. Fire management recommendations were given for each community. For Pelorus Island the northern, western and southern aspects of the island were surveyed on foot.

Survey results

Field work conducted for this report surveyed and described finer scale vegetation transitions and assemblages across the islands focusing on littoral rainforest vegetation.
The vegetation was redescribed as three littoral rainforest vegetation communities and one associated vegetation community.



Garden Island - potential littoral rainforest

Murphy H T, Ford A, Graham E, Metcalfe D (2016)
Mapping to underpin management of tropical littoral rainforest. CSIRO, Cairns.

Garden Island - mapped littoral rainforest

Murphy H T, Ford A, Graham E, Metcalfe D (2016)
Mapping to underpin management of tropical littoral rainforest. CSIRO, Cairns.

Pelorus Island -equates wholly littoral rainforest

Murphy H T, Ford A, Graham E, Metcalfe D (2016)
Mapping to underpin management of tropical littoral rainforest. CSIRO, Cairns.

Pelorus Island -mapped littoral rainforest

Murphy H T, Ford A, Graham E, Metcalfe D (2016)
Mapping to underpin management of tropical littoral rainforest. CSIRO, Cairns.

Littoral rainforest identified by field-based survey and fine scale mapping

Survey found that littoral rainforest occurs on all aspects of Garden Island with more developed forest on the deeper sands of the southern side. Three separate littoral rainforest communities were delineated and described occupying a range of marine derived substrates ranging from sheltered sand deposits to exposed coral rubble and coastal boulders (Figure 1b). On the sand spit a single stand (.07 Ha) of *Casuarina equisetifolia*, regional ecosystem 7.2.7a, forms a littoral rainforest associated community.

The western, southern and northern margin of Pelorus Island was traversed on foot and all discreet littoral rainforest areas were delineated and described. For the remaining eastern margin, littoral rainforest was delineated from current and historic images. No other major vegetation types were delineated. Four littoral rainforest communities were described. Fire management recommendations are given for each community.

Field survey mapped and ground truthed 6.7 ha of littoral rainforest in 24 patches and additional desktop mapping based on imagery; field notes and observations mapped 5.3 ha in 26 patches (Figure 2b). The survey also mapped (by the same method) two *Casuarina equisetifolia* communities which from an important buffer or transitional vegetation type for littoral rainforest. In total 2.3 Ha of *C. equisetifolia* were ground truthed and 2.2 Ha were mapped from aerial imagery.

Table 1. increase in mapped littoral rainforest ecological community & associated Casuarina *equisetifolia* vegetation from field based & fine scale mapping.

	Mapped wholly	Mapped potential	Mapped/ ground truthed	Mapped remotely	Total	*Casuraina equisetifolia*
Pelorus	3.4	0	6.7	5.3	12	4.5
Garden	0	1.8	1.9	0	1.9	0.07

Figure 1 Figures 1b and 2b demonstrate the increase in littoral rainforest ecological community mapped when a ground-based survey is conducted to delineate it from other vegetation types.

4.4 Incentives – The Heritage Example

The Queensland Government has developed the Queensland Heritage Strategy that defines how Queensland through the leadership of the government and the Queensland Heritage Council will manage and coordinate heritage issues that are central to community cohesion, ethos and identity. The Strategy is built around three key directions:

- Leadership: strengthen and streamline heritage protection
- Investing in Queensland's heritage: a collaborative effort
- Our state—Our heritage: connecting Queenslanders with their heritage

The guiding principles of the Queensland Heritage Strategy are to:

• help Queenslanders understand and value the environmental, social and economic benefits of our shared ***cultural capital***.	***'Cultural capital'*** *is an asset that gives rise to cultural value, adding to the economic value it might possess.* *Queensland's rich cultural capital is embodied in the buildings, landscapes and stories we have inherited from our forebears which we have a duty to hand on to future generations.*
• integrate ***sustainability*** and adaptive ***reuse*** of heritage into the state's economy ensuring development maintains ***cultural diversity***.	***'Sustainability'*** *involves integrating economic, environmental and social concerns in long-term development strategies.* ***'Cultural diversity'*** *includes equipment, architecture, customs, environments and memorials representing diverse cultural perspectives and demonstrating how different groups of people lived.* ***'Adaptive reuse'*** *means encouraging viable use of a heritage place that does not compromise heritage values.*
• give Queenslanders certainty about how their ***living heritage*** is identified and planned for.	***'Living heritage'*** *is about connecting people, places and history. It includes the representations, expressions, knowledge, stories and skills that communities and individuals recognize as part of their cultural heritage.*

The Strategies and Priority Actions are easily translatable to the preservation of the natural environment. Critically, the Strategy strives to create an economic value attached to Heritage and promotes investment into Queensland's Heritage. The Strategy:

- Addresses the key themes- Leadership, investment, and connecting people with their Heritage.
- Tells a story of why preservation is important and provides a roadmap to how it will deliver outcomes.
- Places an economic value on the preservation of heritage and gives property owners the comfort that the "burden" of maintaining heritage places does not fall to them alone.

Opportunities – The Strategy:

- Is translatable to the preservation of ecological communities and provides a strong roadmap for its delivery.
- Provides opportunities for private investment into preservation which could be particularly attractive to companies or managed funds looking to improve their "green/sustainability" credentials.
- Provides future certainty to land owners regarding the value of their asset and how it will be managed.

4.5 Kuranda Conservation Community Nursery Inc (KCons)

Kuranda Conservation (KCons) is an entirely volunteer organization whose objectives are to assist the community to use land in an ecologically sustainable way and to enhance natural biodiversity through education and demonstration.

The Group's efforts to promote awareness of the environment required for the preservation of cassowaries including habitat protection and enhancement, and domestic and feral animal control has contributed to a very strong local community understanding of the Cassowary Habitat. The Group has successfully lobbied Mareeba Shire Council for Planning Scheme Amendment which made subdivision in the Kuranda Area, impact assessable (requiring public notification). This one small change to the planning scheme has substantially reduced the number of subdivision applications in the locality, as landowners and Council have a clear understanding of the *community's expectations* for the area.

KCons is a practical demonstration of non-statutory contributions to species protection, and they:

- participate in research to better understand the needs of the cassowary and the other fauna and flora that the cassowary both relies on, and that also flourishes with a healthy cassowary population.
- have their own Nursery to assists residents in making good decisions about what they grow on their properties, what pets they keep
- educate residents how they behave on the roads and bush tracks
- teach residents how they design their towns and houses by measuring the impact their actions have on cassowary habitat in this part of the world.
- raise local community, national and international awareness of the threats to the Cassowary population.

KCons is partners with the Wet Tropics Management Authority and Terrain NRM. They network with regional educational and research entities and individuals and other like-minded community groups.

The community native nursery has around 6000 local species, provides plants for ongoing projects and activities which include revegetation/improvement projects from very small to very large. The plants are for sale to the wider community.

Observations:

- A community's level of education about an ecological community is essential to the success of any changes to a Local Government's approach to perseveration and recovery.
- Preservation and recovery method work best when they are "owned" by the whole Community.

Opportunities:

Developing relationships with Community Advocates is essential to the success of this project. Creating supporting programs and projects that enable community members to be part of a preservation and recovery process is vital.

Education is critical. An education campaign that demonstrates both the economic value and the environmental value of a threatened species is likely to be more effective than an environmental campaign in isolation.

4.6 Mission Beach Habitat Network Action Plan

The Action Plan is a living web-based document (www.terrain.org.au/missionbeach). The project commenced in 2009. This is the first and only local area plan as recommended in the cassowary recovery plan.

The Mission Beach Habitat Network Action Plan coordinates community, industry and government action to protect a network of habitat that is ecologically viable and protects community identified values related to lifestyle, culture and the natural environment.

A Community Vision for the future of Mission Beach, developed through collaborative efforts, lies at the heart of the Action Plan. The Plan is underpinned by rigorous biodiversity and planning system science, developed through co-research partnerships supported by the Australian Government's Marine and Tropical Science Research Facility.

The Action Plan identifies the need to protect, connect and reduce critical threats in all remaining cassowary habitat at Mission Beach through a variety of measures, and to restore degraded habitat in key sites. Of note:

- 40% of habitat occurs on land with relatively low levels of protection and disrupted connectivity.
- Protection of cassowary habitat ensures protection of other significant biodiversity, and of aesthetic/lifestyle and Djiru cultural values of great importance to many people.
- Mission Beach has national and international biodiversity significance in its own right and these values are urgently threatened by pressures of human population growth and coastal development.
- Local communities have a strong history of and ongoing motivation to act.
- The Action Plan will build ecological resilience in a vital rainforest corridor and key site for climate change response in the wet tropics bioregion.

Central to the Plan are community partnerships to implement projects within each of 8 strategies:

1. Habitat Protection and Restoration
2. Traffic Management
3. Exotic Species Management
4. Agricultural Management
5. Management by Traditional Owners
6. Residential and Infrastructure Management
7. Tourism Management
8. Building Community Strength.

The Action Plan provides a vital opportunity for strong innovative partnerships between community, industry and government to achieve this important goal. The question remains- 12 years later, what worked, what could be improved, and what did we learn?

4.7 Tablelands Habitat Linkages

For more information on this project refer to Trees for the Evelyn and Atherton Tablelands Inc Habitat Linkages Project (www.treat.net.au/projects/habitatlinkage_sat_grn.html).

The Habitat Linkages Project was undertaken circa 2006-2009.

Land managers require a range of practical tools to assist with the myriad of problems associated with forest fragmentation. Restoring ecological connectivity through habitat linkages is one tool. Adaptive management projects such as the Habitat Linkages Project provide ideal opportunities for practitioners, researchers and managers to learn from the ecological response to restoration, and their replication will strengthen our conceptual understanding.

This overarching project involved the re-establishment of three habitat linkages in the wet tropics using an ecological restoration approach. The habitat linkages – Lakes Habitat Linkage, Donaghy's Habitat Linkage and Peterson Creek Habitat Linkage were conceived as a potential response to issues of land degradation, localised species extinctions and patch isolation.

The Habitat Linkage projects are jointly undertaken by Trees for the Evelyn and Atherton Tablelands Inc (TREAT); Qld Parks and Wildlife – Restoration Services; Tablelands Community Revegetation Unit; North Johnstone and Lake Eacham Landcare Association; Department of Primary Industries and Forestry; over 25 Land holders and monitoring was undertaken by James Cook University, UCLA Berkeley, University of Qld, and Griffith University. TREAT provided over 3000 trees plus volunteers and equipment to undertake the work.

A feature of these projects was the **monitoring effort**, which was informed by extensive base-line sampling prior to restoration works, to provide rigorous data on re-colonisation by at least a subset of life forms.

The **community engagement process** resulted in the mobilisation of a significant volunteer effort, supported by government agencies and research organisations. The links established between researchers and community has increased understanding of ecological connectivity, and in particular the role of private lands in increasing landscape permeability. The numbers of landholders engaged in the process has increased in line with progressive catchment rehabilitation. The input of key landholders is crucial to successful outcomes. This input varies across landholders but includes:

- provision of planting sites for restoration
- showing leadership within the local farming community
- assistance with on-ground works.

Lessons Learned

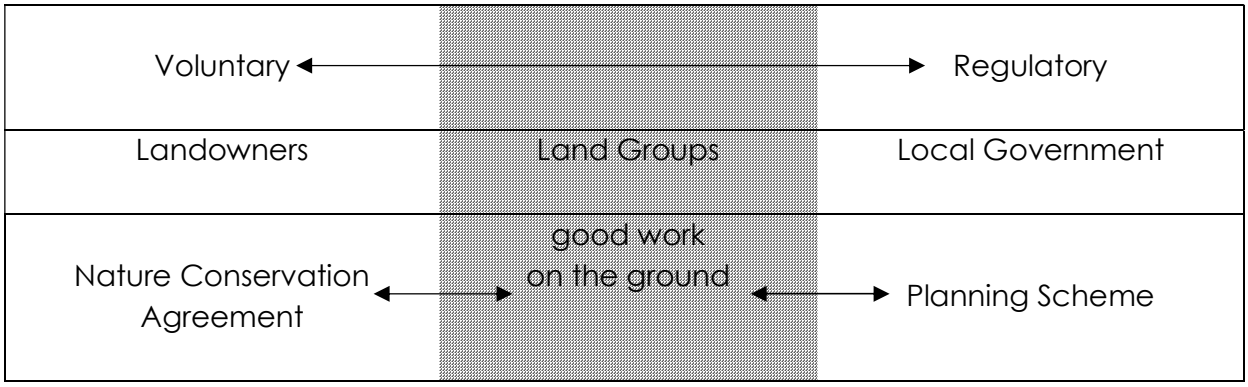
- Restored habitat linkages can facilitate the movement of obligate rainforest species within 3 years.
- At least 3 years of regular maintenance of plantings is required to achieve successful establishment.
- Structural complexity of vegetation comes from planting a range of species / life forms and this makes restored areas more attractive to rainforest wildlife.
- Colonisation has been slowest at Peterson Creek which is the longest linkage and is surrounded by more intensive land use.
- The placement of habitat furniture (logs, rock piles) prior to planting adds structural complexity and encourages more rapid and diverse faunal colonisation. These habitat features are no longer present in cleared agricultural landscapes but are essential for vertebrate and invertebrate species.

- Restoration plant stock must be woody, weed and pathogen free and hardened to site conditions. The quality of plants has a major influence on plant survival and growth.
- Support from all stakeholders and the community is crucial to project success. Proponents must be prepared to commit to long term goals which can be evaluated and work co-operatively to achieve goals which are realistic and based on a genuine appreciation of community input and aspiration.
- Monitoring a range of variables provides the best measures of success. Engaging researchers from various disciplines adds rigour and insight to projects where it is important to understand all the ecological factors influencing the outcome at a particular site.
- Monitoring faunal movement and colonisation by genetic means can furnish more reliable data than that derived from field identification and mark recapture techniques.
- Monitoring vegetation colonisation provides an insight into the types of seed dispersers that may visit a site and the subsequent rate and nature of plant colonisation and community succession.
- Long term protection by covenant is an appropriate way to secure linkage investments. The Donaghy's Habitat Linkage is protected by a Nature Refuge covenant and for NRM projects that represent significant community and financial investments, this form of protection is warranted. Such agreements may not be suitable for all restoration projects and other options should be explored.

5.0 Current Tools and Opportunities Assessment

5.1 Context

The current tools available in Local Government's repertoire of response mechanisms range from voluntary agreements through to regulatory which include statutory and mapping responses.



A workshop was held with the FNQROC Regional Planner's Forum (16 April 2021), a full list of attendees and their organisation is provided in **Appendix 1** of this report.

From a land use planning and assessment perspective:

- CASSOWARY HABITAT is found across the urban footprint and rural and agricultural land
- MABI forest is on the best agricultural land
- LITTORAL forest is also found on the highly valued coastal land.

The overarching position of the Planner's Forum is that the importance of habitat protection is known and appreciated by development assessment planners, consultant planners, Councils and applicants. However, vegetation protection and assessment is a continual frustration for development assessment planners, consultant planners, Councils and applicants, as:

- it is costly and time consuming and often puts applicants, Council planners and State assessment teams in an antagonistic position, despite the common goal of good vegetation outcomes.
- it is based on poor mapping and continued development pressures combined with difficult policy that does not have any flexibility and does relate to local circumstances.
- while the protection of Environmental values (e.g. through covenants and other forms of vegetation protection) are generally supported, it is the process and time frame (including EPBC) that is the problem for Industry and Local Governments.
- it is easy to negotiate the vegetation values as part of the development assessment process however the system does not adequately allow for this.
- the biggest problems arise for State and Council, where the urban land uses (zones) interface with the vegetation.

Significantly, the Planners are the frontline of planning system that manages protection of vegetation and there is considerable frustration at the existing system and pushback against further statuary vegetation tools. That the current system has alienated the Planning industry – the assessment managers who are typically champions for good outcomes, should be heeded as a strong indication of the extent to which the current system does not deliver appropriate outcomes.

When complying with the processes and policy becomes too lengthy, expensive and uncertain, people start to take things in their own hands and ignore the rules. The old adage of asking for forgiveness not permission.

It is important to note that the scope of this review is not targeted at broadscale vegetation mapping. In fact, what appears to be a negative response to Vegetation Mapping, presents a unique opportunity to improve Local Government response to the targeted ecological species that are listed as endangered or critically endangered. A greater understanding of the attributes of these species and the opportunities for increased habitat protection creates a platform for implementing localised and species specific corporate, planning, and natural asset management responses in each FNQROC Local Government area.

There are opportunities to address ecological resilience, habitat protection and vegetation management across the different tools and platforms.

5.2 Mapping issues and opportunities

The Planning scheme is the point of access to mapping at a property level. The Council is required to include State mapping values in the Planning Scheme, yet Council is not the owner of, nor it is the generator of the mapping data. There are known gaps in the mapping (Welbergen, & Goosem, 2011 Gap analysis of environmental research needs in the Australian Wet Tropics) and deficiencies in State Mapping and Planning Scheme Overlay maps can to an extent be attributed to the level of detail available and the source of the content. There is an imperative on the State Government and Research Agencies to undertake research and provide data that picks up the subtle interface (ecotones) between the Wet Tropics rainforest and drier woodland ecosystems.

While broad scale mapping is appropriate most of the time, it is not effective to address the management of the approximately 30% of ecosystems that are not mapped as protected because of fragmentation and habitat being found in numerous small and dispersed patches, often at the interface of urban or agricultural development.

The **suggested improvements** to vegetation mapping include targeted fine scale mapping:

a. Identify the Cassowary habitat, Mabi Forest and Littoral Rainforest that is open to further development or fragmentation by tenure type, local government area and size. This data is presented in the **Mapping** section of this Report in each **Species Overview**.
b. Work with local government planners to identify the urban area overlaps with vegetation mapping and to determine approaches to refinement. It is recommended that this approach occur in collaboration with established and recognised Recovery Teams to build a consensus on mapping.
c. Improve the quality of the mapping and identify mapped vegetation, particularly in urban areas as mapping that is obviously incorrect:
    - creates antagonism and mistrust in vegetation protection
    - unnecessarily triggers referral or higher levels of assessment.

Improving the quality of the vegetation mapping builds trust in the mapping and results in better outcomes.

5.3 Planning schemes and zones issues and opportunities

The Planning Scheme may help inform a landowner or person wishing to undertake development as to where development should or should not occur. However, the Scheme does not actually have any influence over outcomes on land until a development application is lodged.

Legislators, administrators and environmental groups do not always appreciate the consequences of the layers of vegetation legislation. Adding another layer or changing the way policy is used can have, and often does have unintended consequences:

- There is a genuine fear amongst landowners if your land becomes 'zoned' environmental then you lose your right to do anything at all – from hiking to housing. The reality is that the right to develop may remain however the process is unnecessarily complicated, expensive and lengthy. Conversely, other landholders are seeking voluntary agreements or lasting protection for their vegetated freehold land to ensure vegetation is maintained on site following bequeathment or sale and this option is not often available to them.
- Use of conservation zone and Environmental Management zones in the scheme should be more judiciously applied. This is equally so for land zoned for Urban purposes.

The **suggested improvements and opportunities:**

- Build incentives into codes. e.g. if you conserve land you can get density bonus, parking reduction, other building rewards. This is similar to how Douglas Shire Council rewards tropical design with plot ratio bonuses, and how Heritage protection is incentivised in some situations.
- Incorporate facilitative provisions for revegetation and offset initiatives in rural locations.
- Establish ecosystem services to better recognise the environmental value proposition of the land.
- Back-zoning of some Environmental and Conservation zoned lands to better suited zones.

- Review and understand Douglas Shire Council Approach to whole of Council review of Vegetation and Heritage proposed changes to include Traditional Owners consultation, education, site specific analysis before you put it in the scheme. An overarching approach going back to the big picture.

The State Government established a suite of zones and then as part of the scheme drafting and review process established a set of parameters for when Council must include land in an 'environmental zone'. The unintended consequences:

- In urban areas there are many examples of where the purpose of the zone does not match – cannot be achieved on the small lot size that is better suited for a low-density residential house.
- The State changes the policy application and process which in turn creates an interface issue e.g. the S22a changed the way the Scheme reads and so does the urban footprint in terms of urban areas that are ˜excluded" from the urban footprint that may not be (and it comes to the changes in how the state applied certain triggers in drafting).

5.4 Landowners and the community issues and opportunities

There is an increasing awareness of the value of maintaining and improving biodiversity and ecological connectivity across the landscape, which in turn also builds social and community connectivity at a range of scales and establishes healthy relationships between diverse community groups.

Increasing the capacity and willingness of landowners and the community to support biodiversity and ecological connectivity can be supported through the use of a range of different conservation tools and activities to establish and maintain healthy relationships with and between diverse community groups. At the same time, vegetation agreements can be like heritage protection agreements. They are not always well received or enforceable / manageable. They can be time consuming and costly and deliver very little in terms of outcomes, there are other tools and opportunities available or that can be developed.

The **suggested opportunities for Local Governments** in working with communities includes:

a. Once identify the Cassowary habitat, Mabi Forest and Littoral Forest that is open to further development or fragmentation, have the conversation with the landowners:
   - inform them of the value of the land and the value of their role in managing the land
   - provide them with a suite of tools to support them in managing the land e.g. rate reductions, free trees, opportunities to work with landcare groups, buy back options, carbon credits, ecosystem services
   - ask landowners about their intentions for the land, identify the best way to work directly with the landowner to get a targeted individual solution.

b. The State and Councils have developed robust infrastructure charges policy. At different times the infrastructure policy acts as a lever to achieve certain outcomes e.g. waivers of the charges for tourist accommodation to boost tourism in the community. There is an opportunity to but have develop a credit and incentives policy to allow people to trade their environmental land values e.g. Carbon Trading, biodiversity credits, stewardship incentives and other ideas. Voluntary agreements do not always work so considered and well-implemented incentives may offer a reasonable alternative).

5.5 Ecosystem services

In the consultation sessions with stakeholders, the question was asked –

Our natural environment is a big economic driver for our region. Is there anything we can do here that is not being done... or being done well somewhere else?

On the 20th – 21st May 2021 the G7 Climate and Environment Ministers' Meeting issued a Joint communiqué and stated:

> *The COVID-19 crisis has reinforced the importance of science and evidence in government policies and decision-making. Recent assessments by the Intergovernmental Panel on Climate Change (IPCC),* ***the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES),*** *the International Resource Panel (IRP), and the UN Environment Programme (UNEP) have documented that rapid and far-reaching transformations across all sectors of society and the economy are necessary to tackle climate change, environmental degradation and biodiversity loss. Recalling the outcomes of previous G7 meetings on Earth observation systems, we recognise the important role of research and systematic observation to provide information on the state of the planet and support and guide action to address climate change and conserve, protect and restore essential and biodiverse ecosystems. We will ensure our domestic action and international commitments are informed by the best available science and will support others wishing to enhance their evidence-based policy-making processes by sharing our experiences and best practices…*
>
> *…We recognise deforestation and forest degradation as a significant cause of climate change. We commit to urgent action to conserve, protect and restore natural ecosystems including forests and habitat connectivity and promote sustainable forest management. We also commit to implement decarbonisation pathways that do not cause further biodiversity loss or deforestation…*
>
> *… We recognise the crucial role of Nature-based Solutions in delivering significant multiple benefits for climate mitigation and adaptation, biodiversity, and people and thereby contributing to the achievement of various Sustainable Development Goals (SDGs). Such benefits include, among others, improving air quality, water quality and availability, soil health, storm and flood protection, disaster risk reduction, and alleviating and preventing land degradation. Nature-based Solutions can also provide sustainable livelihoods through protecting and supporting a wide range of ecosystem services on which the world's most vulnerable and poorest people disproportionately rely…*
>
> *…We will strive to ensure the effective and equitable management of protected areas and OECMs, and strive to improve their ecological connectivity, with a focus on areas that deliver the greatest benefits for global biodiversity, ecosystem services and climate protection. We underline the importance of a strong accountability framework that strengthens implementation and increases transparency of our actions to meet these targets, and will actively support the development of robust implementation, monitoring and review frameworks.*

We need to adopt an approach that is more nimble and responsive than lines on maps and development codes. Whilst there is a place for addressing the concept in a Local Government Planning Scheme there is likely to be greater benefits in establishing Ecosystem Services or an Ecosystem Economy. It is considered appropriate that the Local Government Planning Scheme incorporate strategic statements to

support Local Government stewardship and set the framework for Local Government to explore other voluntary arrangements.

The OECD (2019), Biodiversity: Finance and the Economic and Business Case for Action, report prepared for the G7 Environment Ministers' Meeting, 5-6 May 2019 identifies in detail:

1. The socio-economic case for action
2. The business case for action
3. Opportunities for cost-effective restoration
4. Data and indicator gaps on pressures and responses relevant to biodiversity
5. Global biodiversity finance opportunities
6. Opportunities to scale up action for biodiversity

This concept needs further development however some **opportunities include:**

- Develop a strategy similar to the State Heritage Strategy which incentives land restoration and recognises the importance of private landowners commitment to habitat protection strategies.
- Environmental Law Centre has developed options for Ecosystems Services and Biodiversity Credits. Explore opportunities for council support and implement these new strategies.
- Consider consultation with the Cassowary Credits project which has completed proof of concept design and has now progressed to market testing.
- Linking State Government Funding to revegetation Capital Projects.
- Flip the conversation from constraints to opportunities.
- Keep the dollars local – link revegetation outcomes to increase local jobs
- Do site specific mapping of key risk sites for the landowners i.e. small fragments on freehold or adjoining freehold that are most vulnerable to planning/land use related matters. (This is equally a planning response).

It is acknowledged that substantial research has been developed and implemented in this sector and this Report has not explored this in detail. It is simply acknowledging that this presents an opportunity for the Far North Queensland region and there is a role for Local Government to play in its establishment and growth.

5.6 Coastal Hazards Adaptation Strategy Opportunities

Littoral rainforest is a critically endangered ecological community that is afforded the least protection under current mapping. The key historic and ongoing threat to Littoral Rainforest is coastal development and, given its distribution, Littoral Rainforest is also highly susceptible to the interacting effects of climate change and sea level rise, both of which exacerbate the existing threats of habitat fragmentation.

All FNQROC Coastal Councils are currently developing their Coastal Hazards Adaptation Strategy (CHAS). The CHAS assesses current and future hazards and addresses the impacts of a changing climate on coastal erosion, sea level rise and storm tide inundation, from now until 2100.

The CHAS considered community values and hazard mapping and identifies and prioritises public assets at risk and proposed adaptation options.

The CHAS represents a unique opportunity to recognise the role natural responses, or "green infrastructure" plays in coastal protection from the impacts of climate change. On balance natural responses such as revegetation, are more sustainable and offer long term environmental and economic benefits.

An option to consider is to mandate the prioritisation of “green infrastructure” solutions over hard infrastructure solutions in CHAS and supporting Capital Budgets.

Additionally, or alternatively, an option is to recognise endangered habitats for the public benefit they offer and consider them critical assets that should be afforded protection by the CHAS. This could be incorporated in the first annual review of the CHAS.

The widespread nature of the Littoral rainforest ecosystem provides opportunities to share management experiences and learn from practices elsewhere.

6.0 Conclusions and Recommendations

6.1 Conclusions

PROJECT FINDINGS

1. **Tenure:** The identified species and ecological communities are found on freehold private tenure and reserves. The mapping review suggests significant in scope land holdings by Local and State Government (approximately 70%). This lends itself to opportunities for improved habitat protection through natural areas management initiatives. Land in private tenure is at the margins of the habitat and provides an opportunity to improve connectivity between habitat locations and an opportunity to prevent further encroachment of development or agricultural practices into the targeted habitats.

2. **Mapping:** Broad Scale Mapping is NOT the answer. There is a growing frustration with inaccurate mapping and Assessment Managers are placing less weight on the protection afforded by mapping. Fine scale mapping is an option that should be explored based on identified priority areas. Fine scale mapping should be limited to areas within regions where it is necessary and will have a demonstrated net positive effect on habitat protection.

3. **Not "One Size Fits All":** Each habitat has a different risk and threat profile, and each Local Government area has a different appetite and resource allocation for natural areas management initiatives. The most appropriate solution for each local government should be tailored based on the location and species of habitat and the policy direction of the current Council. There is an opportunity in all Local Government areas to acknowledge the importance of habitat protection and reduction in fragmentation in the Strategic and purpose statements of a Planning Scheme.

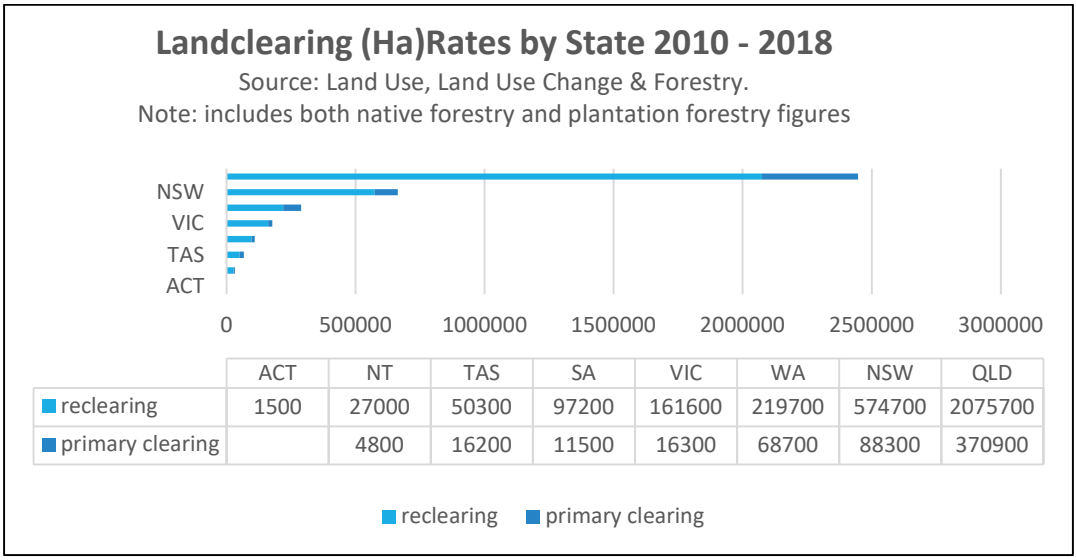
4. **Community Specific Solutions:** The solution for each ecological community will be different based on the cause of loss of habitat/fragmentation. As such, a detailed analysis of each species in provided in this report to assist in informing Local Government officers as to how best address the risks and threats within their planning scheme and planning scheme policies.

5. **Natural Areas Management:** Local Governments have a role in practical on the ground solutions. It does appear that Local Governments could do more to acknowledge the importance of the role they plan in Habitat Protection in Corporate and operational plans to ensure adequate project planning and operational budgets.

6. **Traditional Owner Engagement:** Traditional Owners have a deep relationship with the land and a culture that is symbiotic with protection of the identified habitats. Story telling has the opportunity to greatly improve education and community awareness and traditional land management practices have an important role in ongoing habitat protection and restoration. The Local Government areas that genuinely engage with Traditional Owner groups and actively partner with indigenous ranger programs appear to have a deeper understanding of the value of the habitat to the region.

7. **Education:** Educating the community and Councillors is central to improved habitat protection outcomes and understanding the value of these ecosystems to Far North Queensland. This Review focused on specific vegetation types for identified threatened habitats. These habitats have both an

ecological and economic benefit to the region. This link may be critical to aligning economic and environmental priorities and go a long way to reducing the historical conflict between economic and environmental outcomes.



	ACT	NT	TAS	SA	VIC	WA	NSW	QLD
reclearing	1500	27000	50300	97200	161600	219700	574700	2075700
primary clearing		4800	16200	11500	16300	68700	88300	370900

Figure 20: Land clearing (Ha) rates by State 2010 – 2018

8. **Trust:** There is an inherent distrust in the vegetation protection framework from the general community, agricultural industry, and development industry. Equally, conservation groups often form the view that "lip-service" is paid to conservation provisions and that they are often overlooked for the economic benefits associated with farming and development. This is understandable given the rates of primary clearing and re-clearing in Queensland compared to the balance of the States and Territories. There is a challenge in balancing the expectation of community and environmental groups with the expectations of industry sectors.

6.2 Recommendations

This report identifies a number of opportunities for FNQROC Councils to improve or increase their involvement in habitat protection and restoration of the targeted ecological habitats. It is acknowledged that Local Government delivers a vast suite of community services with finite resources and budgets. Accordingly, some of the initiatives proposed are designed to be a low cost, simple and efficient approach to improved habitat protection. Other initiatives may take some time to implement and require external funding applications to enable further development. **Table 5** provides a summary of the recommendations and an indicative cost.

Table 5: Summary of recommendations and cost

Initiative	Comment	Timeframe	Stakeholders	Cost
Planning Scheme	The Planning Scheme reflects the existing and aspirational values of the community, sets the strategic direction for Council and regulates development.	Next Major Amendment	Planning Officers	$ - Low

Initiative	Comment	Timeframe	Stakeholders	Cost
	The Scheme sets up the 'go' and 'no-go' areas for different land uses. In the case of vegetation it can set the policy direction for values such as biodiversity and connectivity and can identify: a. existing vegetation for protection b. appropriate development and appropriate assessment provisions for development c. provide mechanisms for enforcement in the event of clearing d. strategic (future) vegetation corridors, as a trigger for identifying areas for possible revegetation. A guideline to implementation is provided at **Appendix 2.**			
Localised Mapping	Where mapping gaps exist in current vegetation protection for the targeted ecological habitats it is recommended that LGA specific mapping be undertaken. This mapping can be incorporated into Planning Scheme Biodiversity and Vegetation Overlay mapping and also submitted to the State and Federal Government agencies to update MSES and MNES mapping. More detail is provided in **Appendix 2.**	Short Term Prior to next Major Amendment	Planning Officers FNQROC Terrain NRM Traditional Owners	$$ - Medium
Corporate Plan	It is critical that Councils acknowledge the importance of the identified endangered habitats (as applicable to each LGA) in the Corporate Plan Framework. This provides an ongoing commitment to habitat protection and forms the basis for establishing operational plans and budgets to support the implementation of specific strategies. A guideline to implementation is provided at **Appendix 3.**	Immediate	ELT Councillors	$ - Low

Initiative	Comment	Timeframe	Stakeholders	Cost
Engagement with Traditional Owner Groups	A consistent theme has been identified following consultation with Traditional Owners (TO) in the FNQROC region, that an opportunity exists to improve engagement by Local Government with TOs in the development and implementation of Natural Areas Management Plans and Biodiversity Plans. This presents an opportunity to understand historical and cultural approaches to habitat protection and to partner in education and resourcing opportunities to undertake projects on behalf of Local Government Natural Areas teams. Importantly, TOs have a unique story attached to the natural environment that should be valued and understood and, where appropriate and in an appropriate manner, shared with the community to assist in education and understanding of the importance of these habitats. A framework for Engaging with Traditional Owner Groups is provided at **Appendix 4.**	Immediate	NAM Officers Traditional Owners Terrain NRM	$ - Low
Ecosystem Services	Prescribing an economic value and return on investment (ROI) to habitat protection and restoration works is not a new concept, however, it is not widely practiced by Local Governments in the context of capital and operational budgets and projects. Developing regional Ecosystem Services would create a regional economy based on habitat protection. This would enable reporting on ecological integrity and habitat connectivity and prescribe an economic benefit to that asset.	Further development required	FNQROC Terrain NRM Economic Development Officers ELT Councillors Traditional Owners	$$ - Medium

Initiative	Comment	Timeframe	Stakeholders	Cost
	It would also facilitate a clear per hectare analysis of habitat protection and restoration. Mabi forest likely to benefit substantially from this approach.			
Coastal Hazards Adaptation Strategy (CHAS)	It is recognised that most coastal Councils are well progressed with the development of their CHAS and that this opportunity may not present itself until the first review period following adoption. There has been varying degrees of inclusion of "soft" infrastructure or natural habitat restoration solutions proposed from Council to Council. The protection and restoration of Littoral Rainforest provides an opportunity for "green infrastructure" to play a role in the ongoing protection of Coastal areas. Conversely, Littoral Rainforest is not recognised as an asset for the purpose of the CHAS. There is a pressing need to assess the existing and future threats to Littoral rainforest from extreme weather events and sea-level rise in order to prioritise areas for management intervention to maximize its capacity to continue providing the many services that benefit communities and biota in this region.	First CHAS Review	Planning Officers Sustainability Officers Infrastructure Officers Traditional Owners	$$ - Medium
Incentive Programs (Local Government)	A number of FNQROC Councils have developed and trialled different landowner incentive programs over the years. Some Councils such as Tablelands Regional Council have Incentive Programs under development. A well-developed incentive programs can deliver significant and measurable habitat restoration and protection outcomes.	Further development required	FNQROC ELT Elected Representatives NAM Officers Finance Officers	$$ - Medium

Initiative	Comment	Timeframe	Stakeholders	Cost
	Careful consideration needs to go into the development of these incentives to ensure they are specific and suitable for each LGA particularly those with a limited rates base.			
Incentive Programs (State)	The QLD State Government has a well-developed QLD Heritage Strategy designed to incentivise and assist with the restoration and maintenance of sites on the QLD Heritage Register. MSES Mapping recognises that the subject habitats are of State Significance. There is an opportunity for the State Government to develop a similar strategy for the preservation and restoration of the State's most endangered habitats.	Further development required	FNQROC	$$ - Medium
Representation on Recovery Teams/Action Groups	The existing Recovery Teams/Action Groups for Mabi, Littoral, and Cassowary Habitat are well established. They are a substantial resource and a wealth of knowledge. There is benefit in having increased representation from Local Government as part of each Action Group.	Immediate	NAM Officers Planning Officers Terrain NRM FNQROC	$ - Low
Education	The capacity and willingness of the community to support biodiversity and ecological connectivity continues to be acknowledged and supported in the use of a range of different conservation tools and approaches and activities to establish and maintain healthy relationships between diverse community groups. Throughout consultation education was raised consistently as a simple yet effective opportunity to improve habitat protection.	Further development required	FNQROC Terrain NRM NAM Officers Marketing & Comms Officers Councillors Traditional Owners	$$ Medium - $$$ High

Initiative	Comment	Timeframe	Stakeholders	Cost
	Education is focus on: ▪ Increasing community awareness ▪ Increasing Councillor awareness ▪ Increasing visitor awareness Education is not just about species identification and status but also about the value the habitat has to the region, the deep connection our first peoples have with the land and providing the tools to make a difference. Local Government successfully run advertising awareness campaigns for Water, Waste and Animal Management. Natural Areas Management presents another opportunity to work with the community to increase awareness.			
Advocacy	It is acknowledged and accepted that Local Governments cannot be all things to all people. The responsibility of improved habitat protection must be shared by the whole community and other levels of Government. Local Government has the opportunity to improve habitat protection and restoration outcomes in their community by successfully advocating for increased funding and services in the sector and by advocating for improved policy positions. Some opportunities include- ▪ Insurance costs ▪ Incentives programs (see above) ▪ Increased/consistent funding for NAM programs (similar to Works for QLD) ▪ Continued development of Indigenous Land and Sea Rangers program ▪ A State-wide ecosystem services sector	Immediate	ELT Councillors Terrain NRM FNQROC	$ - Low

Initiative	Comment	Timeframe	Stakeholders	Cost
	▪ Funding for education programs similar to the Illegal Dumping campaign. ▪ Alignment of MNES & MSES Mapping. ▪ Elevating the region's status to a Federal Priority Area for endangered species. Further detail is provided at **Appendix 5**			

7.0 Reference and Bibliography

Australian Government, 2015. Littoral Rainforest and Coastal Vine Thickets of Eastern Australia Conservation Advice: A statement for the purposes of approved conservation advice (EPBC).

Australian Government, 2019. National Recovery Plan for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia Ecological Community.

Jensen R. and Wannan, B (2008) Mabi Forest - Conservation Assessment of Fragments and Priorities for Action. Environmental Protection Agency, Atherton.

Latch, P. 2007. National recovery plan for the southern cassowary Casuarius casuarius johnsonii . Report to Department of the Environment, Water, Heritage and the Arts, Canberra. Environmental Protection Agency.

Latch, P. 2008. Recovery Plan for Mabi Forest. Report to Department of the Environment, Water, Heritage and the Arts, Canberra. Environmental Protection Agency, Brisbane.

McKenna, S., Jensen, R. and Wannan, B. (2007) Mabi Vegetation Survey. Environmental Protection Agency, Atherton.

Threatened Species Network, 2007. The Australian Threatened Species Fact Sheet, Southern cassowary.

Westcott, D., Metcalfe, S., Jones, D., Bradford, M., McKeown, A and Ford, A. 2014. Estimation of the population and distribution of the southern cassowary, Casuarius casuarius in the Wet Tropics Region of Australia. Report to the National Environmental Research Program, Reef and Rainforest Research Centre Limited, Cairns.

Appendix 1: Attendees at Consultation Session and Feedback Summary

FNQROC Planners Session 16 April 2021

Name	Organisation
Brett Nancarrow	DSDILGP
Joanne Manson	DSDILGP
Byron Jones	Cassowary Coast Regional Council
Daniel Horton	Cassowary Coast Regional Council
Martin Garred	Cairns Regional Council
Liz Taylor	Carpentaria Shire Council
Paul Cohen	Hinchinbrook Shire Council
Debbie Wellington	Cairns Regional Council
Sophie Barrett	Cairns Regional Council
Gerhard Visser	DSDSATSIP
Jenny Elphinstone	Douglas Shire Council
Paul Cohen	Hinchinbrook Shire Council
Crystal Baker	LGAQ
Rebecca Taranto	Douglas Shire Council
Nikki Huddy (Consultant)	Yarrabah Shire Council
Travis Sydes	FNQROC
Darlene Irvine	FNQROC

Note: Refer to Section 5 of this report for feedback

Mabi Recovery Team Atherton 24 May 2021

Name	Organisation
Andrew Millerd	Department of Environment and Science
John Doherty	Department of Environment and Science
Keith Smith	Department of Environment and Science
Matt Wallace	Department of Environment and Science
	Wadjanbarra Tableland Yidinji Aboriginal Corporation
Scott Morrison	Tablelands Regional Council
Kylie Freebody	Tablelands Regional Council
Helen Murphy	CSIRO
Case Schoorl	Barron River Catchment
Rod Marti	Barron River Catchment
Sheryl Fitch	Barron River Catchment
Angus McLeod	Wet Tropics Management Authority
Jenny Maclean	Tolga Bat Hospital
Evizel Seymour	Terrain
Tony O'Malley	Terrain

Observations/Feedback:

- Cultural Importance of the Mabi Habitats along comes through consistently in each consultation session – this is a unique opportunity for Local Governments to link RAP and corporate documents/NAM Plans.
- Volunteer projects are well received by traditional owners / revegetation and grass roots projects seem to make greater difference on the ground.
- Traditional Owners Ranger program to work in with any of the programs (currently trying to establish formal ranger program) and looking at current volunteer programs.
- Incentives:
  - Revegetation and rehabilitation work is focused on gullies and non-productive areas as the usable area (productive) land has a different priority.
  - Local Government Rates model does not incentivise landowners to value revegetation
  - Financial modelling is critical to ensuring an incentive program is practical
  - Cassowary Service Scheme – complimentary external funding/investment. – "Ecosystems Services".
- Improved Education – not just farming community but community in general.
- There is limited research to identify the true impact low intensity uses have on habitats. There is an opportunity for traditional owners to be involved in ongoing monitoring
  - Protect what is left of Tolga scrub.
  - Mazlin Creek- traditional birthing area now full of weeds.
  - Tree Kangaroo is a significant Totem. Mabi Forest draws its name from the local aboriginal name for Lumholtz's Tree-kangaroo (mabi or mapi), one of the most common large mammals in this forest type.
  - White Moth grub was a traditional food supply– still practiced by some families on Country
  - Genuine desire to reconnect with Country and see revegetation projects as part of this program.
  - 8 Clan groups yindinji nation from Cairns-Innisfail up through Tablelands.

Wadjanbarra Tableland Yidinji Aboriginal Corporation (Tableland) & Choorichillum Mabi Action Group 24 May 2021

Name	Organisation
Geoff Onus	
Sandra Rosas	
Lenora Miller	
Lorna Condie	
Evelyn Johnson	
John Doherty	DES/QPWS
Travis Sydes	FNQROC
Tony O'Malley	Terrain NRM
Teesha Wellington	

- Cultural Importance of the Mabi Habitats along comes through consistently in each consultation session – this is a unique opportunity for Local Governments to link RAP and corporate documents/NAM Plans.
- Traditional owners mentioned that access to country was an issue for them at present. They want access to country for bush tucker regeneration projects and reasons. Landowners block roads and access for them to get to their significant sites and places in country. They want more access to get back to managing good outcomes for their bush tucker plants on country.

- QPWS mentioned that there is a new threat to the national park areas on the Tablelands – these are new weeds for the region. QPWS have their own weed management plans in place and are dealing with this new threat. The Mabi Action groups Management plan will be updated – a new plan is being prepared and will be finalised within 12 months.
- Traditional owners would like to provide their ideas, advice and possible TEK ideas for implementation into the new Mabi Conservation Advice / Mabi Plan.

Littoral Recovery Team

- Cultural Importance of the Coastal Habitats along comes through consistently in each consultation session – this is a unique opportunity for Local Governments to link RAP and corporate documents/NAM Plans

Cassowary Recovery Team

Mamu Traditional Owners and Indigenous Organisations 19 & 21 May 2021

Name	Organisation
Michael Morta	Ngadjon-jii traditional owner Terrain
Steve Purcell	Mamu Elder
James Biggs	Director, Conservation & Population Management Zoo and Aquarium Association Australia
James Epong	Mandaburra People
Dennis Ahkee	Jaragun
Blake	Jaragun
Robert Ambrum	Jaragun
Liz Owens	Jaragun
Sandra Rosas	Wadjanbarra Yidinji Corporation (Tablelands)
Lenora Miller	Wadjanbarra Yidinji Corporation (Tablelands)
Lorna Condie	Wadjanbarra Yidinji Corporation (Tablelands)
Evelyn Johnson	Wadjanbarra Yidinji Corporation (Tablelands)

- Cultural Importance of the Mamu Habitats along comes through consistently in each consultation session – this is a unique opportunity for Local Governments to link RAP and corporate documents/NAM Plans
- **Mapping:**
  - Traditional owners have priority places in the landscape and want to be funded to revegetate and manage the rehabilitated areas.
  - The State Government and local government often have different priorities for revegetation and identify different pest species as priority.
  - The State Government has mapped State significance corridors, the failing of this mapping is it is looking to secure the existing vegetation and missing the value of connectivity – which is well understood at the local scale (by Traditional owners).
- **Not one size fits all:**
  - Traditional owners are not afraid to talk to landowners, and often have long histories of working with farmers going back generations.
  - Traditional owners are often more welcome or trusted on land matters than Council or the State.

  - There is strength (for Council and the State) in working with locals who are invested in the area, who have nurseries and grow and plant a mix of species, and have a program of following up with maintenance.
- **Tenure:**
  - Review leases in strategic areas with the view to returning them to land management practices
  - Traditional owners do not own the land that needs to be revegetated and maintained.
  - The majority of traditional owners want joint management agreements in place for current local government management planning to do with weed management, feral animal management, fire management, rubbish management, compliance and enforcement within national park and recreational parks areas.
  - Traditional owners could be involved in joint management through their own ranger groups and units.
  - Traditional owners have good knowledge of their traditional countries and can if they chose implement some of their TEK knowledge and information into current local government management planning for over-all better management outcomes on country and within local government planning scheme areas. This could be set-up with the traditional owners via MOU's, ILUA's, Traditional Use of Marine Resources Agreements, IPA etc. within Aboriginal Lands or within local government areas of management. It could even be set-up for any traditional owner Permitted activity, Licenses or Approvals.
  - Access to traditional country is currently a big problem for the traditional owners, in some instances landowners install fences and gates with locks on Gazetted (public) roads. The traditional owners want to have access to sites and places within their traditional country for hunting or gathering of cultural material items for the making of their traditional hunting weapons, carry bags, water bags, and to pass on their TEK knowledge, stories and information to the next generations. This problem can be addressed by enforcing the law.
  - Access to traditional country is currently is made difficult with new threats such as the Panama TR4 Soil disease and public liability for the traditional owners to go through country to get to where they want to go for cultural reasons. This can be resolved via negotiations with the current landowners who in most instances will know the traditional owner groups because their parents and family members will have worked for them over the years and may not have a problem with them having access into their freehold lands provided they do the right thing by the landowners.
- **Community Specific Solutions:**
  - Traditional owners want to work on their country and to apply the Traditional Ecological Knowledge (TEK) acquired over hundreds or thousands of years through direct contact with the environment.
  - Traditional owners can be seen as the right / rightful people to be working on and restoring country. It is not about who can do it the cheapest, but it is about rights and TEK.
  - While this approach mainly applies to government owned land, Traditional owners work on private land by building relationships with landowners, as they are locals, with local knowledge and relationships and share similar long term interests in good land management.
  - Local governments can encourage traditional owner involvement in some of its current land and sea area management groups such as the Rural Fire Brigade, Chambers of Commerce, local community group involvement such as the Rotary clubs, the Lions clubs, the PCYC clubs, the scout clubs and fore wildlife management problems, and for volunteer LandCare revegetation planting working groups and for volunteering for the local Coast Guards etc. etc.
- **Local Government** There are opportunities for more involvement of traditional owners – more say, more often and earlier:
  - In consultation for any future local government projects including Planning Scheme Review, Planned Projects, vegetation projects etc.
  - The future Regional Plan is a very good opportunity to include Traditional owner values and aspirations.

  - Through providing RNTBC's, PBC's or to individual claimants via a Native Title Future Act notification processes with information on how to access latest information on Material Change of Use, Re-configuring of a Lot (USL), and any relevant Permits, Licenses or Approvals.
  - Sending correspondence to the traditional owners through their RNTBC's, PBC's or to Individual Native Title Claimants recognises they are the legal Native Title representative bodies for their people.
- More traditional owner meetings need to happen between local government and the traditional owners so that their sites and places of cultural significance within local government areas can be provided some form of protection status (planning scheme, local law, increased knowledge etc). There are and will be areas within local government areas of management where this will need to happen. These significance sites and places may or needs to be registered under the current Qld Aboriginal Cultural Heritage Act 2003 for protection from development or from on-ground local governments planning scheme projects.
- Any new, minor or major Permits, Licenses, Commercial Activity Permit's or Approvals should first trigger a Native Title Future Act Notification that are supposed to get sent to the Native Title Representative Body's such as the North Queensland & Cape York Land Councils on behalf of all the registered RNTBC's, PBC's and Individual Native Title claimants for Native Title and Cultural Heritage impact processing prior to any one of them being approved by local government. This notification needs to get sent to the right traditional owner RNTBC, PBC or Individual Native Title Claimant to review the Commercial Activity, Permit, Licenses or Approvals in the first instance to see if it will have any impacts on their Native Title and sites and places or cultural significance in their country. There needs to be consultation with the traditional owners because they may have their own on-country aspirations within their country-based planning to seek local government approval for including for Permits and Licenses for something they may want to do, develop, implement or plan within their traditional country such as for recreational activities, tourism activities etc.
- There are better and improving ways to implement TO's ideas for the places that are important to them and there is an increasing recognition that groups should be funded to be able to do works and projects on country:
  - Revegetation programs need to hold discussions with the right traditional owners who can speak for country.
  - The Terrain Rainforest Decision Support Tools could be used by traditional owners for management of things of cultural importance to them.
- Priority areas
  - The establishment of more cassowary corridors needs to happen to link current known and any new known cassowary breeding sites and locations together. At present there's only the coastal littoral rainforests areas that only go north and south with not much east to west corridors established.
  - We need to fill-up all the areas in-between the established western and coastal eastern rainforests that are out in the open with revegetation projects, negotiate with the landowners for more riparian strip revegetation works so that cassowaries can move freely in all directions and are not restricted to one area. Try to offer them more protection.

NAMAC 20 May 2021

Appendix 2: Guidelines for Incorporating Findings into Planning Scheme

Introduction

The Planning Scheme reflects the existing and aspirational values of the community, sets the strategic direction for Council and regulates development.

The Scheme sets up the 'go' and 'no-go' areas for different land uses. In the case of vegetation it can set the policy direction for values such as biodiversity and connectivity and can identify:

a. existing vegetation for protection
b. appropriate development and appropriate assessment provisions for development
c. provide mechanisms for enforcement in the event of clearing
d. strategic (future) vegetation corridors, as a trigger for identifying areas for possible revegetation.

The role of the Planning Scheme. The Scheme may help inform a landowner or person wishing to undertake development as to where development should or should not occur. However, the Scheme's ability to influence development:

a. is limited to providing an indication of the preferred and non-preferred development in a location (i.e. a person *may* refer to the Scheme to see if a form of development could be undertaken)
b. does not have any influence over outcomes on land until a development application is lodged.

The Scheme may identify areas of future vegetation but it is not the only and possibly not the best mechanism to get them planted.

Strategic Framework

The balance of the Planning Scheme (codes, tables of assessment, mapping, policy) is required to align with and support the achievement of the Strategic Framework.

The Strategic Framework is the 'big picture vision' part of a planning scheme that establishes the Council's intentions for the local government area in 20 to 30 years' time. It may establish:

a. how development should occur by creating a series of strategies to manage future growth and development to achieve the vision.
b. timeframes for when development should occur, for example, it may say that there is sufficient industrial land for the next 15 years and any new industrial land is not anticipated for at least 15-20 years.

It is acknowledged that the structure of the Strategic Framework varies from Scheme to Scheme, however there is typically:

1. Strategic Intent Statement
2. Themes that collectively represent the policy intent of the scheme
3. The strategic outcome(s) proposed for development in the planning scheme area for each them.
4. The element(s) or specific outcomes that refine and further describe the strategic outcomes

The following statements are provided as examples of the form and content that could be included in the Strategic Framework each statement is incrementally more specific, which in turn can feed into purpose statements and performance outcomes in relevant codes.

Significantly, where these statements also align with the strategic documents of the State and Federal Government (such as the Queensland Plan and the Ecotourism Strategy), and they serve as a 'hook' that can be used to support funding applications by Council, landowners and community groups.

In considering possible future amendments, it is helpful to remember that just one well worded and well placed sentence is enough to make a very big policy difference. There is no need to include all of these – pick what works and change it to suit your circumstances.

Table of Possible Scheme Amendments

Section of Planning Scheme	Possible Amendment
Setting the scene (not in every Scheme)	The natural environment directly supports tourism businesses and is a valued part of the regional economy. There is an increasing awareness of the value of maintaining and improving biodiversity and ecological connectivity across the landscape, which in turn also builds social and community connectivity at a range of scales and establishes healthy relationships between diverse community groups.
	There is an increasing understanding of the biosocial and ecological value of the interface between the urban footprint and natural areas and the importance of improving connectivity to (often along roadways and waterways). The capacity and willingness of the community to support biodiversity and ecological connectivity continues to be acknowledged and supported in the use of a range of different conservation tools and approaches and activities to establish and maintain healthy relationships between diverse community groups.
	Council's planning scheme has the capacity to influence biodiversity conservation in a number of ways: • Protect and restore ecological integrity and habitat connectivity; • Protect and restore waterway health and aquatic biodiversity; • Minimise the impacts of urban development on biodiversity; • Encourage the community to value, protect and restore biodiversity.
Strategic intent	The Region continues to be recognised for its diverse, natural environments, including the Wet Tropics World Heritage area. Future development recognises the value of the Natural environment in underpinning our lifestyle and economy and incorporates sustainable practices such as environmental offsets, environmental easements, Voluntary Declarations, green energy solutions and balances the responsible management of our natural areas as an asset for our growing communities.
	Development continues to strengthen the Region's strategic and competitive advantage by balancing people, local enterprise, and natural resources.
	Development contributes to a strong economy that supports appropriate growth across the Region and is responsive to global shifts and opportunities, including diversifying the Region's portfolio of industries and take full advantage of the ongoing value that our natural resources play in Ecosystem Services.

	The natural environment is retained, expanded and enhanced to supports an active lifestyle and supports healthy communities.
	The Region is an internationally celebrated ecotourism and environmental-tourism destination, delivering world-class interpretation and experiences that support the conservation of our special natural places and unique Indigenous and cultural heritage.
	Development provides a positive contribution back to the conservation of natural areas and the community.
	Natural areas are valued for their contribution to a thriving ecotourism industry and landowners are supported in the development of low impact, sustainable experiences that are undertaken in conjunction with ecosystem services, rehabilitation or conservation activities.
	Privately owned ecotourism experiences are available on and off protected areas, particularly showcasing best practice sustainability requirements.
	The Region's Indigenous heritage and Traditional Environmental Knowledge is incorporated into development and land management practices.
	The Region's environmental offering and creates a distinctive point of difference through the incorporation of Indigenous heritage and Traditional Environmental Knowledge.
	Cultural heritage interpretation adds depth to ecotourism and natural experiences and provides visitors with meaningful connections with Traditional Owners and their communities.
Settlement Pattern Theme	The interface between the urban fringe and natural areas is managed sustainably.
	Rural residential development does not further fragment or alienate rural areas, conservation areas and biodiversity areas. Rural residential areas predominantly maintain the current density of development, with infill subdivision of rural residential areas generally limited to identified precincts areas where consistent with the desired character and where adequate services and infrastructure are available or can be adequately and cost-effectively provided. No new / greenfield rural residential subdivisions are created in the XXX and YYY areas as shown as the on the strategic framework map or Zone map.
Economic Development Theme	Development achieves a balance of environmental protection and economic development
	Development provides opportunities to establish and grow economic development and diversification in the area of ecosystems services to provide new and diverse job opportunities.
	Growth within rural villages is limited and is proportionate to the current scale and does not result in the loss of vegetation.
	Development including clearing of vegetation retains ecological connectivity linkages.
	The cost of retention, maintenance and rehabilitation of natural areas is supplemented through the low-impact development opportunities for host communities, organisations and authorities managing natural areas.
	Development does not compromise the current or future ability for ecological connectivity and ecological connectivity is enhanced when development occurs.

	Development avoids adverse impacts on ecological values and where avoidance is not possible the adverse impacts are minimised and, for an area of ecological significance a net gain in natural environment and biodiversity values is achieved.
	Development results in a net gain in ecological connectivity of habitat linkages (within the subject site) and does not compromise the ability to realise future opportunities for ecological connectivity through progressive revegetation of habitat linkages with native vegetation.
Natural Areas Theme	Ecotourism to showcase and help to conserve the Region's unique natural landscapes, cultural heritage and wildlife is encouraged and supported in rehabilitated natural areas.
	Biodiversity and connectivity works and projects are encouraged to be undertaken in partnership with community groups and research organisations to take advantage of, support and promote the ecological restoration techniques that have been refined in the area through local knowledge and practical experience, adaptive management and scientific monitoring.
	Development does not compromise the habitat connectivity of ecological corridors and where possible contributes to an expansion of these existing corridors.
	Natural resources are managed effectively.
Rural and Rural Residential zone	Making new subdivision impact assessable in certain locations (identified on a map) can deliver good outcomes where the community consists of well-informed individuals and groups who are in a position to provide constructive input into development applications – the Mareeba Shire Council Planning Scheme provides a good example of this for land in the Rural and Rural Residential zone in the Kuranda area. An example of how this may be incorporated into the scheme is provided below in Table 5.6.1
Overlays	Material change of use, building work or operational work on land affected by an overlay – can have an altered (increased or decreased) level of assessment. The overlay can also be used to encourage a certain form (e.g. smaller) of development. An example of how this may be incorporated into the scheme is provided below in Table 5.10.1
Codes and Planning Scheme Policy	An example of how this may be incorporated into the scheme is provided below in Table 5.6.1 and 5.6.2

Table 5.6.1—Reconfiguring a lot

Zone	Categories of development and assessment	Assessment benchmarks for assessable development and requirements for accepted development
Rural residential zone	**Impact assessment**	
	If (a) in the *XXX Precinct shown on the Zone Maps; and* *(b)* resulting in the creation of one or more additional lots.	The planning scheme
Rural zone	***Impact assessment***	
	If:	*The planning scheme*

Zone	Categories of development and assessment	Assessment benchmarks for assessable development and requirements for accepted development
	(a) in the XXX Precinct shown on the Zone Maps; and *(b) resulting in the creation of one or more additional lots with an area of less than 60ha.*	

Table 5.10.1—Overlays

Development	Categories of development and assessment	Assessment benchmarks for assessable development and requirements for accepted development
Environmental significance overlay		
Material change of use, building work or operational work in *the XXX Precinct shown on Environmental significance overlay maps.*	**Accepted development**	
	Where: (a) For a Dwelling House; and (b) Development is limited to existing cleared areas of the site; or (c) The development envelope for all residential activities on site is 800m^2 maximum*, including* sheds, swimming pool, on-site sewerage infrastructure and disposal areas.	
	Code assessment	
	Note—Where development is subject to impact assessment in sections 5.5, 5.7, 5.8 or 5.9, the category of assessment is **not changed** to code assessment, despite subsection 5.3.2 (8) of the planning scheme.	Environmental significance overlay code

Table 8.2.4.3A - Environmental significance overlay code – for accepted development subject to requirements and assessable development

Performance outcomes	Acceptable outcomes
For assessable development	
Biodiversity and Connectivity	
PO9 Development includes measures that minimises impacts of development on biodiversity and connectivity and provides ongoing protection to biodiversity and connectivity values.	**AO9.1** Land mapped as Ecological Corridors, Habitat Links and Matters of State Environmental Significance are included within: (a) a covenant under the Land Titles Act 1994; or (b) dedicated to Council or State Government. Land required for bushfire hazard mitigation may be excluded from the covenant.
	AO9.2 Development: (a) retains native vegetation to the greatest extent possible; and

Performance outcomes	Acceptable outcomes
	(b) demonstrates retained biodiversity areas are large enough to maintain ecological values, functions and processes; and (c) avoids alterations to natural landforms, hydrology and drainage patterns on the development site.
	AO9.3 Landscaping and rehabilitation planting: (a) is undertaken with local provenance plants in undeveloped areas of the site where practicable before, during or immediately following completion of the development to achieve a net gain of revegetation of impacted values; and (b) maximises ecological connectivity between vegetation on the subject site and vegetation located on adjacent properties; and (c) provides for the requirements for native flora and fauna known to occur in the locality.
PO10 Development incorporates measures that avoid or minimise the disruption of wildlife and wildlife habitat and allows for safe movement of wildlife through the site.	**AO10.1** Where appropriate, development incorporates: (a) vegetated buffers; and (b) fauna friendly fencing; and (c) wildlife overpasses.
	AO10.2 Development minimises the use of fencing for internal activities and for property boundaries.

Mapping

The Council's planning scheme is a point of access to mapping including environmental values. It is often difficult to access accurate detailed mapping at a property or site-specific scale. Poor data that is difficult to access and interpret effectively results in poor outcomes – as the values are likely to be dismissed, debated or diluted at the application stage.

While deficiencies in Planning Scheme Overlay maps can to an extent be attributed to the level of detail available and the source of the content, there must be a focus on improving the mapping, access to the data and a specific focus on the known gaps (identified in Welberge & Goosem (2011) Gap analysis of environmental research needs in the Australian Wet Tropics).

The Council is not the owner of, nor it is the generator of the mapping data. There is an imperative on the State Government and Research Agencies to undertake research and provide improved data. This project finds that changes to the Strategic Framework Mapping and Environmental Significance overlays will not achieve its full potential (have limited benefit) at this time, as the research gaps / gaps in knowledge do not provide appropriate information to allow for good outcomes.

Filling in the gaps in knowledge is not a direct responsibility of Council and funding and support for research into this high value environmental area is required from the State and Federal Government.

It is recommended that

1. Council improve the community's access to detailed mapping data by developing an interactive mapping system that will deliver site specific property information including:
    a. General property descriptions and information;
    b. Map/s of the property showing location, zones, local plans, overlays and LGIP information.
2. The State Government and Research Agencies research and provide data to improve the accuracy of data available.
3. Work with Action Groups, FNQROC, and Terrain NRM to identify areas of regional value where fine-scale mapping exercised would afford genuine habitat protection. If this opportunity can be regionalised, then it presents a better return on investment.

The Council's planning scheme is however a point of access to mapping at a property level. The format of the current mapping is accessible to the general public, however it is not reliable at a property level due to a variety of reasons including in ability to zoom in and the thickness of the lines. It is recommended that Council develop an interactive mapping system that will deliver site specific property information including:

a. General property descriptions and information;
b. Map/s of the property showing location and applicable zones, local plans, overlays and LGIP information.

A final mapping solution would be to include link outs to relevant sections of the Planning Scheme such as Tables of Assessment and Codes.

Appendix 3: Guidelines for incorporating findings into Council Corporate Plan

The Corporate Plan

The Corporate Plan provides direction for Councils to achieve a sustainable future for their region and optimum social, economic and cultural benefits for residents. It translates the identified community needs and expectations into clear goals and measurable objectives to be achieved over a period of time, usually 5 years.

Contained in the Corporate Plan are Strategic Goals, Outcomes and Strategic Actions which provide the direction from which other Council plans, policies and strategies are developed.

The Corporate plan's objectives are delivered through annual operational plan initiatives and resourced by capital and operational budgets.

It is therefore critical that Councils acknowledge the importance of the identified endangered habitats (as applicable to each LGA) in the Corporate Plan Framework. This provides an ongoing commitment to habitat protection and forms the basis for establishing operational plans and budgets to support the implementation of specific strategies i.e. Planning Scheme reform, detailed regional mapping, and proactive natural areas management.

Strategic Themes

The Corporate plan of most Council's within the FNQROC area have four (4) or five (5) Strategic Themes that underpin their corporate Plan: Community, Economy, Infrastructure, Governance, and Environment.

Although worded slightly differently each Corporate Plan contains a pillar/theme that references the importance of the Environment.

Under each plan generic references are made to the role Local Government plays in the protection of the environment.

Phrases commonly used include-

- Protect, manage, and promote our natural environment and biodiversity
- Value and protect our pristine natural environment
- A coordinated approach to fire management and the management and control of pests, weeds and feral animals and other biosecurity threats

Outcomes or Deliverables commonly Include

- Develop a Natural Asset Management Strategy
- Develop a Natural Asset Management Plan
- Develop a Biodiversity Strategy

A Contemporary Corporate Plan

Feedback from Local Government Officers suggests that the focus on operational initiatives and, as a result funding, extending from the Corporate Plan focus on the specific items listed in the Corporate Plan under the Environmental Theme. A common example is waste recovery or those aspects that have a legislative requirement ie. Biodiversity Strategy or Coastal Hazards Adaptation Strategy.

The importance of an endangered or critically endangered ecosystem should be elevated to the Corporate Plan to acknowledge Council's role as the custodian of this national asset. This is particularly so in Far North Queensland, where these assets are also intrinsically linked to the Economy in terms of Tourism and Agriculture.

Council's corporate plan has the opportunity to address biodiversity conservation in a number of ways:

- Protect and restore ecological integrity and habitat connectivity;
- Minimise the impacts of urban development on biodiversity;
- Encourage the community to value, protect and restore biodiversity; or
- Link biodiversity to regional economic development.

Rather than linking habitat protection outcomes to the "Environmental" pillar alone, a contemporary plan recognises the importance of habitat protection across multiple pillars. Some examples are provided to assist Council's in understanding how habitat protection could be incorporate across multiple themes.

Pillar of the Corporate Plan	Possible Amendment
Community There is an increasing awareness of the value of maintaining and improving biodiversity and ecological connectivity across the landscape, which in turn also builds social and community connectivity at a range of scales and establishes healthy relationships between diverse community groups.	
Strategic Objective/Goal	*Build social and community connectivity through projects that increase the awareness of the value of maintaining and improving biodiversity and ecological connectivity.*
	Foster and promote community lead initiatives that focus on our region's key environmental assets.
	Support the community custodianship of our region's natural assets.
	Adopt Indigenous-led approaches to strengthening and sharing our knowledge for land and sea management.
	Recognise our natural environment is fundamental to the health and wellbeing of every resident and visitor to the region.
	Our biodiversity is an important part of our identity.
Economy The natural environment directly supports tourism businesses, and indirectly supporting a substantial part of the regional economy.	
Strategic Objective/Goal	*Showcase the oldest living cultural history in the world by supporting the development of land and sea country ecotourism opportunities in partnership with local Indigenous groups and relevant agencies*.
	Facilitate investment in tourism products that showcase and preserve the Region's natural areas.
	Assist in establishing and maintaining tourism and recreation activities are environmentally and economically sustainable.

	Establish the economic value of our Region's natural assets.
Infrastructure There is an increasing understanding of the biosocial and ecological value of the interface between the urban footprint and natural areas and the importance of improving connectivity to (often along roadways and waterways).	
Strategic Objective/Goal	*Recognise our natural area assets as critical infrastructure.*
	Recognise the role and function of natural areas in asset protection and disaster management.
Environment	
Strategic Objective/Goal	*Recognise, value and protect our endangered regional ecosystems.*
	Foster and promote voluntary compliance and environmentally friendly behaviour.
	Foster community understanding of the importance of our natural assets through storytelling and cultural practices.
	Promote the natural environment's role in the reduction of the impacts of climate change
	Our natural assets are healthy, valued, and actively cared for
Governance Local Government is required to be transparent and informed in its decision-making process. Increasingly, there is an expectation that this decision-making is socially and environmentally conscious.	
Strategic Objective/Goal	*Maintain and apply a contemporary and adaptive set of natural areas management arrangements.*
	Decisions consider risk and return and are based on the best available scientific evidence and other sources of knowledge.
	Decision making is based on the precautionary principle. Decisions to prevent significant impacts are not avoided because of a lack of policy or scientific certainty.
	hanging environmental circumstances are considered and thinking is adapted to new information

These Statements should be specifically linked to corresponding Operational Plan Initiatives year on year. The progress of Operational Plans are reported to Council on at least a quarterly basis so the habitat protection initiatives shaped by the Corporate Plan will continue to be explored and celebrated in a public forum increasing awareness.

Some inspiration can also be drawn from the 2021 G7 Climate and Environment Ministers' Meeting-

We recognise deforestation and forest degradation as a significant cause of climate change. We commit to urgent action to conserve, protect and restore natural ecosystems including forests and habitat connectivity and promote sustainable forest management. We also commit to implement decarbonisation pathways that do not cause further biodiversity loss or deforestation…

… We recognise the crucial role of Nature-based Solutions in delivering significant multiple benefits for climate mitigation and adaptation, biodiversity, and people and thereby contributing to the achievement of various Sustainable Development Goals (SDGs). Such benefits include, among others, improving air quality, water quality and availability, soil health, storm and flood protection, disaster risk reduction, and alleviating and preventing land degradation. Nature-based Solutions can also provide sustainable livelihoods through protecting and supporting a wide range of ecosystem services on which the world's most vulnerable and poorest people disproportionately rely…

…We will strive to ensure the effective and equitable management of protected areas and OECMs, and strive to improve their ecological connectivity, with a focus on areas that deliver the greatest benefits for global biodiversity, ecosystem services and climate protection. We underline the importance of a strong accountability framework that strengthens implementation and increases transparency of our actions to meet these targets, and will actively support the development of robust implementation, monitoring and review frameworks.

Existing FNQROC Best Practice Corporate Plan Drafting

1. The importance of education and community in Habitat Protection

   The Douglas Shire Council has included a Goal in their "Environmental Pillar" which states:

   Goal 4 We will partner with the community to educate and monitor

   This is a critical aspect to the success of the opportunities explored in this paper and is a recommended inclusion in Council's Corporate Plan.

2. Contribution of Traditional Owners to the protection of the environment.

   Another overwhelmingly consistent piece of feedback was the opportunity to improve engagement with Traditional Owners particularly when developing the Natural Areas Management Plans/Strategies and Biodiversity Strategies. This is discussed further in Appendix 6.

   The Douglas Shire Council has completed the linkage of this proposal by incorporating it as a specific goal under the Corporate Plan

   Goal 5 We will recognise the contribution that Traditional Owners make to the protection of the environment.

Appendix 4: Engaging with Traditional Owners on Natural Areas Management Strategies, Policies, and Procedures

A consistent theme has been identified following consultation with Traditional Owners (TO) in the FNQROC region, that an opportunity exists to improve engagement by Local Government with TOs in the development and implementation of Natural Areas Management Plans and Biodiversity Plans.

This presents an opportunity to understand historical and cultural approaches to habitat protection and to partner in education and resourcing opportunities to undertake projects on behalf of Local Government Natural Areas teams. Importantly, TOs have a unique story attached to the natural environment that should be valued and understood and, where appropriate and in an appropriate manner, shared with the community to assist in education and understanding of the importance of these habitats.

Note: This Framework is designed to be a guideline to assist in the implementation of this approach to developing natural areas strategies/plans etc. It is acknowledged that each Local Government will have its own process and policies for engaging Traditional Owners. The fundamental aspect of the recommendation is that First People's Advisory Groups, Prescribed Body Corporates, and other TO representatives have a wealth of knowledge and experience in NAM practices that is not currently being used to its full potential.

Purpose

The purpose of this framework is to enhance engagement between Local Government and Traditional Owners in developing and implementing Natural Areas Asset plans and strategies.

Specifically, the framework aims to:

- Foster respectful, high quality and culturally appropriate engagement between the Local Government and Traditional Owners.
- Invite and empower Traditional Owners to inform, collaborate with, and co-design initiatives for LGA Natural areas management.
- Use these engagement activities as a critical means of improving regional habitat protection outcomes for the community.
- Value the knowledge, cultural practices and traditions and partner with Traditional Owners in the ongoing protection, preservation and restoration of our natural areas.

Alignment

Corporate Plan: Include statement in Community or Environment Theme about the recognition of the contribution that Traditional Owners make to the protection of the environment.

Reconciliation Action Plan (RAP): Include a corresponding action item in Council's RAP that commits to engaging with TOs in the development and implantation of natural areas asset management plan/s.

NAM Strategy/Biodiversity Strategy: The engagement approaches put forward in this framework support the <Local Government's> commitment in its Corporate Plan and Reconciliation Action Plan to strengthen and build positive relationships between Aboriginal, Torres Strait Islander people and non-Indigenous people

within and outside the organisation by recognising the practical and cultural importance of Traditional Owner knowledge, experience and heritage in Natural Areas management.

Guiding Principles

Strengthen Local Government's engagement with Traditional Owners and Aboriginal and Torres Strait Islander people by:

1. Building on strengths and existing knowledge on cultural practices for habitat protection and natural areas management.
2. Cultivating relationships and connections between Traditional Owners and Local Government.
3. Demonstrating cultural respect and recognition of the value associated with the knowledges and practices of habitat protection and natural areas management.
4. Employing appropriate communication and language in engagement.
5. Lifting capability and creating opportunities in on the ground delivery.

Implementation

Each Local Government should follow the provisions in their RAP and existing Council policy with respect to Traditional Owner Engagement.

If the Local Government does not have an established engagement plan, then this presents an opportunity to develop an engagement plan together with the relevant Prescribed Body Corporate (PBC).

It is important to acknowledge that there are established cultural protocols when sharing knowledge within and outside of different Traditional Owner groups. Other protocols can be negotiated between Indigenous and non-Indigenous partners to facilitate sharing of knowledge the right way.

Protocols can include:

- Agreement on the activities, responsibilities and contributions of each party.
- Ensure respectful, culturally specific, personal engagement behaviours for effective communication and courteous interaction are practiced.
- Develop and implement respectful methods for sharing of Indigenous knowledge including appropriate consent and procurement practices.
- Demonstrate respect and honour cultural ownership and intellectual property rights and obtain appropriate permissions where required.

Outcomes

This approach is an opportunity to better understand historical and cultural approaches to habitat protection. It also presents a genuine education and resourcing opportunity for land and sea rangers (and other similar programs) to undertake projects on behalf of Local Government Natural Areas Management teams. Storytelling has also been identified as a unique opportunity in Far North Queensland to improve education on the importance of habitat protection within the community.

Appendix 5: Local Government Advocacy Opportunities

Throughout this project a number of initiatives have been identified that fall outside of the scope of Local Government service delivery. Local Government is able to assist in the implementation of these initiatives by State Government, Federal Government, and the private sector by advocating for these outcomes in the region.

Opportunity	Brief description
Insurance	The issue of the impact of vegetation on insurance premiums was raised particularly in consultation on Littoral Rainforest habitat. Anecdotally, many insurance providers in Far North Queensland "punish" property owners for the presence of established vegetation on site by increasing premiums due to the risk of vegetation damage as a result of a storm event. In coastal areas the presence of Littoral Rainforest may actually reduce the impacts of sea level rise and storm events. There is an opportunity to communicate the research on the impacts of Littoral Rainforest on the protection of coastal assets to Insurance bodies to encourage retention of this asset on freehold land.
Incentives	The QLD State Government has a well-developed QLD Heritage Strategy designed to incentivise and assist with the restoration and maintenance of sites on the QLD Heritage Register. MSES Mapping recognises that the subject habitats are of State Significance. There is an opportunity for the State Government to develop a similar strategy for the preservation and restoration of the State's most endangered habitats. There is an opportunity for FNQROC or individual Local Governments to present this proposition to the State and assist in its development. This could also be used to inform localised incentive programs.
Funding	There are a number of funding opportunities that exist in this area. Some include- • Increased/consistent funding for NAM programs (similar to Works for Queensland) • Funding for education programs similar to the State funded Illegal Dumping campaign. • Funding for localised ecosystem mapping which can improve the accuracy of Local, State, and Federal Mapping. Importantly, it was recognised during consultation that a shortfall to the current funding regime is ongoing operational funding. Many NAM projects are funded as a capital project but funding for ongoing maintenance during the establishment period is difficult to come by.

A State-wide ecosystem services sector	A localised ecosystem services sector in capable of being established. Many initiatives already exist in the community. The benefit of a State-wide ecosystems services sector is it allows for increased resourcing to develop and implement service aspects and data and monitoring requirements. It also provides the opportunity for Far North Queensland to develop a unique environmental commodity to offset other aspects of the State Government and private sector business ie. Mining. It is acknowledged that substantial research has been developed and implemented in this sector and this Report has not explored this in detail. It is simply acknowledging that this presents an opportunity for the Far North Queensland region and there is a role for Local Government to play in its establishment and growth.
Continued development of Indigenous Land and Sea Rangers program	The value of increased TO engagement is identified in many instances throughout this Report. Consultation with NAM Officers and Action Groups repeatedly encouraged the growth of the Indigenous Land and Sea Rangers program and other similar established programs. There is a role to advocate for the continued funding of these programs but also to increase the resources allocated to these programs. Not only do they deliver improved habitat protection outcomes but they deliver on a number of key goals in the established Local Government RAPs.
Alignment of Mapping	The inaccuracy of broad hectare mapping has been identified as a barrier to vegetation protection in the region. It creates uncertainty and distrust in vegetation assessment. There is an opportunity to advocate for improved mapping particularly the alignment of MNES and MSES Mapping in the region (See section 2.1.5- Cassowary Habitat)
Elevating the region's status to a Federal Priority Area for endangered species.	The Threatened Species Strategy is the Australian Government's way forward for prioritising action and investment, setting the direction for efforts to recover our threatened plants, animals and ecological communities over the next ten years. It sets a clear vision to drive practical on-ground action; identifies key action areas that are fundamental to the recovery of threatened species and ecological communities; and establishes principles for identifying priority threatened species and places to focus Australian Government effort. There is a role to advocate for the habitat species discussed in this Report to be identified as priority threatened species to drawn the attention and focus of the Australia Government.