Sunshine Coast COUNCIL

Biodiversity Report 2016 for the Sunshine Coast Local Government Area

Edition 2016

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Acknowledgements
The Sunshine Coast Council acknowledges the Traditional Owners of this region, recognising their deep cultural and intrinsic connection to the land and sea, that stretches back over thousands of years.

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Biodiversity Report

The Sunshine Coast is an extraordinary part of the world. It is a region brimming with diversity, from beautiful beaches to lush rainforests and bustling urban centres and towns, the Coast has it all. The people of the Sunshine Coast have a deep appreciation for this and keep the environment close at heart, having developed strong connections with the plants and wildlife that thrive throughout the region.

As more people call the Sunshine Coast home, it is imperative that we work together to ensure these awe-inspiring natural environments are protected and maintained for generations to come. Since 2010, the Sunshine Coast Council has been working in partnership with the community to implement the *Sunshine Coast Biodiversity Strategy 2010-2020*.

This strategy has been developed to ensure the Sunshine Coast continues striving to be Australia's most sustainable region – vibrant, green, diverse.

This Background Report on the Sunshine Coast local government area's biodiversity assets, provides:

- valuable information to inform the adaptive and strategic conservation approach being implemented
- a benchmark to measure the success in the protection and conservation of biodiversity, and highlights areas where improvement is necessary.

Sunshine Coast Council will continue to work closely with the community and other stakeholders to best protect, enhance and connect our region's biodiversity.

As more people call the Sunshine Coast home, it is imperative that we work together to ensure these awe-inspiring natural environments are protected and maintained for generations to come.

1 Report overview

The Sunshine Coast is consistently regarded for its impressive natural landscape whether it is waterways, volcanic landforms, coastal foreshores, rainforests, or the incredibly diverse plant and animal species. This 'biodiversity' is not to be taken lightly; it is the beating heart for both our region *and* our planet.

The Sunshine Coast's biodiversity is absolutely vital to our everyday lives. We depend on it for the air we breathe, the food we eat and the water we drink.

How is that possible?

Wetlands filter the pollutants from water, the trees and plants absorb carbon and provide us with clean air, while bacteria and fungi break down organic material and fertilise our precious soil. The fact is, the more biodiverse our environment, the healthier our ecosystems and in turn, the higher our quality of life is. Simply put, we need to conserve biodiversity because our lives depend on it.

It is clear that years of European settlement has impacted on the natural ecosystems of the Sunshine Coast and the time for improvement is now. As one of the fastest growing regions in Australia, development is set to continue and this development will only continue to present challenges to native plants, animals and the environment upon which they so desperately depend.

In the name of becoming, 'Australia's most sustainable region' the Sunshine Coast Council has set the goal of creating a healthy environment through the maintenance and enhancement of the region's natural assets, liveability, and environmental credentials. By continuing to invest in healthy natural ecosystems and protecting remnant vegetation, Sunshine Coast Council is working towards realising its goal.

In response to this goal and in partnership with the community, the *Sunshine Coast Biodiversity Strategy 2010-2020* was developed and is currently being implemented as we strive toward maintaining our natural advantage.

The Strategy identifies the need to build our collective understanding of biodiversity to:

- inform future planning, management decisions and investments
- better measure the effectiveness of biodiversity protection and enhancement efforts
- effectively and efficiently allocate available resources.

The purpose of this report is to complement the Strategy by providing a comprehensive biodiversity monitoring and reporting framework, with outcomes informing future conservation planning. It presents a baseline assessment of our biodiversity – including the amount and distribution of vegetation communities, threatened plants and animals, the extent and type of vegetation being conserved, as well as information on our habitat areas.

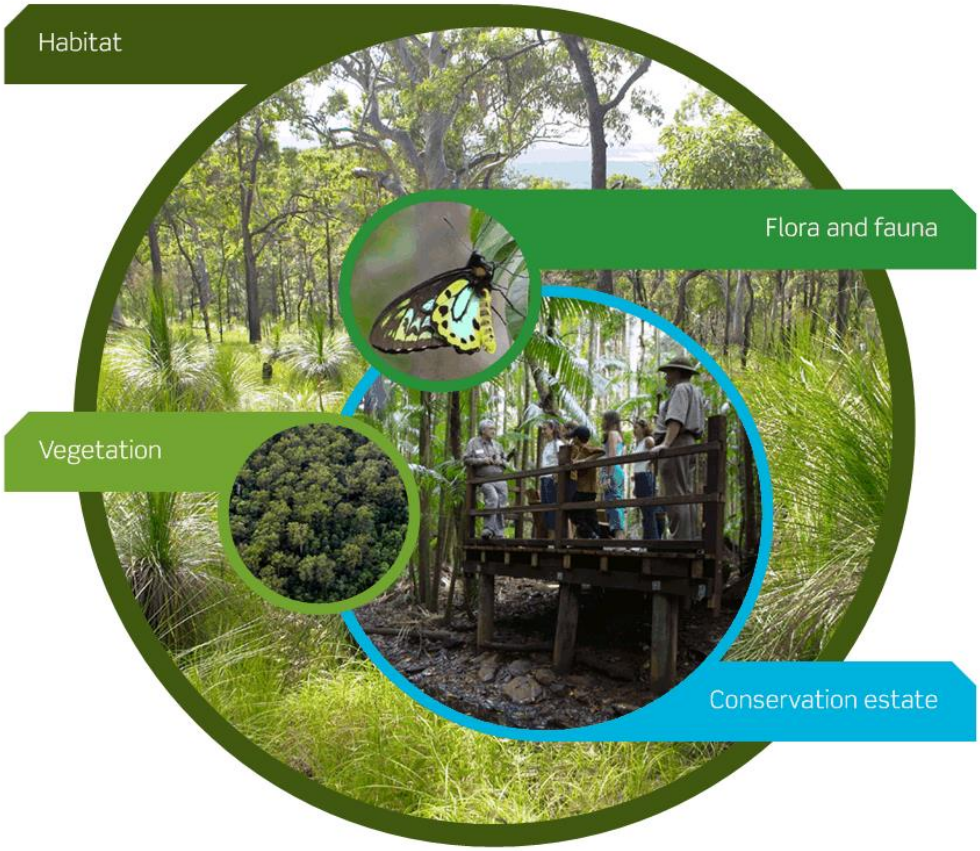


Figure 1.1: Key categories for biodiversity management

1 Report overview

Vegetation

Prior to European settlement, the Sunshine Coast Council area had more than 225,000 hectares of vegetation. Today, 54 percent (124,283 hectares) of the vegetation has been retained. With the rest of the vegetation having been cleared for urban and agricultural development. The remaining vegetation is made up of 75 different regional ecosystems that can be grouped into six broad vegetation communities including, foredune, mangrove and saltmarsh, heath and wallum, melaleuca, eucalypt and rainforest.

Eucalypt and rainforest vegetation communities have been the most heavily impacted, with some of these remaining communities now listed as endangered and vulnerable. Understanding changes in our vegetation extents over time will assist to inform adaptive management strategies to deliver biodiversity conservation outcomes.

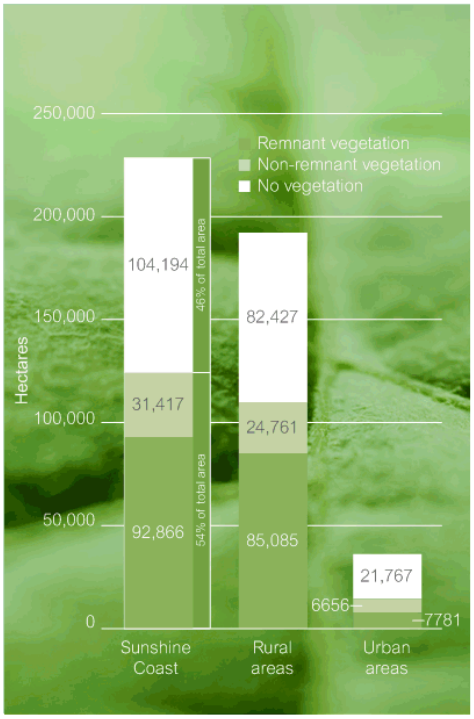


Figure 1.2: Sunshine Coast Local Government Area vegetation

Habitat

The Sunshine Coast's remnant and non-remnant vegetation collectively defines the Sunshine Coast's habitat areas, which includes 89,414 hectares of core habitat, 27,741 hectares of connecting habitat and 7126 hectares of other habitat areas.

The core habitat areas are the primary element of the biodiversity network and are defined as connected and consolidated vegetation areas greater than 50 hectares, providing a high level of ecological functionality. The second, and equally as important, element of the network is the connecting habitat areas that provide important refugia and vegetated corridors that enable wildlife to move between core habitat areas. The remaining vegetation is considered other habitat areas and consists of isolated, more fragmented patches of vegetation in the landscape.

It is important to understand the core, connecting and other habitat areas and the diverse range of animals and plants they support in order to inform biodiversity conservation outcomes. The Maroochy Wallum Area which extends from the lower Maroochy estuary to Noosa National Park and includes significant mangrove, eucalypt, melaleuca and wallum vegetation communities supporting an array of important and iconic fauna species is an example of a cluster of well-connected core habitat areas.

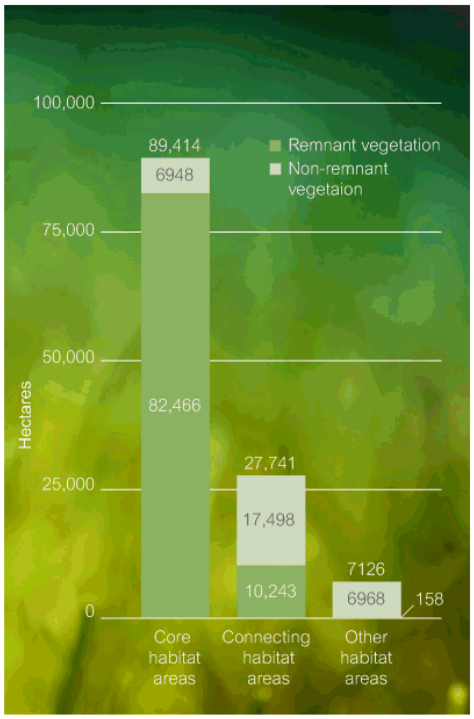


Figure 1.3: Sunshine Coast Local Government Area core and connecting habitat areas

1 Report overview

Flora and fauna

The Sunshine Coast has a diverse range of plant and animals however, 135 of these species are classified as endangered, vulnerable or near threatened (EVNT). Included in this category are the swamp stringybark, Buderim holly, koala and the glossy black cockatoo, just to name a few.

The development of this report has highlighted challenges in terms of data collation, storage and sharing across a range of sources, including council, state and commonwealth government. In order to prepare a coordinated approach to endangered and threatened species management, a robust regional flora and fauna database paired with associated protocols and data sharing agreements between council and key organisations throughout the region is essential.

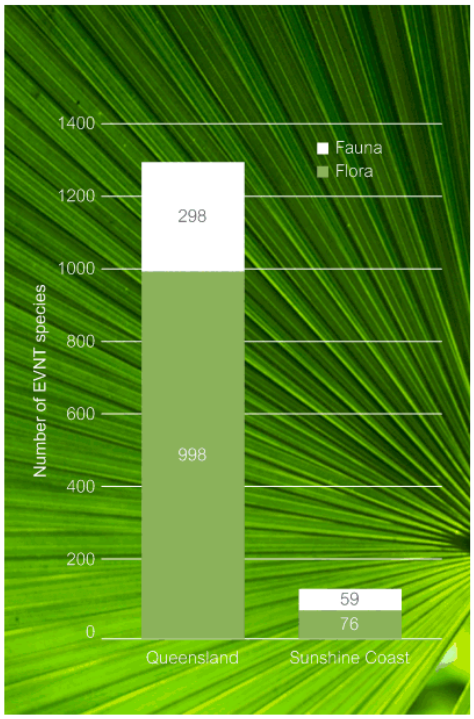


Figure 1.4: Sunshine Coast Local Government Area EVNT flora and fauna

Conservation estate

Currently, 26 percent of the Sunshine Coast Council area is managed for conservation. The conservation estate, made up of state and council reserves and private landowners, conserves more than 44 percent (54,173 hectares) of the remaining remnant and non-remnant vegetation. This includes, 39,684 hectares in state protected areas (i.e. national parks), 5139 hectares in council owned and trustee managed reserves (including council nature refuges), 666 hectares in private nature refuges, 1477 hectares in environmental covenants and 7295 hectares in Land for Wildlife properties.

The remaining 56 percent (70,110 hectares) of vegetation represents an opportunity for future biodiversity conservation initiatives. Any future investment in expanding the conservation estate should be a strategic approach ensuring important biodiversity assets are both targeted and conserved.

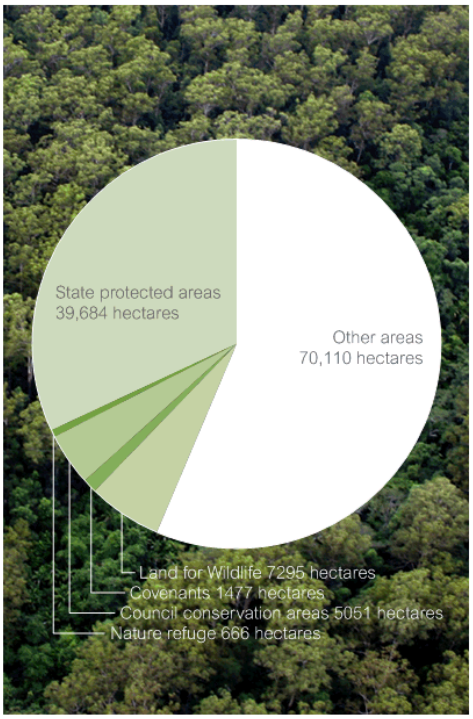


Figure 1.5: Sunshine Coast Local Government Area vegetation protection status (hectares)

1.1 Sunshine Coast Council area

More than 289,000 (2016) people live in the vibrant, green and diverse area that is the Sunshine Coast. Located about 100 kilometres north of Brisbane in South East Queensland, the area has a stunning natural landscape that includes world-renowned beaches, waterways and coastal ecosystems, unique lowland and hinterland forests, and an idyllic subtropical climate.

People continue to appreciate the beauty and prosperity of the Sunshine Coast Council area. Growing numbers are calling it 'home', with the region being one of the fastest growing areas in Queensland. The economic base of the Sunshine Coast Council area was historically built upon forestry and agriculture. Today, the economy is centred on the health care and social assistance, retail, trade and construction industries. Our biodiversity is subject to ongoing impacts from land use and activities across the Sunshine Coast. These will increase and new impacts will emerge in coming decades as a result of climate change, population growth and economic growth.

The Sunshine Coast Council area's population is projected to increase to over 380,000 by 2026.

Unfortunately as the population expands, the land area of 2290km^2, does not. It is imperative that we meet the needs of our rapidly expanding urban population whilst still protecting and sustaining our cherished natural environment, plant and animal life that the Sunshine Coast is known for.

The Sunshine Coast Council area's population is projected to increase to 380,000 by 2026.

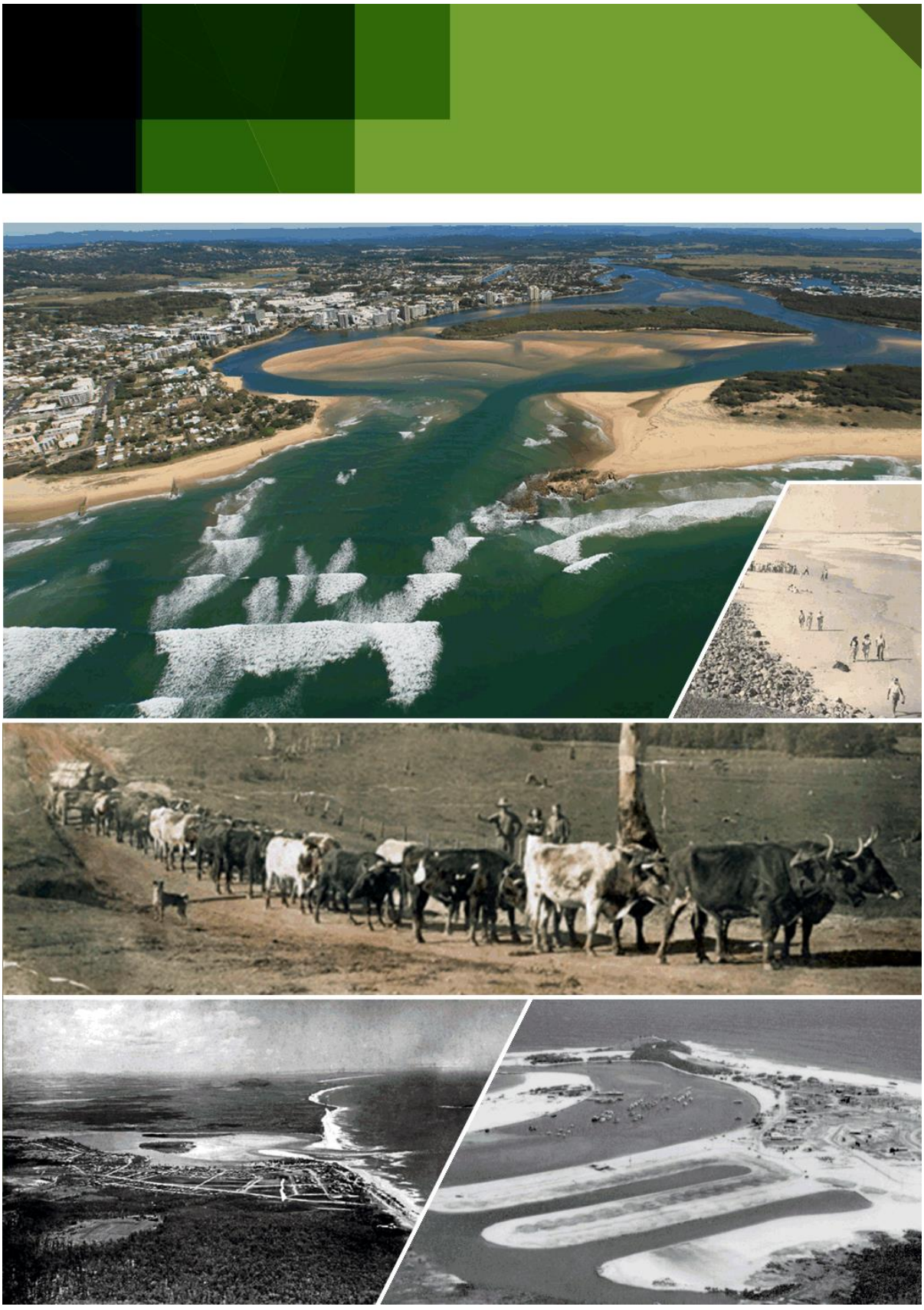
An interesting past and a thriving future

At one point in history, large numbers of Aboriginal people lived in the resource rich area that is now the Sunshine Coast. The headlands served as dreaming areas and Baroon Pocket was a significant meeting place for most of the tribes throughout South East Queensland. During these times, the main forces of landscape disturbance were natural events such as floods, droughts, cyclones and wildfires. The Sunshine Coast once had magnificent stands of forest. In the mid-1800s however, white inhabitants moved into the region and European settlement marked the beginning of 'intensive' vegetation clearing, with the main industries being timber harvesting and cattle grazing.

Many of the towns began as simple ports for the timber industry during the 1860s and 1870s. Likewise, the region's roads often began as snigging tracks for hauling timber. With the advent of the Gympie Gold Rush, prospectors scaled the Sunshine Coast mountains to develop easier roadways to and from the gold fields of Gympie.

By the 1890s, fruit and dairy farming replaced the cattle and timber economy of earlier decades, and sugar cane and pineapples became the iconic Sunshine Coast industries. The Sunshine Coast was further expanded during the development boom of the 1960s and 1970s.

Today, the traditional construction, tourism and retail sectors are being complemented by investments in new and emerging industries such as health and wellbeing and education and research, as a new and resilient economy is developed to support our enviable lifestyle and natural assets.



1.2 Major Catchments of the Sunshine Coast Council area

From the hinterland to the sea, the Sunshine Coast Council area has six major river catchments. This includes, Maroochy and Mooloolah Rivers, Pumicestone Passage and the northern portion of Bribie Island, the headwaters of the Mary and Upper Stanley Rivers and a small portion of the Noosa River catchment (see figure at right).

These catchments vary in the mix of rural, urban and coastal landscapes, with some having very little 'natural' environment left and others having vast conservation areas. Meaning, for each individual catchment, thought needs to be given as to how best to protect the biodiversity that exists in the area, while at the same time also meeting demands for social and economic development.


Maroochy River


Mooloolah River


Pumicestone Passage


Mary River


Stanley River


Portion of Noosa River catchment

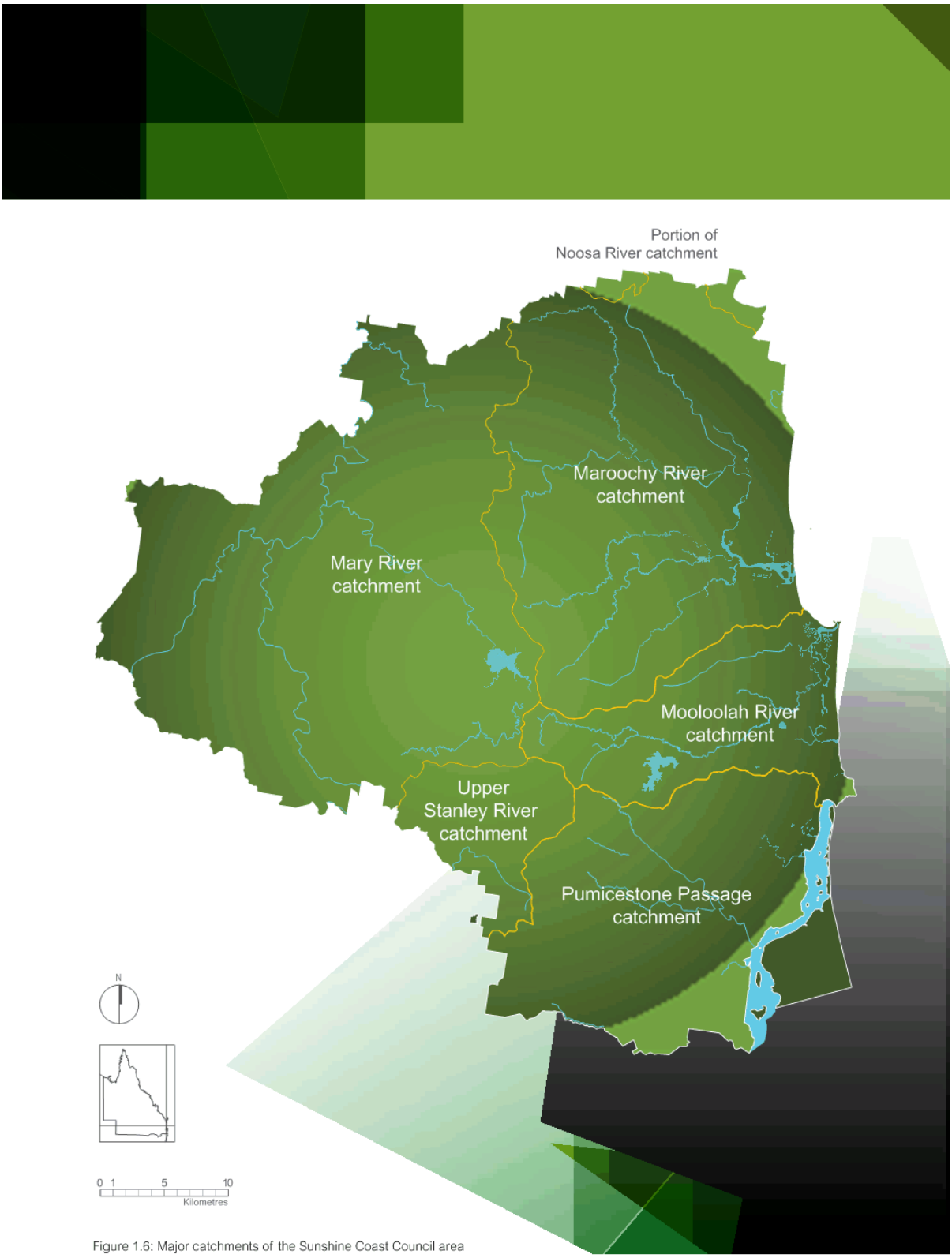


Figure 1.6: Major catchments of the Sunshine Coast Council area

1.3 Why do we need to protect biodiversity?

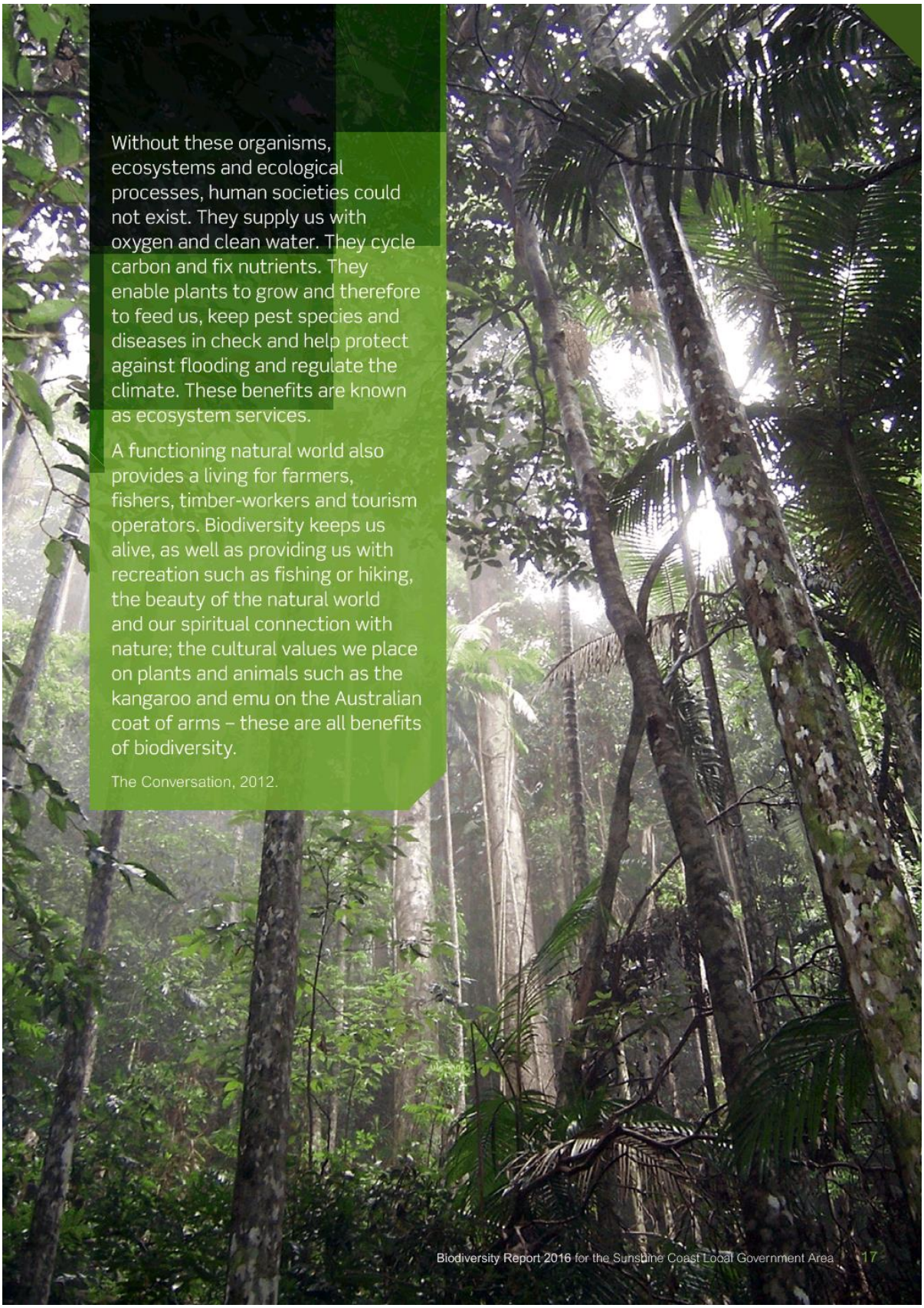
Biodiversity is key to life on the Sunshine Coast. It is defined as the variety of all life forms, including different plants, animals and micro-organisms, the genes they contain, and the ecosystems of which they are a part.

In the Sunshine Coast Council area, biodiversity ranges from the smallest lichen on Mount Coolum, to the tallest eucalyptus in the Conondale Ranges, the worms in our compost heaps, to the distinctive Richmond birdwing butterfly, the familiar brush turkey, and the rarely seen wallum rocket frog. These species, and thousands more plants, animals, landscapes and ecosystems make up the rich biodiversity of our region. We need to protect biodiversity because our lives depend quite literally on it.

The Sunshine Coast Council has placed a high priority on the need to maintain healthy natural ecosystems and protect remnant vegetation. This priority is one that can only be achieved by working in partnership with communities across the region.

The Sunshine Coast has a diverse range of plant and animals however, 135 of these species are classified as either endangered, vulnerable or threatened.

Sunshine Coast's tallest tree in the Conondale Ranges, Flooded Gum (*Eucalyptus Grandis*).


Without these organisms, ecosystems and ecological processes, human societies could not exist. They supply us with oxygen and clean water. They cycle carbon and fix nutrients. They enable plants to grow and therefore to feed us, keep pest species and diseases in check and help protect against flooding and regulate the climate. These benefits are known as ecosystem services.
A functioning natural world also provides a living for farmers, fishers, timber-workers and tourism operators. Biodiversity keeps us alive, as well as providing us with recreation such as fishing or hiking, the beauty of the natural world and our spiritual connection with nature; the cultural values we place on plants and animals such as the kangaroo and emu on the Australian coat of arms – these are all benefits of biodiversity.
The Conversation, 2012.
Biodiversity Report 2016 for the Sunshine Coast Local Government Area 17

1.4 Creating healthy landscapes

A healthy landscape has the following features:

A healthy social landscape. This is central to creating and maintaining the unique and vibrant lifestyle that the Sunshine Coast Council area is renowned for and is essential in regards to our general health and wellbeing.

A healthy economic landscape. A healthy economic landscape supports the development and growth of diverse businesses and activities across various sectors.

A healthy biodiverse landscape. Lastly, a healthy biodiverse landscape has natural areas throughout that are well protected, connected and managed in a way that provides habitats to support a diverse range of native flora and fauna species, and ecosystems well into the future.

1	A healthy landscape creates a sense of place and lifestyle that is unique to the Sunshine Coast Council area
2	The quality of our environment is important to the local tourism industry
3	Agricultural industries contribute to the area's economy
4	Access to unspoilt natural areas is important to general health and wellbeing
5	Large patches of vegetation provide core habitat areas
6	Diversity of ecosystem types provide habitat for a large variety of native species
7	Habitat connectivity allows movement and dispersal of species throughout the landscape
8	Patches of native vegetation act as 'stepping stones' to connect larger areas of core habitat
9	Vegetated riparian buffers protect natural waterways
10	Native vegetation in urban parks and backyards provides habitat for fauna
11	High value habitat is protected
12	Conservation by private landowners is supported through extension programs
13	Degraded ecosystems are rehabilitated through partnerships
14	Weeds and pest animals are managed
15	Vegetation offsets assist to address habitat loss
16	Fauna friendly infrastructure is critical for wildlife movement

Figure 1.7: Creating healthy landscapes

1.5 A strategy for biodiversity

The *Sunshine Coast Biodiversity Strategy 2010-2020* assists the council and community to successfully manage biodiversity.

The Biodiversity Strategy provides the framework and direction for biodiversity conservation to ensure our high value environments are protected, enhanced and reconnected to optimise the services that healthy functioning ecosystems provide to the community.

The current Strategy is being reviewed to ensure it remains both contemporary and responds to the ongoing threats and challenges facing our biodiversity assets .

After 150 years of land clearing, urbanisations and agriculture disrupting native habitat, the time for improvement is now.

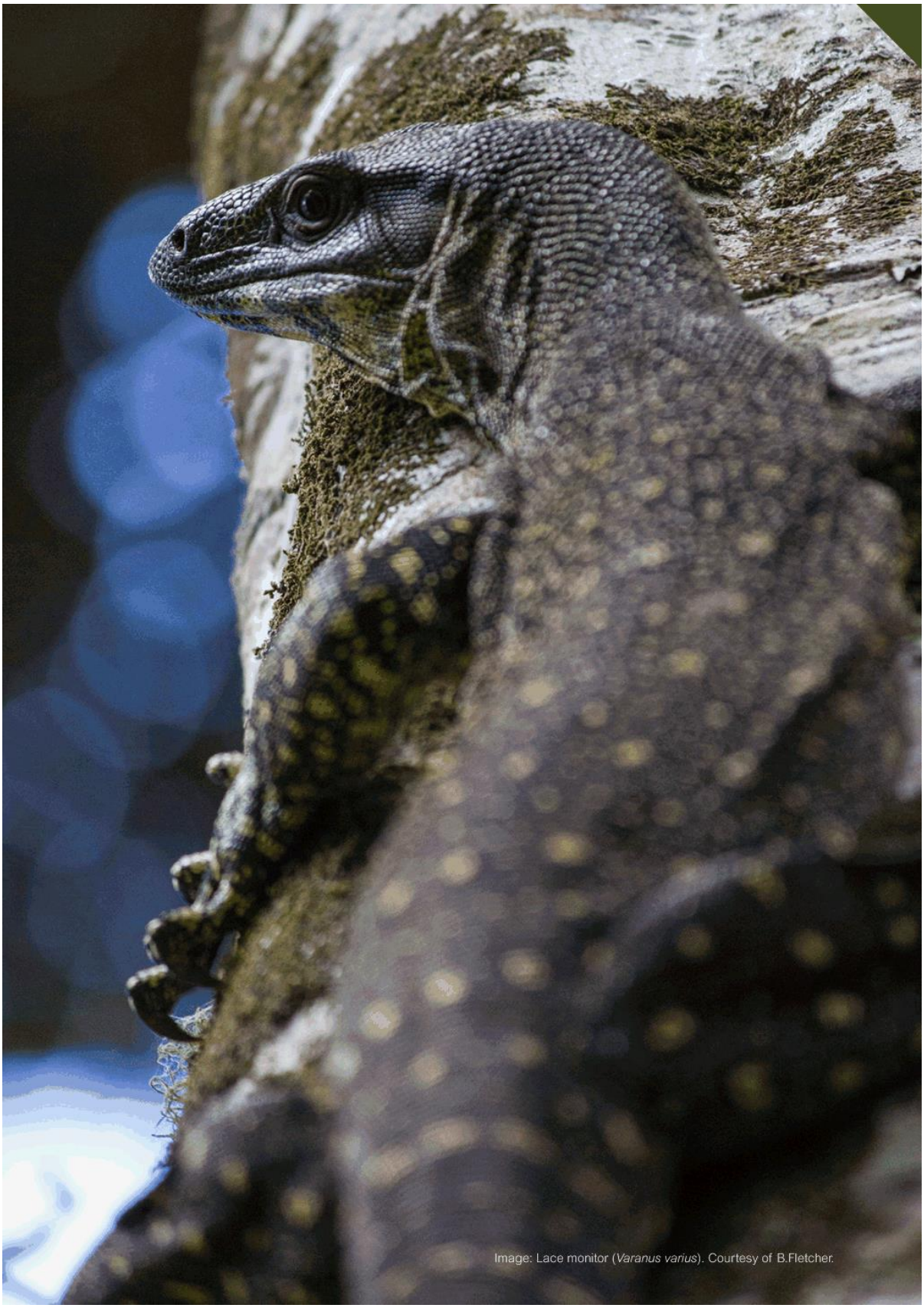


Image: Lace monitor (*Varanus varius*). Courtesy of B.Fletcher.

1.6 Tracking our progress

Land managers are able to monitor progress over time by measuring the condition of different biodiversity indicators.

The indicators you choose to monitor are dependent upon what questions you want to ask about particular aspects of biodiversity.

When we combine the results gathered from monitoring different biological indicators we can develop appropriate management 'responses' to reduce threats and pressures, thus improving biodiversity.

Where to from here?

The results of this report will provide essential information that will enable Sunshine Coast Council to:

- better understand the local government area's biodiversity
- refine regional habitat mapping
- identify priority investment areas
- inform the review and development of new strategic directions for biodiversity conservation.


The Biodiversity Report provides a monitoring and reporting framework to measure the success of the protection and conservation of our local biodiversity.

2 Method

2.1 Reporting Categories and scale

The Biodiversity Report 2016 for the Sunshine Coast Local Government Area has four reporting categories that are conceptually represented in Figure 2.1. In managing terrestrial biodiversity at a landscape scale within the Sunshine Coast Council area the focus is on our core **habitat** areas. The Sunshine Coast Council area has a range of different **vegetation** communities that contribute to **habitat areas** that may support threatened **flora and fauna** species listed as endangered, vulnerable or near threatened. Parts of our habitat areas are actively managed in the **conservation estate,** where properties are either protected by national parks, nature refuges, council reserves and statutory covenants or through voluntary programs such as Land for Wildlife. Habitat not conserved is considered more at risk from threats such as pest plants and animals, urbanisation, habitat loss and fragmentation. An improved understanding of these categories will assist to guide strategic biodiversity planning and investment. Table 2.1 lists the indicators associated with each reporting category.

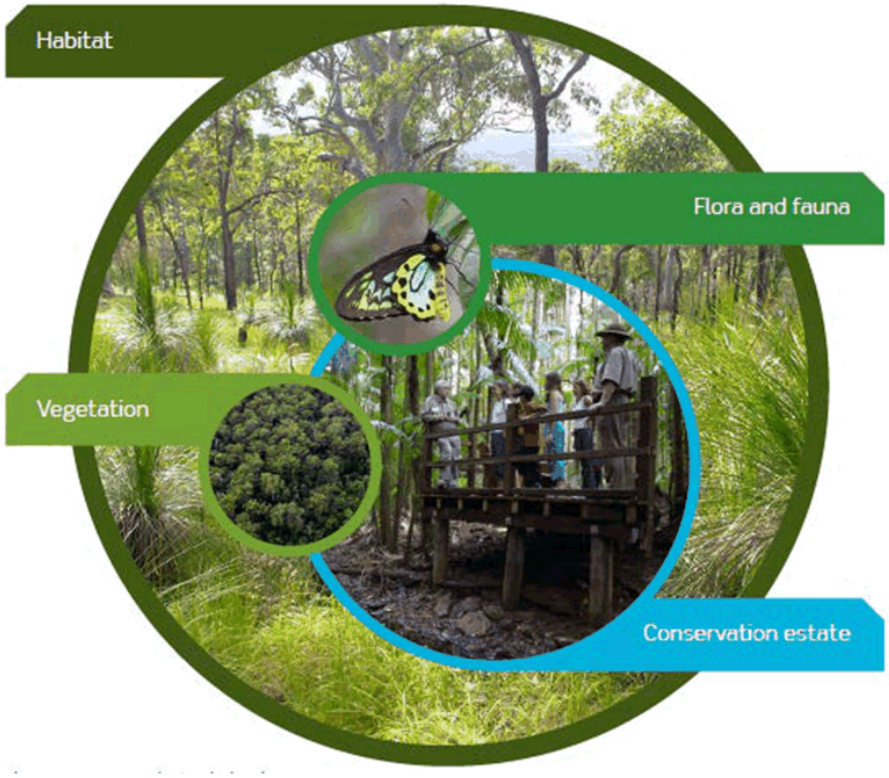


Figure 2.1: Conceptual diagram of biodiversity management using the reporting categories.

Table 2.1: Biodiversity reporting categories and associated indicators

Reporting category	Indicator
Vegetation	• Total extent of vegetation • Type and extent of each vegetation community • Extent of each vegetation community lost • Conservation status of each vegetation community • Commonwealth endangered ecological communities
Flora and fauna	• Known endangered, vulnerable and near threatened species • Catchment occurrence of endangered, vulnerable and near threatened species
Conservation estate	• Extent of vegetation in the conservation estate • Type of conservation tenure and extent of vegetation conserved • Type and extent of vegetation communities within the conservation estate • Number and extent of poorly conserved vegetation communities
Habitats	• Number and type of core and connecting habitat areas • Extent of vegetation in core and connecting habitat areas

Each category utilises a different method of assessment outlined in the Methods.

Reporting units

The Sunshine Coast Council local government area as defined by the Queensland Government's Local Government Boundaries (2014) extent data (Department of Natural Resources and Mines) and the river catchments contained within the local government area are the reporting units used in this report. The local government area (LGA) supports the landscape management approach adopted by the Sunshine Coast Biodiversity Strategy 2010-2020 (SCBS), while the smaller catchment unit has a defined boundary thereby allowing changes in biodiversity to be more easily monitored, measured and communicated. At the catchment scale (2009 Sunshine Coast Council catchment boundaries), biodiversity results also complement the annual waterway health results associated with the annual Healthy Waterways Ecosystem Health Monitoring Program report card and support the integrated catchment management approach which is identified in the SCBS.

Spatial data analysis

All vegetation area values (from here on defined as extent) are reported in hectares and have been rounded to whole numbers, except values less than a hectare (10,000m^2). In these cases, results are reported to two decimal places to ensure representation of these limited extents.

2.2 Vegetation

Native vegetation is a fundamental component of biodiversity and provides an effective surrogate measure of general biodiversity health. Understanding the overall extent of vegetation, the type and extent of different vegetation communities and their respective conservation status in the Sunshine Coast Council area can inform the development of, and assist with, the effective delivery of strategic biodiversity conservation and management programs.

Vegetation extent provides an important snapshot in time against which future data can be compared in order to understand vegetation gains or losses across the Sunshine Coast Council area. The total extent of vegetation in the Sunshine Coast Council area was determined based on a dataset which included both remnant and non-remnant vegetation. The dataset and associated spatial layer were developed by combining the State's regional ecosystem vegetation mapping data and the fine-scale vegetation (FSV) data developed by Council in 2016.

Regional ecosystem vegetation mapping

The Queensland Herbarium's regional ecosystem mapping process originally defined by Sattler and Williams (1999) maps native remnant vegetation at a scale of 1:50,000 with a minimum patch/polygon size of 10,000m^2. The mapping uses a three part numeric code that systematically classifies remnant vegetation into distinct regional ecosystem/vegetation communities (Neldner *et al.,* 2012). The three part code refers to:

1. The biogeographic region: Queensland is split up into 13 bioregions and the Sunshine Coast Council area occurs within the South-east Queensland bioregion which is represented by the number 12;
2. The land zone which is determined by the underlying geology or substrate on which the regional ecosystem occurs: there are 12 different land zones ranging from flood plain depositional soils and sands to ancient volcanic soils; and
3. The vegetation composition typically defined by the dominant vegetation species.

For example, if a vegetation community has a dominant canopy species made up of grey gums (*Eucalyptus propinqua*) and bloodwoods (*Corymbia intermedia*) occurring on volcanic soils and located within the South-east Queensland bioregion the resultant regional ecosystem classification would be 12.12.15 (for further information on the regional ecosystem classification go to www.ehp.qld.gov.au/regional-ecosystems).

The regional ecosystem data set also includes information about the extent of each regional ecosystem prior to European settlement, which is referred to as pre-clearing regional ecosystem extent. This data indicates the type of vegetation that occurred in an area prior to European vegetation clearing. It should be noted that regional ecosystem datasets including pre-clearing may be up-dated with new information. Version 9 (2015) of the regional ecosystem vegetation mapping dataset was used in the remnant vegetation analysis described in this Report.

For the purposes of this Report the term 'regional ecosystem' is used interchangeably with 'remnant vegetation'.

Fine-scale vegetation mapping

In 2016, the Sunshine Coast Council developed a fine-scale vegetation (FSV) mapping dataset using aerial laser survey (LiDAR) technology combined with high-resolution multispectral imagery to remotely sense tree heights and the extent of all woody vegetation within the Sunshine Coast Council area. However, some vegetation types such as heath and grasslands are not well represented in this dataset due to their low height structure. The data recorded more than 144 billion laser return points which translated into more than 500,000 individual patches or mapping polygons of vegetation. The mapping was compiled at a scale of 1:2,500 with a minimum polygon size of 100m^2.

A quality assurance process was applied to the data and resulted in the exclusion of certain polygons of vegetation associated with forestry and horticulture land management practices.

For the purposes of this Report the term 'fine-scale vegetation' is used interchangeably with 'non-remnant vegetation'.

A combined vegetation mapping layer

The regional ecosystem data was overlaid on the FSV data generating a foundational Sunshine Coast Council area vegetation mapping layer (see Figure 2.2) which defines two distinct vegetation classes, remnant and non-remnant, and maintains the integrity of the respective datasets.

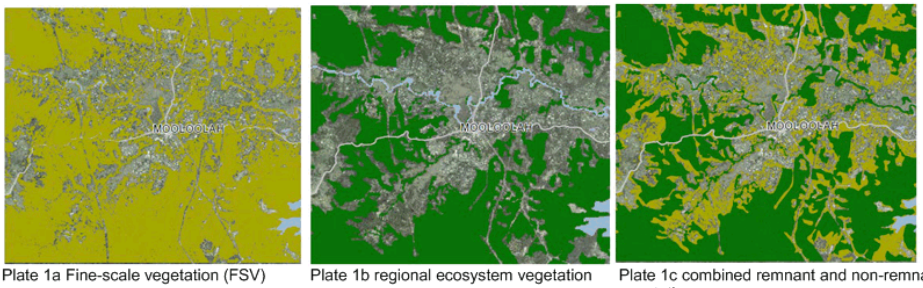


Plate 1a Fine-scale vegetation (FSV) Plate 1b regional ecosystem vegetation Plate 1c combined remnant and non-remnant vegetation

Figure 2.2: The remnant and non-remnant vegetation datasets were combined to provide a foundational Sunshine Coast Council area mapping layer.

Vegetation data analysis

Vegetation extent results were generated through spatial analysis of the Sunshine Coast Council area vegetation layer using ESRI ArcInfo software designed in a Model-Builder framework and input data were manipulated via several geo-processing models. This approach was adopted to ensure repeatable results for future temporal analysis.

The different scales of the two datasets was considered when interpreting the results as the regional ecosystem data includes infrastructure such as roads and buildings, thus potentially overestimating the true extent of vegetation (Accad *et al*., 2001). In contrast, the FSV data may under estimate the true extent of non-remnant vegetation due to the removal of certain vegetation classes (i.e. forestry and horticulture) during the quality assurance process (Sunshine Coast Council, 2016).

Vegetation extent, loss and conservation status

An understanding of the diversity, spatial extent and conservation status of different regional ecosystems is important to identify those which have a limited distribution, are under threat or at risk of being lost in order to improve protection and conservation management.

The extent of each regional ecosystem was determined through analysis of the regional ecosystem vegetation mapping dataset Version 9 (2015).

Vegetation loss analysis was undertaken at two temporal scales. The first scale provides a long-term insight into the current extent and loss of each regional ecosystem since European settlement. This was undertaken by calculating the difference between the current and pre-clearing extent data for each primary regional ecosystem. The second scale provides a more recent time scale of loss (or gain) over a 5 year period. The Queensland Government's regional ecosystem data is continually edited, amended, updated and published in map versions that are periodically released to the public. The different data set versions enable comparisons to be drawn from one version to the next and provides an effective method of tracking change in vegetation extent over time. Version 9 regional ecosystem data was compared to Version 6b (2010) to identify changes for this report.

To assist with reporting on the numerous regional ecosystems occurring throughout the Sunshine Coast Council area the dominant species associated with each regional ecosystem was used to establish six broad vegetation communities (see Figure 2.3). Vegetation results are reported at an individual regional ecosystem level, as well as the six broad vegetation groups.

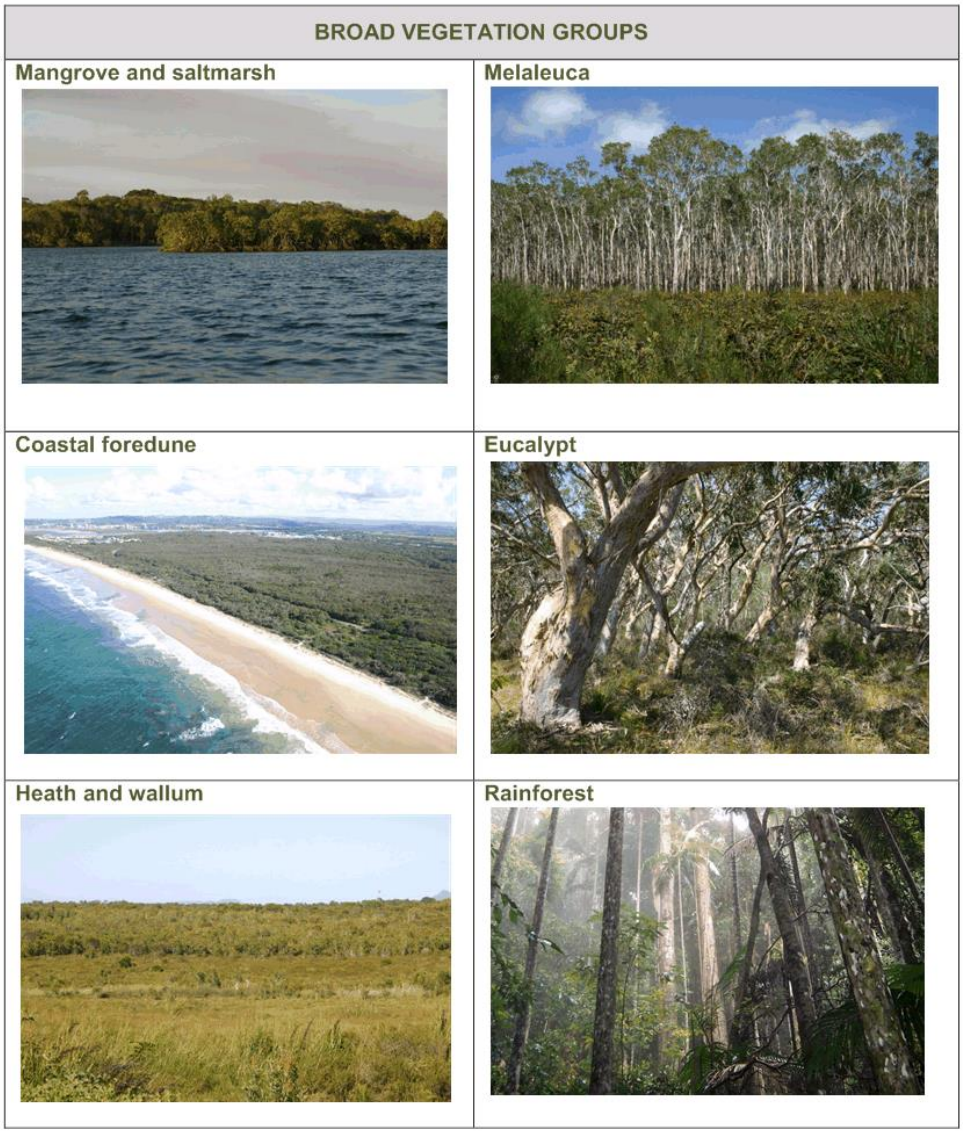


Figure 2.3: Pictorial representation of each broad vegetation community

Regional ecosystem conservation status

Under the *Vegetation Management Act 1999* three conservation status classifications *least concern*, *of concern* and *endangered* are being applied to individual regional ecosystems based on their remaining extent in the bioregion compared with thier pre-clearing extent (Table 2.2).

Table 2.2: Conservation status classification

Vegetation Conservation Status	Percentage of regional ecosystem's pre-clearing extent remaining
Endangered	< 10
Of Concern	10-30
Least Concern	>30

The current conservation status of a regional ecosystem occurring in the Sunshine Coast Council area was determined by interrogating the State Government's regional ecosystem description database. In addition to this, the percentage loss of each regional ecosystem in the Sunshine Coast Council area since European settlement was calculated using Equation 1.

Equation 1

$$\%\,\text{RE lost on Sunshine Coast} = \left(\frac{\text{Current RE extent on Sunshine Coast}}{\text{Pre - clearing extent of RE on Sunshine Coast}} \right) \times 100($$

Commonwealth listed ecological communities

The Sunshine Coast Council area has three nationally listed ecological communities including two critically endangered and one vulnerable ecological community under the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999*. These include:

- Critically endangered Lowland Rainforest of Subtropical Australia (LRSA);
- Critically endangered Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (LR&CVT); and the
- Vulnerable Subtropical and Temperate Coastal Saltmarsh.

Endnagered ecological communities

The Sunshine Coast currently has limited extents of LR&CVTs much of which is considered to be non-remnant whereas LRSA extents exist across the region.

The Sunshine Coast Council area has nine regional ecosystems that are representative of the LRSA ecological community. The key diagnostic characteristics of the listed ecological community are:

- distribution of the ecological community is primarily in the NSW North Coast and South Eastern Queensland bioregions, according to Interim Biogeographic Regionalisation for Australia (IBRA) version 6.1 (2004);
- the ecological community occurs on: soils derived from basalt or alluvium; or enriched rhyolitic soils; or basalt enriched metasediments;
- the ecological community generally occurs at an altitude less than 300 metres above sea level;
- the ecological community typically occurs in areas with high annual rainfall (>1300mm);
- the ecological community is typically more than 2 km inland from the coast;
- the structure of the ecological community is typically a tall (20m–30m) closed forest, often with multiple canopy layers; and
- patches of the ecological community typically have high species richness.

Vulnerable ecological communities

The Sunshine Coast cotains extents of the vulnerable listed Subtropical and Temperate Coastal Saltmarsh. The Coastal Saltmarsh ecological community consists mainly of salt-tolerant vegetation (halophytes) including: grasses, herbs, sedges, rushes and shrubs. The key diagnostic characteristics of the listed ecological community are:

- occurs south of 23° 37' S latitude - from the central Mackay coast on the east coast of Australia, southerly around to Shark Bay on the west coast of Australia (26° latitude), and including the Tasmanian coast and islands within the above range;
- occurs on the coastal margin, along estuaries and coastal embayments and on low wave energy coasts;
- occurs on places with at least some tidal connection, including rarely-inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences, but not areas receiving only aerosol spray;
- occurs on sandy or muddy substrate and may include coastal clay pans (and the like);
- consists of dense to patchy areas of characteristic coastal saltmarsh plant species (i.e. salt-tolerant herbs, succulent shrubs or grasses, that may also include bare sediment as part of the mosaic); and
- proportional cover by tree canopy such as mangroves, melaleucas or casuarinas is not greater than 50%, nor is proportional ground cover by seagrass greater than 50%.

The above key diagnostic characteristics for LRSA and STCS have been extracted from the *Environment Protection and Biodiversity Conservation Act 1999* Conservation Advice for the respective ecological communities.

2.3 Habitat analysis

The term 'habitat' is used to holistically describe the biotic and abiotic elements of an area and includes soil, rocks, waterbodies, flora and fauna, along with the myriad of ecological processes needed for an area to function and remain viable.

The principles of landscape ecology and island biogeography were adopted to develop a GIS model, which was applied to the Sunshine Coast Council foundational vegetation layer to determine the nature of habitat areas in the region. The mapping process categorised the Sunshine Coast Council area's vegetation into three broad landscape elements: core habitat areas; connecting habitat areas; and other habitat areas as depicted below.

Core habitat areas (CHA) are defined as patches 50 hectares or greater of contiguous remnant and non-remnant vegetation. A minimum contiguous area of 50 hectares was chosen to identify CHAs given relative scales to regional and state core habitat area identification (i.e. bioregional cores are defined as 500 hectares in extent). Internal buffer widths of 50 and 10 metres were applied to define CHAs and ensure linear, narrow (less than 50m but greater than 10m wide) vegetated connections were appropriately identified and classified. CHAs have been classified into three classes including:

- **Primary core habitat areas** – these are habitat areas that have 50 metre internal buffers from the nearest vegetated edge and can be described as the inner portion of a vegetated patch reflecting relatively un-fragmented habitat sufficiently large enough to support more than one individual of a species or habitat and are somewhat unaffected by human disturbance or other neighbouring habitats;
- **Fringing primary core habitat areas** – these are habitat areas that are directly contiguous with primary core habitat areas, have 10 metre internal buffers from the nearest vegetated edge and are typically linear and more fragmented in nature. These habitat areas are considered an integral component of primary core habitat areas providing varying levels of ecological connectivity and functionality.
- **Secondary core habitat areas** – these are habitat areas that have 10 metre internal buffers from the nearest vegetated edge and are typically more isolated in nature with significantly less associated contiguous vegetation compared to primary core habitat areas.

Connecting habitat areas are defined as patches of vegetation, made up of remnant and non-remnant vegetation, less than 50 hectares in area with internal buffers of 10 metres applied. Connecting habitat areas have been further categorised based on patch size continuity and adjacency buffers and include:

- **Contiguous vegetation** – these habitat areas that can be extensive in their overall area but are very linear in nature with the consolidated areas not exceeding 10 metres in width. Contiguous vegetation areas may be directly connected to fringing primary core habitat areas, secondary core habitat areas and/or stepping stone habitat areas;
- **Large stepping stone habitat areas** – these are patches greater than 25 hectare and less than 49.99 hectares of contiguous vegetation with a 10 metre internal buffer;
- **Medium stepping stone habitat areas** – these are patches greater than 10 hectares and less than 24.99 hectares of contiguous vegetation with a 10 metre internal buffer; and
- **Small stepping stone habitat areas** – these are patches greater than 1 hectare and less than 9.99 hectares of contiguous vegetation with a 10 metre internal buffer;

Stepping stone and contiguous vegetation habitat areas are scattered throughout the landscape and may provide a level of ecological functionality, form existing functional linkages or have the potential to provide ecological connectivity between core habitats areas (see Figure 2.4). These areas typically differ from core habitat areas as they are more likely to have a greater degree of fragmentation and subject to higher levels of edge affects (i.e. invasive weeds) due to patch size and shape (area to perimeter ratio). Interior edges or holes are also likely to demonstrate higher degrees of 'internal' edge affects.

Other habitat areas (OHA) are made up of isolated remnant and non-remnant vegetation patches that are not contiguous with any of the above classes.

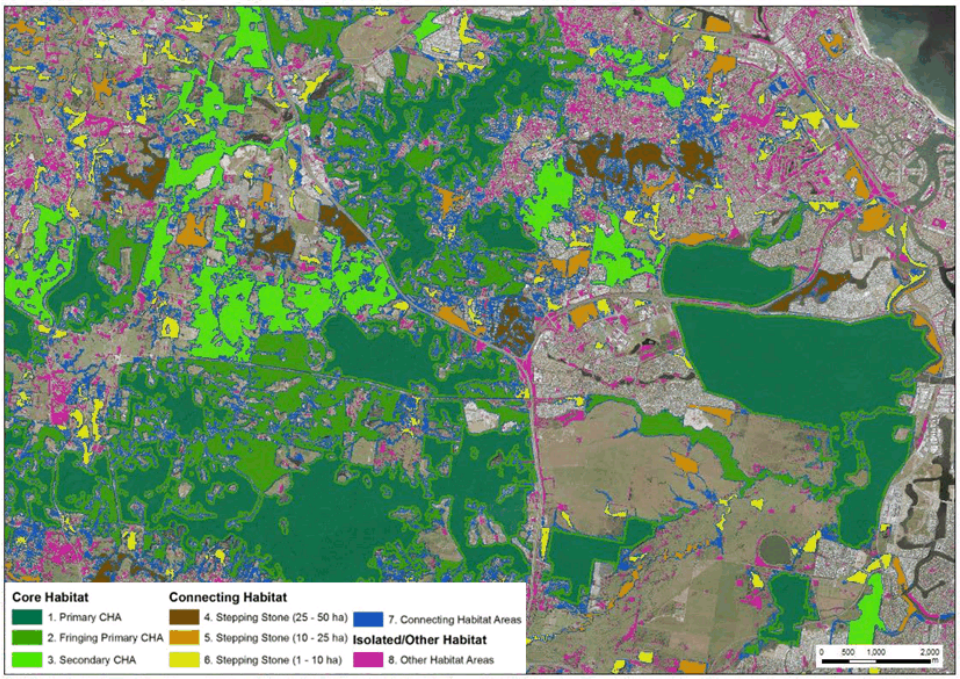


Figure 2.4 Snapshot of the classified vegetation into core, connecting, stepping stone and other habitat areas.

Once the core, connecting and other habitat areas were determined spatial analysis was undertaken to quantify the extent of remnant and non-remnant within each of the habitat area and categorised both at a local government area and river catchment area.

It should be noted that areas that no longer contain vegetation may also provide habitat for particular species. For example, many raptor species prey on small mammals and reptiles in redundant cane fields providing an important food resource. However, the habitat value of non-vegetated areas was not considered as a part of the habitat analysis due to a lack of information and appropriate identification methods.

2.4 Flora and Fauna Analysis

Flora and fauna are a fundamental component of biodiversity. However, it is unrealistic to monitor and manage every plant and animal species in the Sunshine Coast Council area due to their number and diversity, the habitats in which they are found and the large spatial extent of the region. However, an understanding of the endangered, vulnerable and near threatened species that exist in the Sunshine Coast Council area, and where they are known to occur, can inform future conservation and management strategies.

Rare and threatened species

Endangered, vulnerable and near threatened (EVNT) and presumed extinct species likely to occur in Queensland and the Sunshine Coast Council area were determined by querying the State Government's Species Profile database. This database stores confirmed records of plant and animal species listed under the Queensland Government's *Nature Conservation Act 1992* and the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* as occurring in Queensland. Table 2.3 summarises the datasets used and the treatment applied in the data analysis.

Table 2.3: Summary of datasets used in the EVNT data analysis for the Sunshine Coast

Dataset name	Owner	Description	Last updated or obtained	Precision/ accuracy scale
Species profile (previously wildnet)	Department of Environment and Heritage Protection (DEHP)	Queensland government's online wildlife database. Based on collated species lists and wildlife records acquired from a range of internal and external sources including specimen collections, research and monitoring programs, inventory programs including extension activities, literature records, wildlife permit returns and community wildlife recording programs. https://environment.ehp.qld.gov.au/report-request/species-list/	August 2016	10m to 20000m
Atlas of Living Australia	Australian Government Initiative with the Global Biodiversity Information Facility (GBIF), in collaboration with 17 partner organisations	The Atlas of Living Australia is a collaborative, national project that aggregates biodiversity data from multiple sources and makes it available and usable online. http://www.ala.org.au	August 2016	up to 26000m
Sunshine Coast Council Internal Data	Various Sunshine Coast Council teams	Sourced from a range of Council programs and projects including Land for Wildlife program, Council reserve management	2016	Various and unknown

A number of other associated datasets (Faunawatch, Koala Tracker and Glossy Black Cockatoo Conservancy) collected and managed using citizen science were used to determine the occurence of individual species across the catchments.

2.5 Conservation estate analysis

The Sunshine Coast's conservation estate is a cornerstone of the region's approach to biodiversity conservation and management. Expanding the conservation estate is critical to protecting regional biodiversity, enhancing ecological connectivity and increasing the estate's resilience to climate change.

The conservation estate has two components (see Table 2.4):

1. **Protected areas** – state, council and private land tenures that include a level of protection for conservation purposes. These include land designated as:
   - State reserves and Nature Refuges gazetted under the *Nature Conservation Act 1992*;
   - Reserve for environmental purposes under the *Land Act 1994*;
   - A statutory covenant under the *Land Title Act 1994*; and
   - Freehold land owned by Council and managed for conservation purposes.

2. **Voluntary conservation areas** – land tenures not bound by any encumbrances for environmental conservation purposes. Voluntary conservation areas consist of land owned by private landholders who are engaged in the Land for Wildlife program, which aims to improve land management practices and actively manage habitat areas.

Table 2.4: Conservation estate tenure types and data source

Conservation estate	Conservation tenure type	Data source
Tenure with a legal protection mechanism	**State protected areas*** • National Parks • Conservation Parks	Protected Estates dataset (Department of Environment and Heritage Protection) 01/04/2016
	Nature Refuge • Council and private freehold land	Department of Environment and Resource Management Version 01/04/2016
	Statutory covenants • voluntary and non-voluntary private freehold land	Sunshine Coast Council's Covenant dataset 01/06/2016
Tenure with conservation as primary purpose	**Council conservation areas** (Council and State owned land managed by Council) • Council owned freehold • State owned Council trustee • Council Trust under Nominee • Riparian esplanades • Reserves outside of SCC cadastre	Sunshine Coast Council's Open Space (conservation) dataset 18/06/2016.
Tenure subject to voluntary conservation	**Land for Wildlife**	SEQ Catchments Land for Wildlife Enquire Database August 2016.

*Queensland Government lands designated as "State Forests" or "Timber Reserve" were not included in the State protected areas. These tenures do not currently protect the biodiversity values that occur in these areas. However, the report recognises the biodiversity values of these areas and the non-plantation remnant and non-remnant vegetation occurring within these tenures are considered as a part of the vegetation and habitat analysis.

**The data used in this report associated with the state, nature refuge, statutory covenant, Council conservation areas and registered Land for Wildlife properties is representative of a point in time and therefore may not reflect property changes, including tenure gazettal and designations occurring after January 2016.

Conservation estate and associated vegetation

Establishing the extent and composition of vegetation in the conservation estate and associated tenures provides important information on the habitat values being conserved. It also provides a baseline from which the estate can be increased to ensure adequate representation and protection of the region's diverse vegetation communities.

The extent and composition of vegetation in the conservation estate and associated tenures were determined through a GIS spatial analysis of the Sunshine Coast vegetation layer and available cadastral and tenure datasets. To ensure that individual properties of the conservation estate were analysed only once and that results represented the actual extent of reported tenures, a hierarchy priority method was applied. The hierarchical priorities were:

1. Nature Refuges;
2. Covenants;
3. State protected areas;
4. Council conservation areas; and
5. Land for Wildlife.

This priority hierarchy was particularly relevant to properties with multiple conservation tenures, for example, a Land for Wildlife property with a registered statutory covenant or a Council conservation area with a Nature Refuge.

For the purposes of reporting the various conservation tenures are grouped into three classes including: 1. **State** made up of National and Conservation Parks; 2. **Council** made up of Nature Refuge, freehold and trustee land; and 3. **Private** made up of Nature Refuge, covenants and Land for Wildlife.

Conservation estate and poorly conserved regional ecosystems

Understanding which regional ecosystems are represented within the conservation estate (excluding Land for Wildlife properties) and their respective extents is vital to ensure long-term protection and management of the region's biodiversity.

The nationally accepted Comprehensive Adequate and Representative (CAR) reserve system (ANZECC & MCFFA, 1997) approach to understanding appropriate levels of conservation informed the identification of the Sunshine Coast's poorly conserved regional ecosystems.

The CAR criteria and method used to define adequacy was applied to the conservation estate's protected area tenures (excluding Land for Wildlife properties), and the Sunshine Coast vegetation layer to identify regional ecosystems considered to be poorly conserved at a Sunshine Coast Council local government area scale.

This was determined by comparing the extent to which a regional ecosystem is currently 'protected' to its pre-clearing extent (Equation 2). If the current protected extent exceeds 10% of the total pre-clearing extent, the regional ecosystem was considered to be adequately represented however, if the extent was less than 10%, it was considered to be poorly conserved.

Equation 2

$$\%\ \text{of Pre - clearing RE extent in conservation} = \frac{\text{Current extent of RE in protected areas}}{\text{Pre - clearing extent of RE}} \times 100$$

3 Results and Discussion

3.1 Sunshine Coast Council Local Government Area

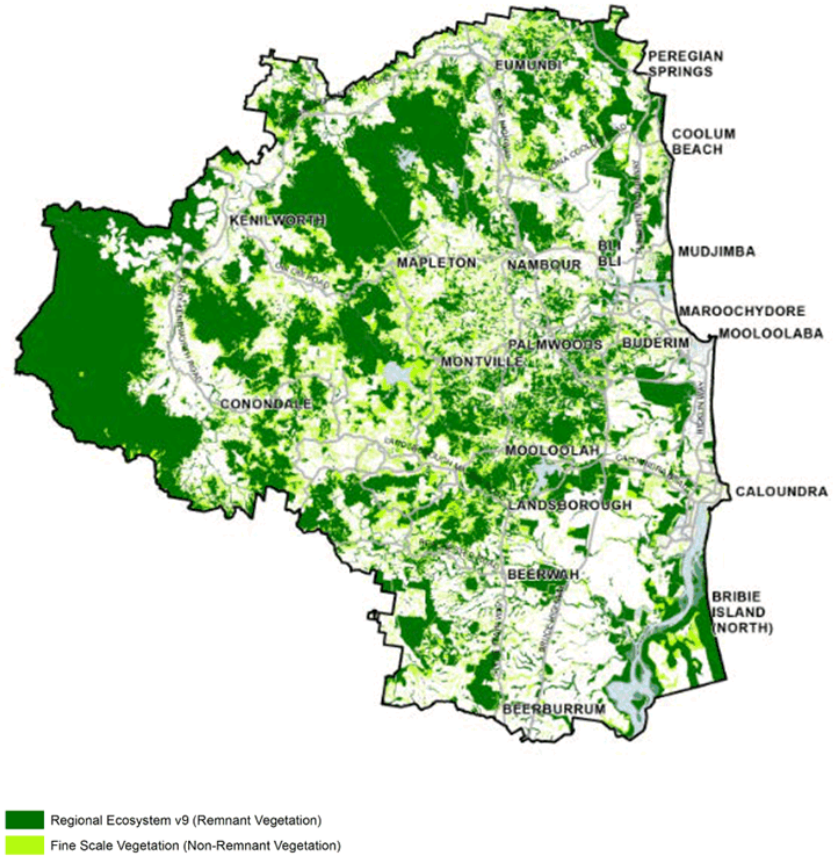
3.1.1 Vegetation

Approximately 54% of the Sunshine Coast Council area is vegetated, of which 75% is remnant and 25% is non-remnant vegetation. Approximately 12% of vegetation occurs in urban areas (see Table 3.1; Map 3.1).

Table 3.1: Summary of Sunshine Coast Council area vegetation

	Vegetation extent (ha)		
	Urban* area	Rural area	Total area
Local Government Area	36,204	192,273	228,477
Remnant vegetation	7,781	85,085	92,866
Non-remnant vegetation	6,656	24,761	31,417
Combined remnant and non-remnant vegetation	14,437	109,846	124,283
No vegetation	21,767	82,427	104,194

*Urban includes urban and rural living areas as defined by the South-east Queensland Regional Plan 2009-2031



Map 3.1: Remnant and non-remnant vegetation of the Sunshine Coast Council area

Box 1: Case study - how we compare to other SEQ local government areas vegetation extents?

The extent of remnant vegetation in the Sunshine Coast Council area contributes approximately 10% to the extent of remaining remnant vegetation in the South-east Queensland (SEQ) bioregion.

Table below shows the land area and remnant vegetation extents of South East Queensland local governments.

Local governments	SEQ local government area (km^2)	Extent of remnant vegetation (hectares)	Remnant vegetation cover (%)	Contribution to SEQ remnant vegetation extent (%)
Somerset Regional	5,369	191,534	35	21.4
Scenic Rim Regional	4,239	123,310	29	13.9
Sunshine Coast Regional	**2,284**	**92,866**	**41**	**10.6**
Lockyer Valley Regional	2,272	91,727	40	10.2
Moreton Bay Regional	2,069	68,598	33	7.7
Toowoomba Regional	7,122	65,258	50	7.4
Gold Coast City	1,375	53,313	39	6
Brisbane City	1,379	51,887	38	5.8
Noosa Shire	869	40,278	46	5
Redland City	522	29,268	56	3.3
Gympie Regional	6,898	27,937	41	3.2
Logan City	957	26,274	27	3
Ipswich City	1,093	22,781	21	2.5

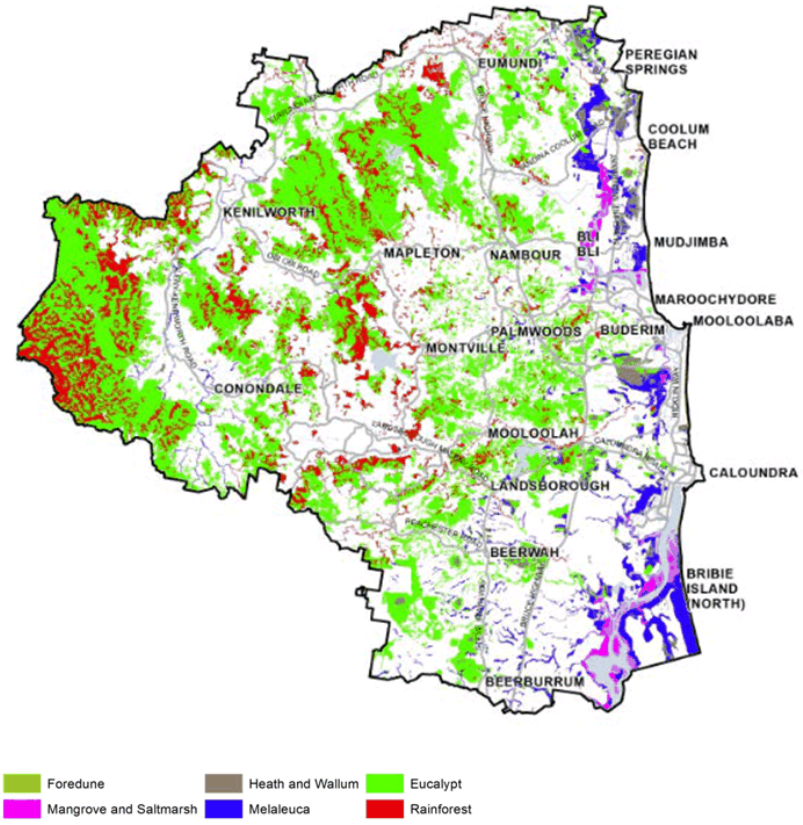
* Highlighted cells represent those local governments with a similar area to the Sunshine Coast Council area (**bolded**).
Data source: provided by Healthy Waterways and Catchments 2016

Vegetation communities

The Sunshine Coast Council area's remnant vegetation consists of 75 regional ecosystems comprising more than 92,800 hectares. The 75 regional ecosystems are grouped into six broad vegetation communities including: eucalypt (66%); rainforest (18%); melaleuca (9%); heath and wallum (3%); mangrove and saltmarsh (3%); and foredune (1%) (see Table 3.2; Map 3.2). Appendix A details the vegetation communities and their associated regional ecosystems.

Table 3.2: Summary of vegetation communities of the Sunshine Coast Council area

		Regional ecosystem			
		Number	Pre-clearing extent (ha)	Current extent (ha)	Loss (%)
	Sunshine Coast LGA	75	225,453	92,866	59
Vegetation community	**Mangrove and saltmarsh**	3	3,011	2,527	16
	Foredune	2	615	338	45
	Heath and wallum	15	8,274	2,920	65
	Melaleuca	9	28,311	8,564	70
	Eucalypt	36	146,007	61,748	58
	Rainforest	10	39,235	16,769	57



Map 3.2: Vegetation communities of the Sunshine Coast Council area.

Vegetation loss

The Sunshine Coast Council area's current vegetation pattern has been influenced by more than 150 years of rural and urban landuses. The early pioneers 'opened up' the country by clearing vegetation to establish tracks, roads, townships and farms with much of the timber used for the construction of dwellings, sheds and fences, transportation, fuel and other essential activities. As the area was further developed, the vegetation was impacted by the establishment of industries such as forestry, agriculture, horticulture, and in more recent year's urbanisation. Since European settlement, the remnant vegetation extent has declined by approximately 59% (see Table 3.2).

Twenty-three regional ecosystems had pre-clearing extents of less than 200 hectares including three melaleuca, three rainforest, eight heath and wallum, and nine eucalypt regional ecosystems (see Appendix A). Forty regional ecosystems have lost more than 50% of their pre-clearing extents and twenty one of those have lost more than 70% while a further six regional ecosystems have lost between 67-69% of their pre-clearing extents. The regional ecosystems that have had a >70% loss had an average pre-clearing extent greater than 4,000 hectares and three regional ecosystems had pre-clearing extents greater than 10,000 hectares. Appendix A details the vegetation communities and their associated regional ecosystems along with their respective pre-clearing and current extents.

The eucalypt vegetation communities had the greatest pre-clearing extents; the greatest subsequent extent losses; and also the largest remaining extents. Regional ecosystems 12.3.2, 12.3.11, 12.5.3, 12.8.8, 12.9-10.4, 12.9-10.14, 12.11.14 and 12.12.12 had a combined pre-clearing extent of more than 74,600 hectares or 33% of total vegetation cover. These eight combined vegetation communities have lost more than 58,600 hectares or 80% of their pre-clearing extents and constitutes almost half (44%) of all vegetation lost within the Sunshine Coast Council area.

Regional ecosystem 12.3.11 (open forests to woodland, predominately *Eucalyptus tereticornis, E. grandis, Corymbia intermedia, Lophostemon suaveolens,* fringing riparian areas - mainly on alluvial plains and drainage lines along coastal lowlands) has had the greatest loss relative to its pre-clearing extent with 95% (10,689 hectares) cleared. This regional ecosystem's current conservation status is classified as O*f Concern* bio-regionally under the *Vegetation Management Act 1999* but the extent lost in the Sunshine Coast Council area would place it in the critically endangered category. Regional ecosystem 12.5.3 (open forests predominantly *Eucalyptus racemosa* on deeply weathered soils and ancient sands) has had the greatest total extent loss of the eucalypt communities with 10,729 hectares cleared (see Table 3.3; Map 3.3).

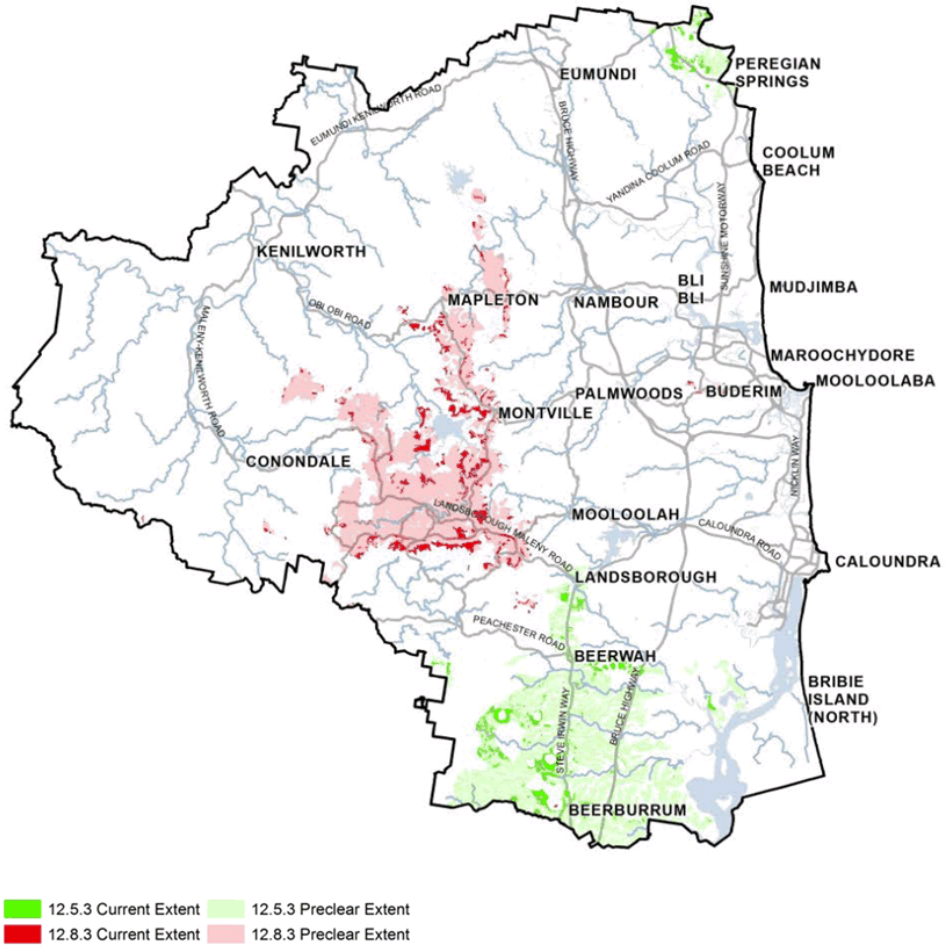
The rainforest regional ecosystem 12.8.3 (complex notophyll/microphyll vine forests on the basalt soils) was the most widespread rainforest regional ecosystem in the Sunshine Coast Council area with a pre-clearing extent of 12,758 hectares. It has had the greatest extent loss of any regional ecosystem with more than 11,000 hectares cleared; that constitutes nearly two thirds of all rainforest lost in the Sunshine Coast Council area (see Table 3.3; Map 3.3).

Regional ecosystem 12.12.15 (tall open eucalypt forests of *Eucalyptus propinqua, E. siderophloia, E. microcorys, Corymbia intermedia* on old volcanic soils) has the greatest remaining extent with more than 11,600 hectares from a pre-clearing extent in excess of 16,000 hectares, most of which occurs in protected areas.

For full details of each regional ecosystem including their preclear and current extents see Appendix A.

Table 3.3: Sunshine Coast Council area pre-clearing and current regional ecosystems extents for 12.5.3 and 12.8.3

RE Classification	Pre-clearing extent (ha)	Current extent (ha)	Loss (%)
12.5.3	12,126	1,397	88
12.8.3	12,758	1,563	88



Map 3.3: Pre-clearing and current extents of regional ecosystems 12.5.3 and 12.8.3

Vegetation loss – regional ecosystem comparison

A comparative analysis of regional ecosystem data Version 6b (2010) and Version 9 (2015) was undertaken to identify changes (i.e. gains or losses) in vegetation for the Sunshine Coast Council area. A loss of 554 hectares of remnant vegetation was recorded for the period.

Table 3.4: Comparison of Version 6b and Version 9 regional ecosystem data shows the relative extent loss for the Sunshine Coast.

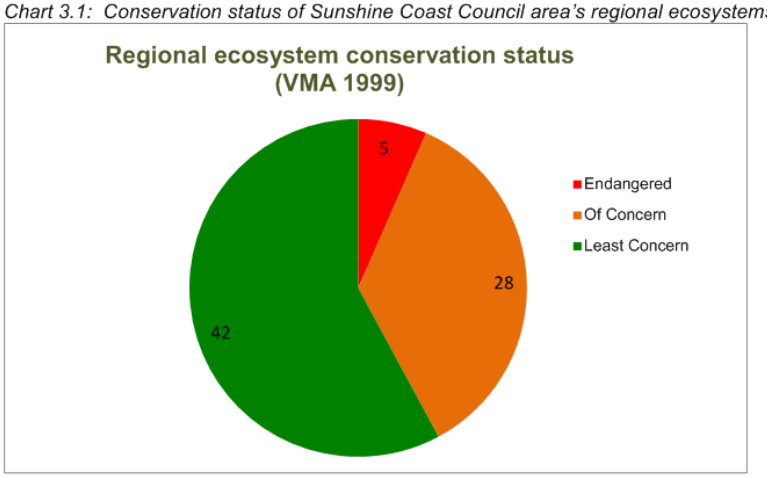
Sunshine Coast Council Area				
Remnant vegetation extent (ha)			Drivers of loss (ha)	
2011	2016	Loss	Urban	Rural
93,420	92,866	**554**	**317**	**237**

Melalueca and eucalypt vegetation communities were the most heavily impacted in the urban areas. More than 300 hectares of remnant vegetation has been cleared in the urban areas as a result of residential development, council infrastructure (including the expansion of landfill sites and the Sunshine Coast Airport) and state government infrastructure (including utilities such as Queensland Bulk Water) and road construction. While in the rural areas the impacts are less concentrated and more widespread including a multitude of as of right single dwelling contruction and associated infrastructure, horticulture, agriculture and other land use/management activities.

Queensland conservation status of regional ecosystems

Of the Sunshine Coast Council area's 75 regional ecosystems five are considered *endangered*, 28 *of concern* and 42 *least concern* according to their conservation status under the Quuensland *Vegetation Management Act 1999* (see Chart 3.1).

Chart 3.1: Conservation status of Sunshine Coast Council area's regional ecosystems



When reviewing the conservation status of Sunshine Coast Council area regional ecosystems it is important to also consider the local loss that has occurred. A regional ecosystem's conservation status does not necessarily represent an ecosystem's extent at a Sunshine Coast Council area scale, as the classification is derived at a greater bioregional scale (south east Queensland). For example, the conservation status of the rainforest regional ecosystem 12.8.3 is *least concern* bio-regionally but data specific to the Sunshine Coast Council area indicates this community is threshold endangered having lost 88% of its pre-clearing extent. For details on each regional ecosystem's conservation status and extent lost on the Sunshine Coast Council area see Appendix A.

Commonwealth listed endangered and vulnerable ecological communities

The Sunshine Coast Council area contains two ecological communities listed as threatened under the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act 1999* including the critically endangered Lowland Rainforest of Sub-tropical Australia (LRSA) and the vulnerable Subtropical and Temperate Coastal Saltmarsh (STCM).

The Sunshine Coast Council Area includes extents of nine regional ecosystems diagnostic of the LRSA and three regional ecosystems diagnostic of STCM (see Table 3.5).

Refer to Appendices A and C to understand the remaining extents of the various regional ecosystems and how much is currently protected and conserved.

Table 3.5: Diagnostic regional ecosystems for the LRSA and STCS ecological communities in the Sunshine Coast Council area

Commonwealth listed ecological communities	
Diagnostic LRSA Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.3.1	Endangered
12.5.13a	Endangered
12.8.3	Least Concern
12.8.13	Of Concern
12.11.1	Least Concern
12.11.10	Least Concern
12.12.1	Of Concern
12.12.16	Least Concern
*12.9-10.16	Of Concern
Diagnostic STCS Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.1.1	Of Concern
12.1.2	Least Concern
12.1.3	Least Concern

*Regional ecosystem 12. 9-10.16 is only included where it is enriched with soils derived from landzone 3 (alluvia) or 8 (basalt).

3.1.2 Habitat

The Sunshine Coast Council area's habitat network comprises 89,414 hectares of core habitat areas, 27,743 hectares of connecting habitat areas and 7,127 hectares of other habitat areas (see Table 3.6; Map).

Table 3.6 Sunshine Coast Council Area's core, connecting and other habitat areas

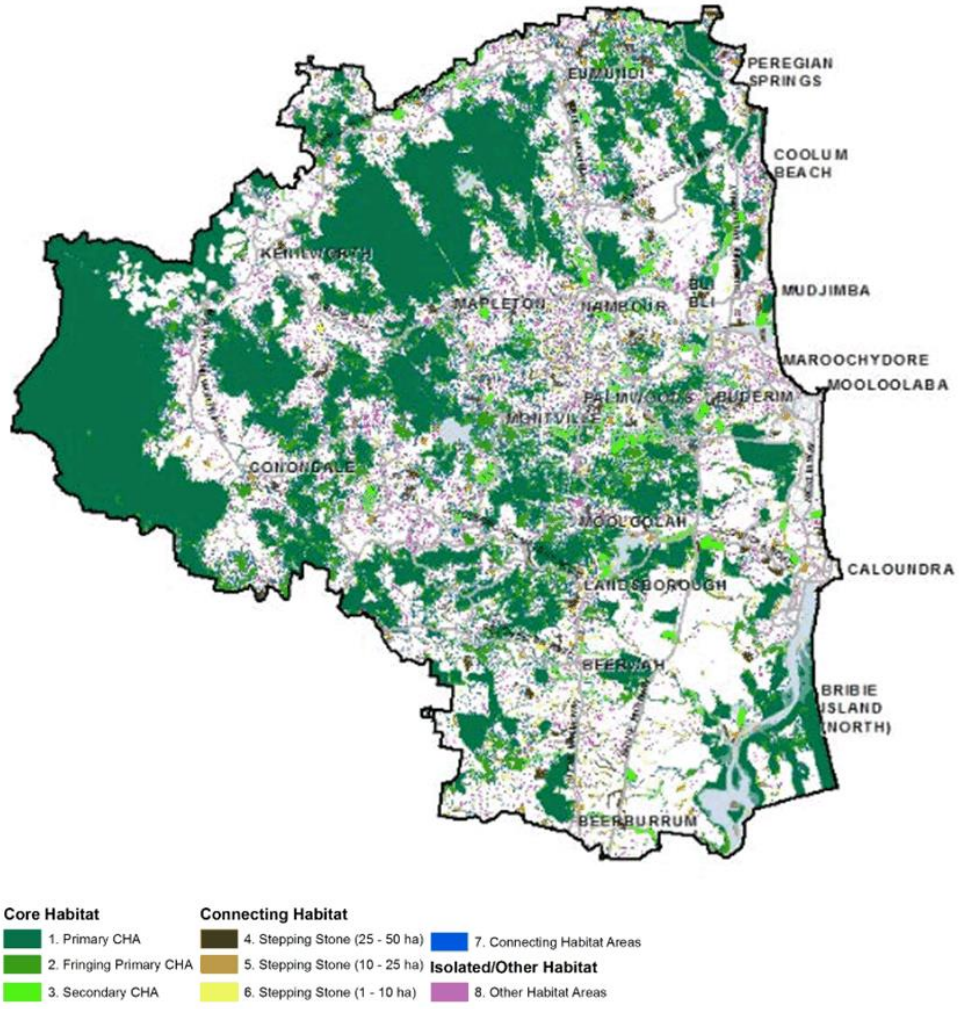
Landscape element	Secondary Classification	Number of features	Remnant	Non-Remnant	Total vegetation
			Area (ha)	Area (ha)	Area (ha)
Core habitat areas	Primary core	109	61,841	629	62,470
	Fringing primary core	59	16,677	5,636	22,313
	Secondary core	58	3,948	683	4,631
	Sub-total	**226**	**82,466**	**6,948**	**89,414**
Connecting habitat areas	Stepping stone patches 25-50 ha	69	1,991	408	2,399
	Stepping stone patches 10-25 ha	162	2,005	522	2,528
	Stepping stone patches 1-10 ha	1,165	2,288	1,252	3,541
	Contiguous vegetation areas	14,363	3,959	15,316	19,275
	Sub-total	**15,759**	**10,243**	**17,498**	**27,743**
Other habitat areas	Isolated vegetation areas	**63,048**	**158**	**6,967**	**7,126**
	Totals		**92,866**	**31,416**	**124,283**

There are 109 primary core habitat areas spread across the local government area comprising 61,841 hectares of remnant vegetation and 629 hectares of non-remnant vegetation. These areas are considered to have higher ecological connectivity and an assumption of higher ecological functionality given their contiguous, unfragmented, and more intact nature.

Some of the more notable primary core habitat areas are characterised by large protected and conservation areas such as the Conondale and Mapleton National Parks. Important coastal primary core habitat areas include Bribie Island National Park, Mooloolah River National Park and Coolum Creek Conservation Park. The primary core habitat areas constitute 49% of the Sunshine Coast Council area's vegetation (refer to conservation estate section for further details on conservation reserves).

Fringing core habitat areas and secondary core habitat areas makeup the balance (26,944 ha) of the identified core habitat areas. The fringing core habitat areas are those areas of vegetation that are contiguous with primary core habitat areas but have vegetated connection widths less than 50 metres but greater than 10 metres indicating the linear nature of this connected vegetation. The composition of the fringing core habitat areas is characterised by a greater proportion of non-remnant vegetation (see Table 3.6).

Stepping stone connecting habitat areas will play a vital role in the region's future biodiversity conservation planning as they assist to identify areas where improvements to ecological connectivity and functionality may be possible. While structural connections does not necessarily equate to functional connectivity for native and or focal species, our knowledge of structural corridors are valuable in biodiversity assessments and certainly play an important role in landscape planning and meeting conservation goals.



Map 3.4 Sunshine Coast Council Area's core, connecting and other habitat areas

3.1.3 Flora and fauna

The Sunshine Coast Council area has 135 of the state's 1,296 listed endangered, vulnerable and near threatened (EVNT) flora and fauna species (see Table 3.7). A breakdown of these EVNT species by taxonomic group and conservation status is presented in Charts 3.2 and 3.3 respectively.

Of the 135 EVNT species identified, 11 are not recognised in the state dataset but are likely to occur in the Sunshine Coast Council area. These 11 species include six species listed in the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* and a further five species identified by "local specialists" within Council or community monitoring groups that still require formal validation (see Appendix B).

Sightings records that are not formally confirmed, and are thereby classified as 'unconfirmed' or 'other' are not necessarily unreliable, but simply have not been vetted by the state herbarium or museum. Studies have shown that community monitoring can be valuable even without quality control and that the results can be similar to systematic surveys undertaken by experts (Szabo & Possingham, 2012).

A comprehensive list of the EVNT species is presented in Appendix B.

Table 3.7: Number of EVNT species in Queensland and the Sunshine Coast Council area

	Queensland	Sunshine Coast Council LGA (2016)			
	Listed EVNT species	EVNT species listed by the state and Commonwealth (Species Profile)	Additional EVNT species listed by the Commonwealth only	Additional EVNT species identified in other data sources	Total EVNT species
Flora	998	71	1	4	76
Fauna	298	53	5	1	59
Total	1296	124	6	5	135

Chart 3.2: Sunshine Coast Council area listed EVNT flora and fauna species by taxonomic group

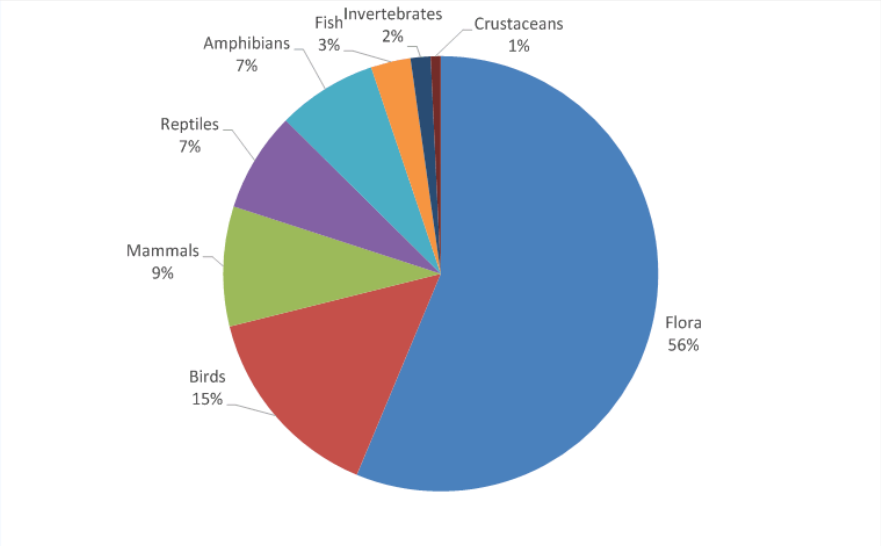
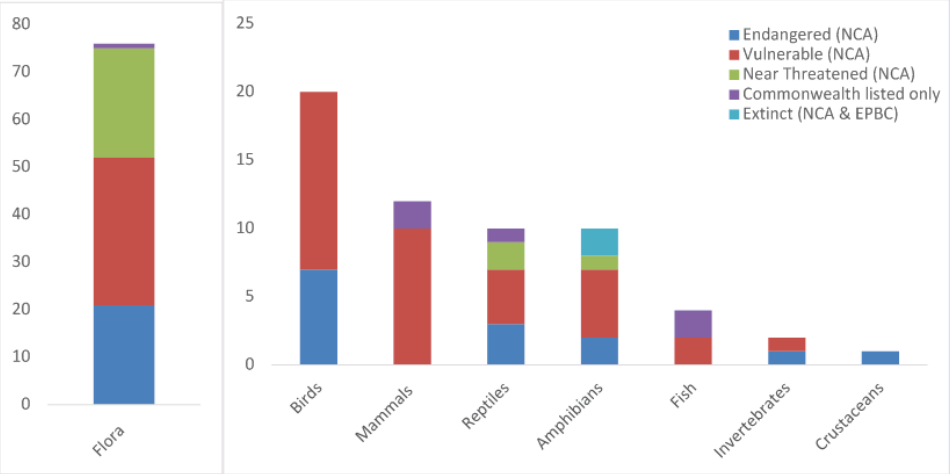


Chart 3.3: Sunshine Coast Council area number of listed species within each taxonomic group and the listing status under the Nature Conservation Act 1992 and Environment Protection and Biodiversity Conservation Act 1999.

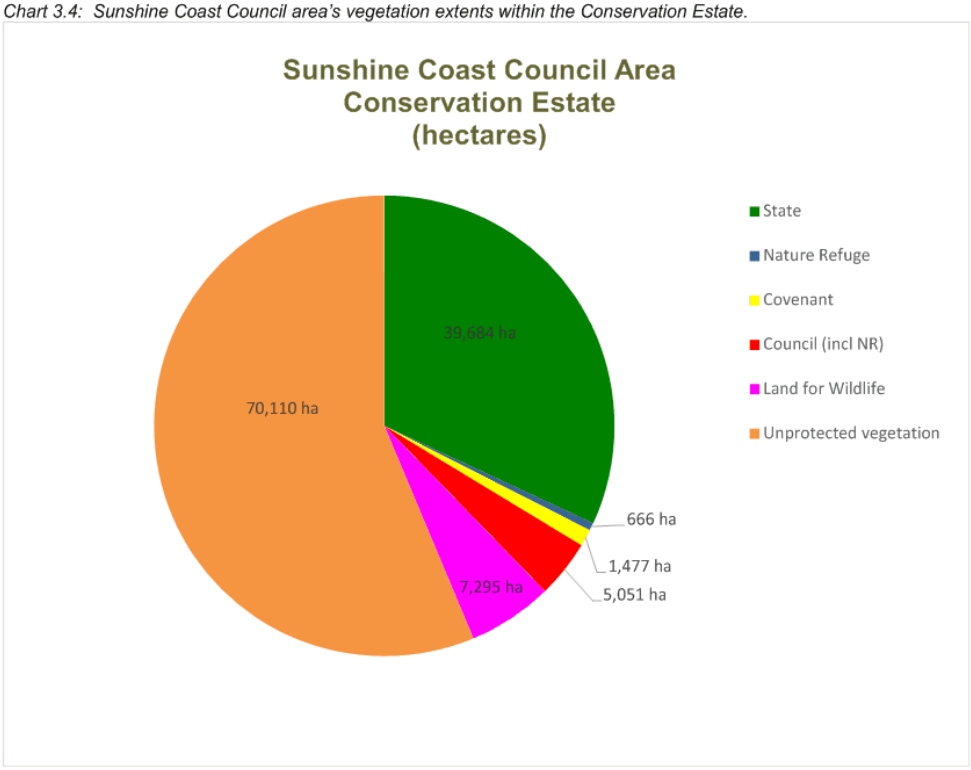


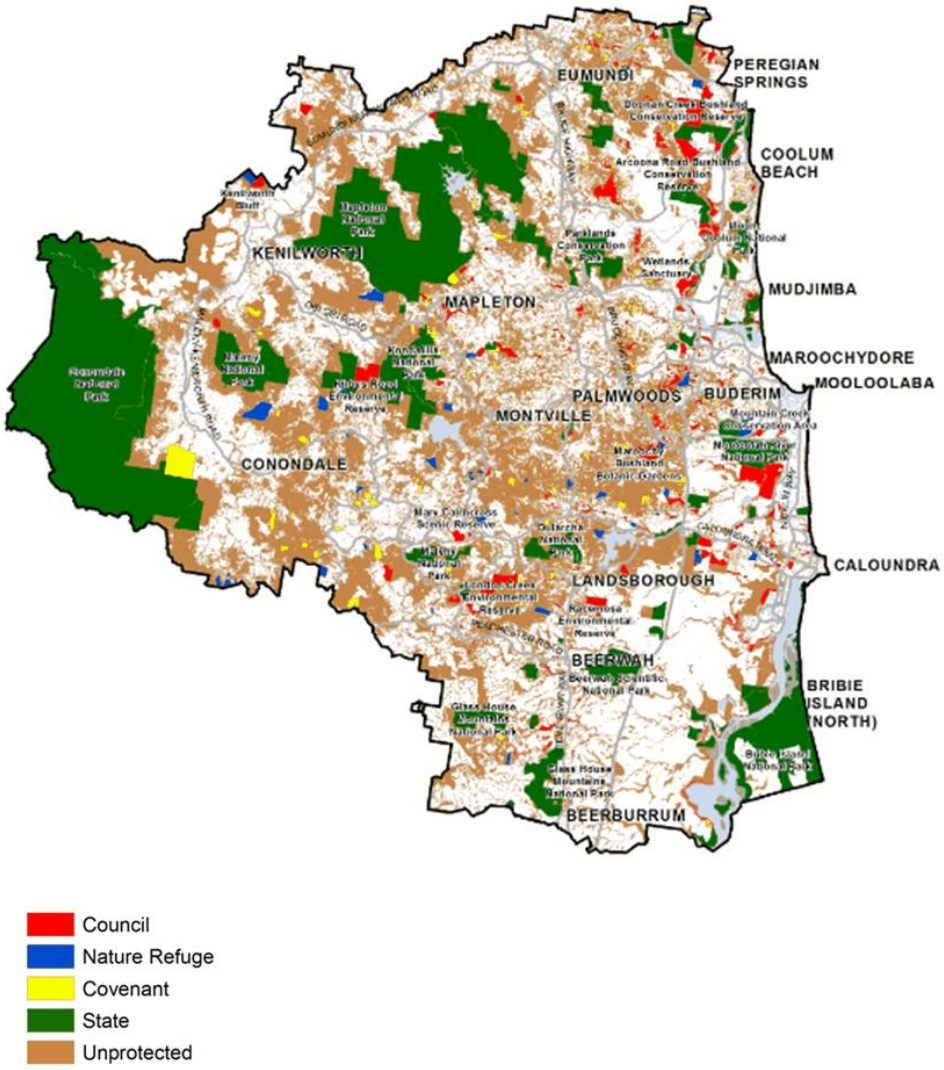
3.1.4 Conservation Estate

The Sunshine Coast Council area's conservation estate covers approximately 44% (54,173 hectares) of the region's vegetation and consists of approximately 49,400 hectares of remnant vegetation and 4,700 hectares of non-remnant vegetation (see Chart 3.4; Table 3.8 and Map 3.5). The region's remaining 56% (70,110 hectares) of vegetation is considered to be 'unprotected' and is a potential focus for future biodiversity conservation initiatives.

The conservation estate's remnant vegetation consists of 71 regional ecosystems, and each of the six vegetation communities is represented. The eucalypt communities have the greatest representation in the estate with 36 regional ecosystems covering approximately 30,600 hectares. For further details on the conservation estate's vegetation communities and associated regional ecosystems refer to Appendix C.

Chart 3.4: Sunshine Coast Council area's vegetation extents within the Conservation Estate.





Map 3.5: Conservation areas in the Sunshine Coast Council area (excludes Land for Wildlife land parcels)

Table 3.8: Sunshine Coast Council area conservation estate and vegetation extents

Conservation estate							
	Reserve tenure	**Number of Reserves**	**Number of Lots**	**Total area (ha)**	**Extent of remnant vegetation (ha)**	**Extent of non-remnant vegetation (ha)**	**Total vegetation area (ha)**
State	National Park[1]	15	44	37,485	36,241	896	37,137
	Conservation Park[1]	14	19	2,590	2,477	70	2,547
	Sub-total	**29**	**63**	**40,075**	**38,718**	**966**	**39,684**
Council	Nature Refuge[1]	16	24	520	477	36	513
	Freehold	79	164	1,909	1,324	296	1,604
	Trustee[2]	369	733	2,210	1,564	452	2,016
	Nominee under trust (i.e. DA contribution)	67	104	507	386	80	466
	Other (no lot plans i.e. water and road parcels)	-	163	524 (72)**	389 (51)**	63 (21)**	452
	Sub-total	**531**	**1,188**	**5,742**	**4,191**	**948**	**5,139**
Private	Nature Refuge[1]	39	48	692	547	119	666
	Voluntary Covenants[1]	-	56	523	380	119	499
	Development Covenants[1]	-	946	1,312	793	185	978
	Land for Wildlife[#]	0	773	10,687	4,879	2,416	7,295
	Sub-total	**39**	**1,823**	**13,214**	**6,599**	**2,839**	**9,438**
	Total	**599**	**3,074**	**59,959**	**49,441**	**4,732**	**54,173**

1 - Tenures that have a legally binding protection mechanism.
2 - Trustee lands managed for conservation may have a gazetted purpose other than "conservation"
** Additional extents of vegetation currently managed for conservation but designated for a non-conservation purpose.
[#] Land for Wildlife lot data extracted from the Enquire database (August 2016) which is managed by Healthy Waterways and Catchments and represents registered properties only.

State protected areas

The state protected areas constitute 73% of the Sunshine Coast Council area's conservation estate securing more than 40,075 hectares of land protecting more than 38,700 hectares of remnant vegetation and 960 hectares of non-remnant vegetation (see Table 3.8). The protected remnant vegetation consists of 60 regional ecosystems with representation from each of the six vegetation communities. The eucalypts are the dominant vegetation community occurring within the state protected areas (27,800 hectares) conserving 28 regional ecosystems (see Appendix C). Some of the more substantial reserves include Conondale Ranges, Mapleton, Maleny, Glasshouse Mountains and Bribie Island National Parks.

Queensland Bulk Water Supply Authority (QBWSA), a Queensland Government entity, manage five water supply dams and adjacent lands (total area 2,335 hectares) in the Sunshine Coast Council area including, Poona Dam, Cooloolabin Dam and Wappa Dam (all considered to be a part of the same system), Baroon Pocket Dam and Ewan Maddock Dam. While the preservation and management of the vegetation on these lands contributes to source protection to assist in the delivery of water quality outcomes, they also are recognised for providing complementary conservation outcomes. QBWSA currently manage 696 hectares of remnant vegetation and 520 hectares of non-remnant vegetation. This vegetation includes regional ecosystems that are considered important to the Sunshine Coast's Council area's strategic biodiversity conservation approach.

Council conservation areas

Council owns and manages more than 530 reserves made up of 1,188 individual lot plans conserving more than 5,000 hectares of vegetation (see Table 3.8). The remnant vegetation includes 4,200 hectares representing all six vegetation communities comprising 54 regional ecosystems (see Appendix C). Council Nature Refuges include 16 reserves protecting more than 500 hectares of vegetation and are considered to have the highest level of Council tenure protection (see Table 3.8). While, Council Trustee reserves which include more than 360 reserves conserving in excess of 2,000 hectares of vegetation, are in most cases not specifically gazetted for conservation purposes (i.e. Trustee for Camping, Parks and Garden) and therefore considered to have a lesser level of long-term protection.

Private conservation areas

The private conservation areas contribute 17% of the Sunshine Coast Council area's conservation estate. Currently, there are 39 Nature Refuges affording the highest level of private protection to more than 660 hectares of remnant and non-remnant vegetation (see Table 3.8). Vegetation protection covenants protect 1,477 hectares of vegetation with a third in voluntary conservation agreements and two thirds achieved through development approval outcomes. These legal mechanisms are collectively helping to conserve 46 regional ecosystem with representation in all but the mangrove and saltmarsh communities.

Approximately 780 registered Land for Wildlife properties are helping to conserve nearly 5,000 hectares of remnant and 2,500 hectares of non-remnant vegetation (see Table 3.8). The remnant vegetation consists of 49 regional ecosystems which together include all but the mangrove and saltmarsh vegetation communities. The eucalypt communities have the greatest extent in conservation with 29 regional ecosystems covering more than 3,000 hectares. The voluntary conservation areas include three regional ecosystems, 12.12.19x2, 12.3.7b and 12.11.3b that are not represented in any other conservation tenure (see Appendix C). In addition, the Land for Wildlife program also helps protect more non-remnant vegetation (2,421 hectares) than all other conservation areas combined. This is a significant contribution and given the appropriate support may be managed back to remnant vegetation.

Map 3.5 shows the spatial extent and composition of the Sunshine Coast Council's conservation areas. Land for Wildlife properties have not been identified on the map due to privacy issues. For a full list of the Sunshine Coast Council area's regional ecosystem and their respective conservation extents see Appendix C.

Protected areas and poorly conserved regional ecosystems

The Sunshine Coast Council area has 28 poorly conserved regional ecosystems including three melaleuca, three rainforest, four heath and wallum, and 18 eucalypt vegetation communities (see Table 3.9).

Table 3.9: Sunshine Coast Council area's poorly conserved regional ecosystems

Vegetation community	Regional Ecosystems					
	Number of poorly conserved at SCC LGA	Poorly conserved	Pre-clearing extent (ha)	Current extent (ha)	Extent in protected areas (ha)	Additional extent required to be adequately conserved at SCC LGA scale (ha)
Heath and wallum	4	*12.2.15a	2	2	0	1
		12.9-10.22	265	18	14	13
		*12.12.19	9	4	0	1
		*12.12.19x2	26	4	0	3
Melaleuca	3	12.3.4	5,728	1,337	222	351
		12.3.7	1,025	460	30	73
		*12.3.7b	80	80	0	8
Eucalypt	18	*12.2.8	60	8	2	4
		12.3.2	9,301	3,041	506	424
		12.3.11	11,273	584	132	995
		*12.3.11a	9	4	0	1
		12.5.2a	471	19	3	44
		12.5.3	12,126	1,397	613	599
		12.5.6c	620	290	57	5
		12.8.8	3,457	579	131	215
		*12.8.8a	67	22	2	5
		12.8.14	747	127	5	70
		12.9-10.1	2,569	631	71	186
		12.9-10.4	7,881	1,620	439	349
		12.9-10.7a	1,636	230	17	147
		12.9-10.14	17,235	7,279	1,374	350
		12.9-10.14a	3,819	1,421	186	196
		*12.11.3b	127	101	0	13
		12.11.14	3,642	394	77	287
		12.12.12	9,771	1,053	120	857
Rainforests	3	12.3.1	4,554	1,752	328	127
		12.8.3	12,758	1,563	365	1,240
		*12.8.13	25	1	0	3

** Regional ecosystems considered to have limited pre-clearing extent (less than 200 hectares) within the Sunshine Coast Council area*

Of the twenty eight poorly conserved regional ecosystems 12.3.11 and 12.5.2a can never achieve 10% adequacy based on their remaining extents. Regional ecosystem 12.5.2a may be reinstated through rehabilitation and this could contribute to achieving adequacy. Nine poorly conserved regional ecosystems are considered to have had limited pre-clearing extents of less than 200 hectares and of those seven ecosystems have no current representation in protection.

Regional ecosystems with limited preclear and current extents will present challenges to achieving adequate representation in the conservation estate. This will be particularly difficult where the remaining extents of a regional ecosystem is spatially scattered across the region and made up of multiple small patches, resulting in the need to secure numerous properties potentially making adequate representation economically unviable.

Results - catchments

3.2 Maroochy River Catchment

The Maroochy River system dominates the northern half of the Sunshine Coast Council area. It drops quickly from its headwaters in the Blackall and Mooloolah Ranges onto a large broad floodplain dominated by farmland and redundant sugar cane paddocks before reaching the sea at Maroochydore, and the more intensively developed coastal strip.

Maroochy River mouth and Pincushion Island

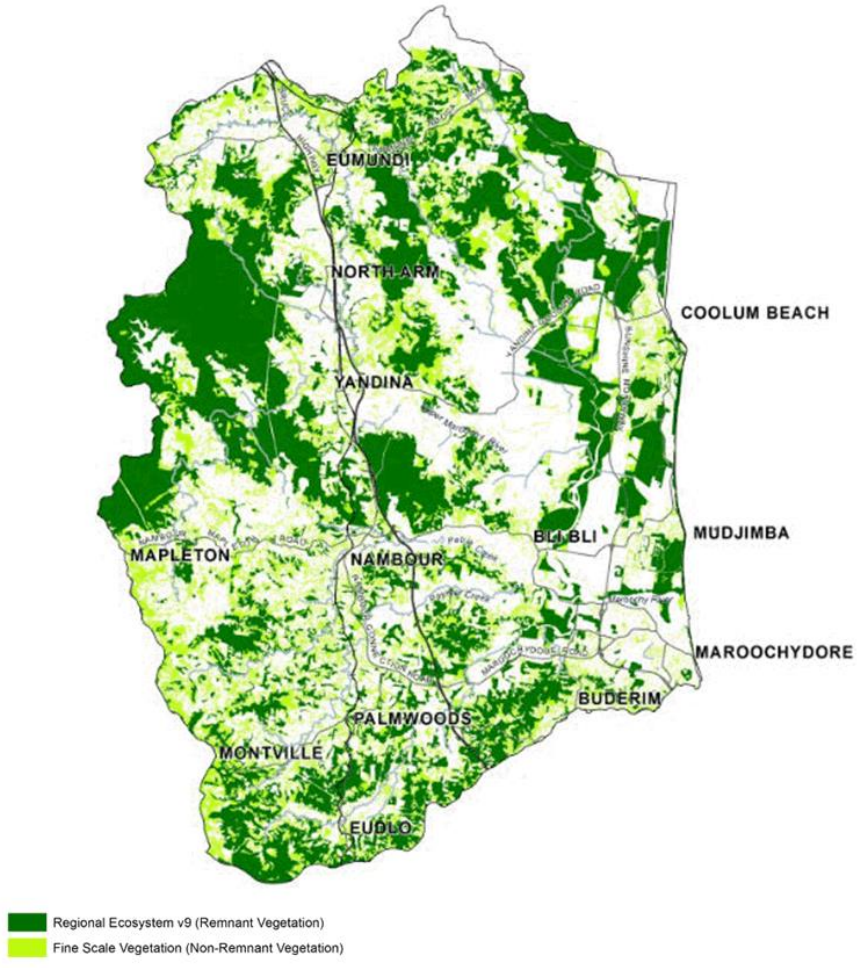
3.2.1 Vegetation

Ninety nine percent of the Maroochy River catchment occurs within the Sunshine Coast Council area – the catchment's most northern watershed area falls within the neighbouring local government area. Approximately 51% of the catchment's area is vegetated, of which 68% is remnant and 32% is non-remnant vegetation (see Table 3.10; Map 3.6).

Table 3.10: Summary of vegetation extents in the Maroochy River catchment

	Vegetation extent (ha)		
	Urban* area	Rural area	Total area
Catchment	16,243	47,272	63,515
Remnant vegetation	4,132	17,792	21,924
Non-remnant vegetation	3,396	7,087	10,483
Combined remnant and non-remnant vegetation	7,528	24,879	32,407
No vegetation	8,715	22,393	31,108

*Urban includes urban and rural living areas as defined by the South-east Queensland Regional Plan 2009-2031



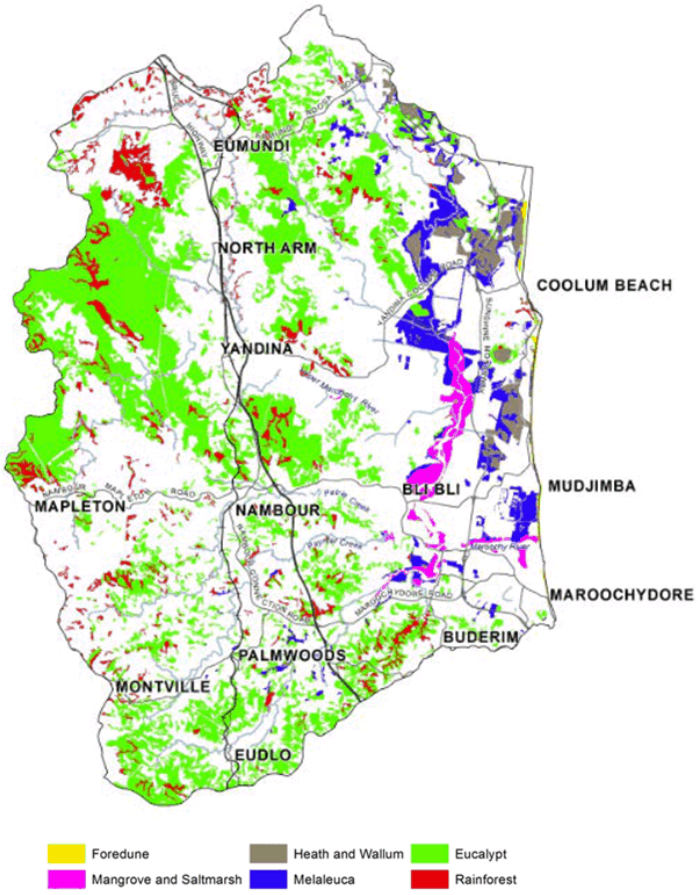
Map 3.6: Remnant and non-remnant vegetation in the Maroochy River catchment

Vegetation communities

The Maroochy River catchment's remnant vegetation consists of 54 regional ecosystems which collectively includes all six vegetation communities and comprises more than 21,900 hectares (see Table 3.11; Map 3.7). The remaining heath, melaleuca and mangrove communities predominantly occur on the coastal floodplain whereas the majority of the remaining eucalypt and rainforest communities occur in the upper catchment. The eucalypt communities represent approximately 69% of the catchment's remnant vegetation.

Table 3.11: Summary of vegetation communities in the Maroochy River catchment

		Regional ecosystems				
		Pre-clearing number	Pre-clearing extent (ha)	Current number	Current extent (ha)	Loss (%)
	Catchment	55	62,842	54	21,925	65
Vegetation communities	**Mangrove and saltmarsh**	3	1,006	3	777	33
	Foredune	2	207	2	142	31
	Heath and wallum	11	2,095	11	1,093	48
	Melaleuca	5	8,772	5	2,197	75
	Eucalypt	27	42,594	26	15,023	65
	Rainforest	7	8,168	7	2,693	77



Map 3.7: Vegetation communities in the Maroochy River catchment.

Vegetation loss

The Maroochy River catchment's current vegetation pattern has been shaped by land use activities including banana, pineapple and ginger farming, forestry sugar cane farming and urbanisation. Since European settlement the catchment has lost approximately two thirds of its remnant vegetation (40,917 hectares) and one regional ecosystem (Eucalypt 12.11.3).

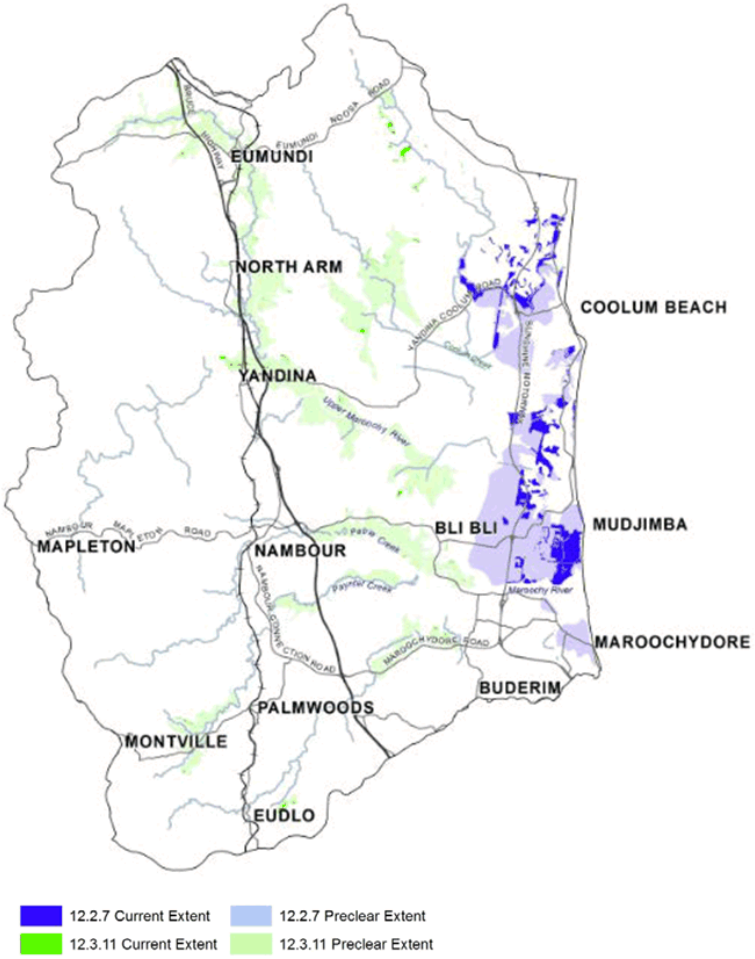
The fertile alluvial soils of the Maroochy River floodplain proved to be a suitable area for sugar cane farming and this resulted in significant stands of melaleuca and eucalypt forests being cleared. The eucalypt communities have had the greatest extent loss in the catchment with more than 27,500 hectares of remnant vegetation cleared, while the melaleuca communities have had the greatest loss relative to their pre-clearing extents with 75% (6,575 hectares) cleared. Regional ecosystem 12.3.5 (*Melalueca quinquenervia* open-forest to woodland) had the greatest extent loss of the melaleuca communities with more than 2,500 hectares cleared however regional ecosystem 12.2.7 had the greatest loss relative to its pre-clearing extent of more than 77% or 2,525 hectares (see Map 3.8).

The eucalypt regional ecosystem 12.9-10.14 (*Eucalyptus pilularis* blackbutt on sandstone) has had the greatest loss of any regional ecosystem in the catchment with more than 5,200 hectares cleared. However, regional ecosystem 12.3.11 (mixed eucalypt *Eucalyptus tereticornis, E. grandis, E. robusta* on alluvial soils) has had the greatest loss relative to its pre-clearing extent, with 97% (4,081 hectares) cleared meaning that the remaining extents, predominantly occurring in the Doonan Creek area, are crucial to catchment biodiversity conservation (see Map 3.8).

For a detailed list of each regional ecosystem within the Maroochy River catchment, including pre-clearing and current extents see Appendix G.

Table 3.12: Pre-clearing and current extents for regional ecosystems 12.2.7 and 12.3.11 in the Maroochy River catchment.

Regional ecosystem			
Classification	**Pre-clearing extent (ha)**	**Current extent (ha)**	**Loss (%)**
12.2.7	3,278	753	77
12.3.11	4,188	107	97

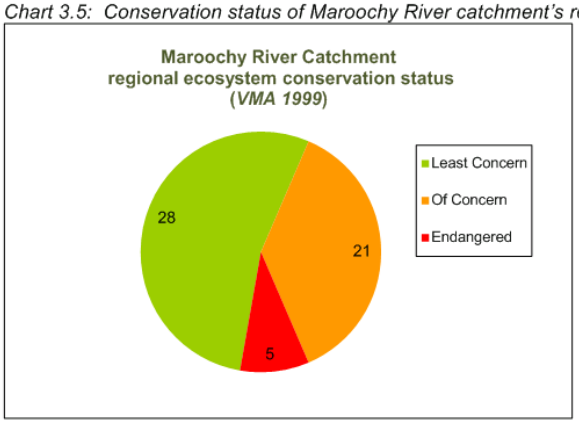


Map 3.8: Maroochy River catchment pre-clearing and current extents of regional ecosystems 12.2.7 and 12.3.11.

Queensland conservation status of regional ecosystems

The Maroochy River catchment has five *endangered*, 21 *of concern* and 28 *least concern* regional ecosystems (see Chart 3.5). The *endangered* regional ecosystems include three eucalypt and two rainforest communities. For details on each regional ecosystem's conservation status see Appendix A.

Chart 3.5: Conservation status of Maroochy River catchment's regional ecosystems



When reviewing the conservation status of the catchment's regional ecosystems it is important to consider the local loss that has occurred. A regional ecosystem's conservation status does not effectively describe an ecosystem's extent at a catchment scale, as the classification is derived at a greater bioregional scale (south-east Queensland). For example, the conservation status of the rainforest regional ecosystem 12.8.3 is *least concern* bio-regionally however the loss results in the catchment indicate it is *endangered* with less than 9% of its pre-clearing extent remaining.

Commonwealth listed endangered and vulnerable ecological communities

The Maroochy River catchment area contains two ecological communities listed as threatened under the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act 1999* including the *critically endangered* Lowland Rainforest of Sub-tropical Australia (LRSA) and the *vulnerable* Subtropical and Temperate Coastal Saltmarsh (STCM).

Table 3.13: Diagnostic regional ecosystems of Commonwealth listed ecological communities for the Maroochy River catchment

Commonwealth listed ecological communities	
Diagnostic LRSA Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.3.1	Endangered
12.5.13a	Endangered
12.8.3	Least Concern
12.11.10	Least Concern
12.12.1	Of Concern
12.12.16	Least Concern
*12.9-10.16	Of Concern
Diagnostic STCS Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.1.1	Of Concern
12.1.2	Least Concern
12.1.3	Least Concern

*Regional ecosystem 12. 9-10. 16 is only included where it is enriched with soils derived from landzone 3 (alluvia) or 8 (basalt).

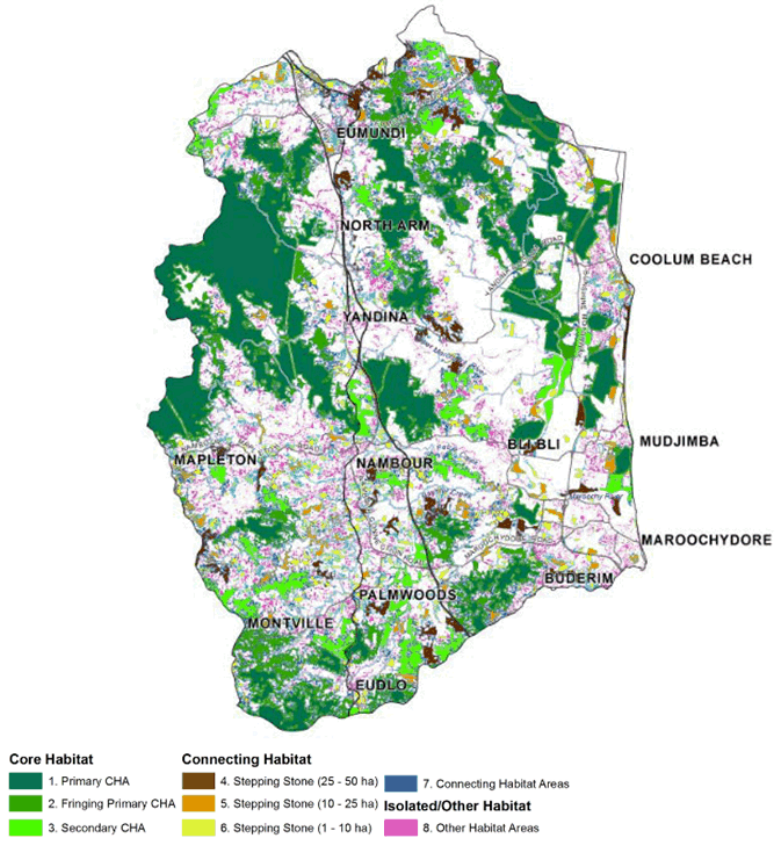
Seven regional ecosystems diagnostic of the LRSA and three regional ecosystems diagnostic of STCM occur within the Maroochy River catchment. Refer to Appendix D to understand the remaining extents of the various regional ecosystems and how much is currently protected and conserved.

3.2.2 Habitat

The Maroochy River catchment's habitat network comprises 19,576 hectares of core habitat areas, 10,284 hectares of connecting habitat areas and 2,547 hectares of other habitat areas (see Table 3.14; Map 3.9).

Table 3.14: Maroochy River catchment's core, connecting and other habitat areas

Landscape element	Secondary Classification	Remnant Area (ha)	Non-Remnant Area (ha)	Total vegetation Area (ha)
Core habitat areas	Primary core	10,837	101	10,938
	Fringing primary core	4,841	1,261	6,102
	Secondary core	2,196	340	2,536
	Sub-total	**17,874**	**1,702**	**19,576**
Connecting habitat areas	Stepping stone patches 25-50 ha	848	136	983
	Stepping stone patches 10-25 ha	749	212	961
	Stepping stone patches 1-10 ha	938	415	1,353
	Contiguous vegetation	1,458	5,529	6,987
	Sub-total	**3,993**	**6,291**	**10,284**
Other habitat areas	Isolated vegetation Patches	**56**	**2,491**	**2,547**
	Totals	**21,923**	**10,484**	**32,407**



Map 3.9: Maroochy River catchment's core, connecting and other habitat areas

Most of the substantial primary core habitat areas are located in the north of the catchment. These tend to be characterised by large protected areas such as the Mapleton National Park in the headwaters, Parklands and Eumundi Conservation Parks in the midlands.

The coastal floodplain is also home to a number of important primary core habitat areas. There is a cluster of primary core habitat areas, fringing core habitat areas and secondary core habitat areas that contribute to define an area known as the Maroochy wallum area extending from the lower estuary of the Maroochy River to Noosa National Park. These habitat areas are noteworthy because of the significant coastal remnants they contain including mangrove, melaleuca, eucalypt and some of the largest remaining extents of the iconic heath and wallum vegetation communities in South-east Queensland.

The Maroochy wallum area supports a diverse range of plants and animals, including migratory water birds such as the brolga (*Grus rubicunda*) and other threatened species such as the water mouse (*Xeromys myoides*), ground parrot (*Pezoporus wallicus*) and the Mt Emu casuarina (*Allocasuarina emuina*). The larger PCHAs are defined by extensive protected areas including Coolum Creek Conservation Park, Coolum Creek Environmental Reserve, Doonan Creek Environmental Reserve and Doonan Wetland Nature Refuge, Bli Bli Wetland Sanctuary and the Mount Coolum National Park.

3.2.3 Flora and Fauna

The Maroochy River catchment has 73 of the Sunshine Coast Council area's 135 listed EVNT flora and fauna species (see Chart 3.6). A breakdown of these EVNT species by taxonomic group is presented in Chart 3.7. An additional 15 EVNT species may occur in the catchment but due to the undisclosed locations of these species in the Sunshine Coast Council area they were not included in the catchment analysis. A comprehensive list of the EVNT species, including the catchments where they have been sighted, is included in Appendix B.

Chart 3.6: Number of listed EVNT fauna and flora species in the Sunshine Coast Council area and in the Maroochy River catchment.

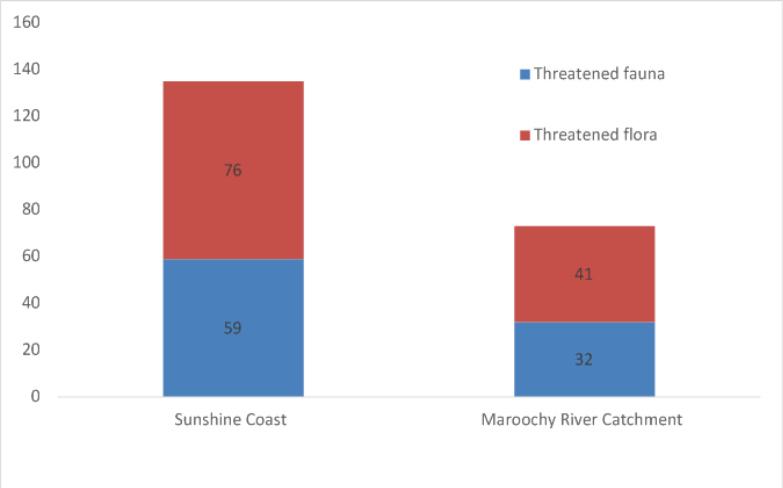
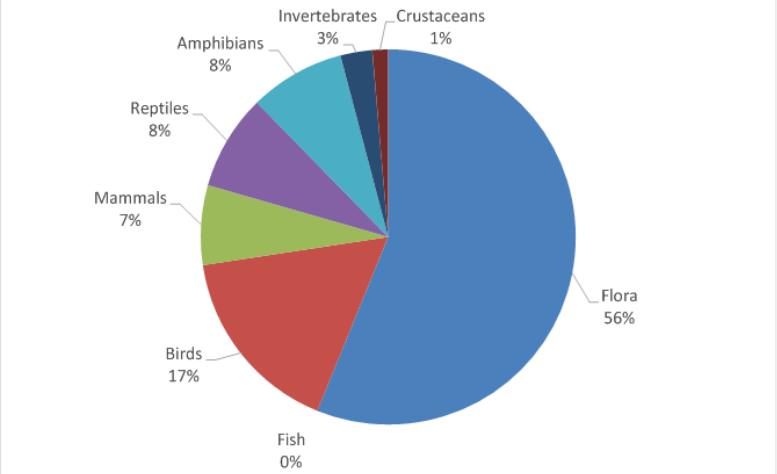


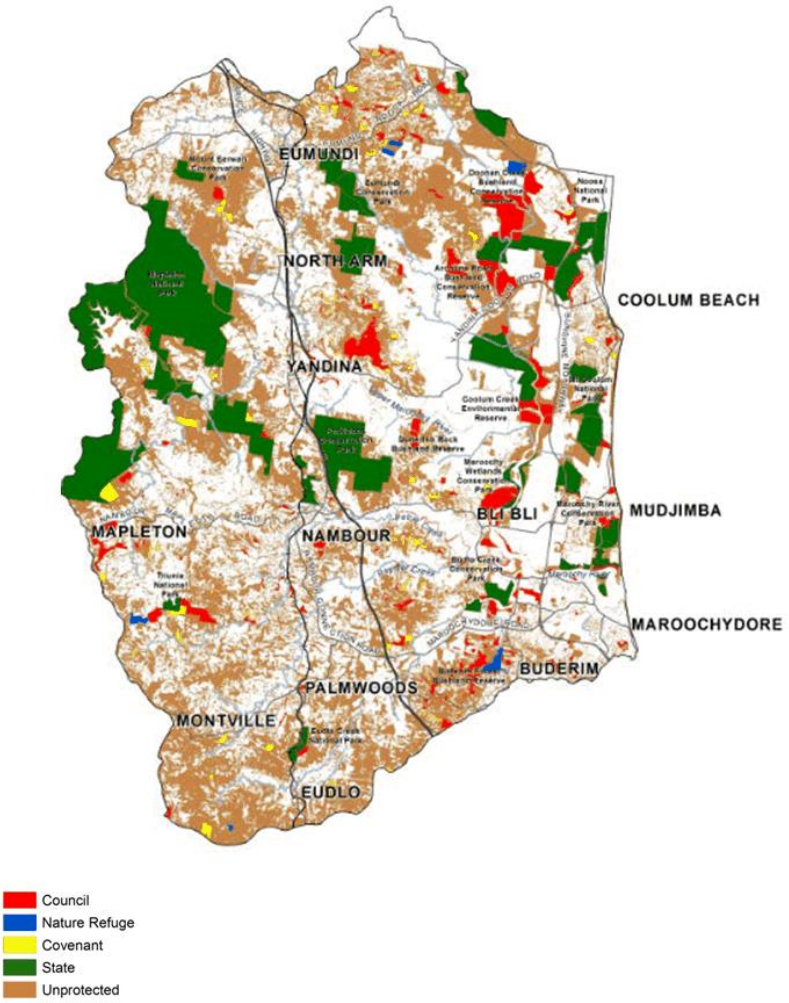
Chart 3.7: Listed EVNT fauna and flora species in the Maroochy River catchment by taxonomic group.



3.2.4 Conservation Estate

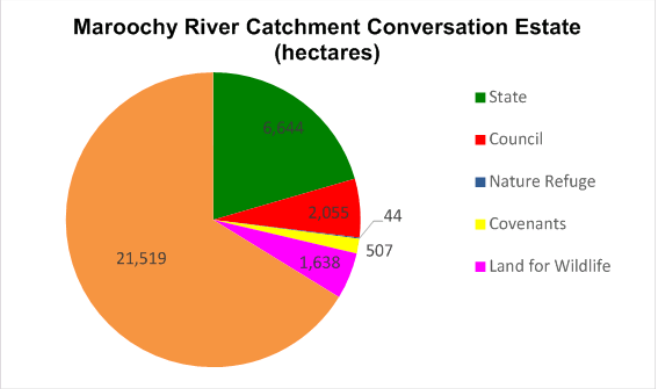
The Maroochy River catchment's conservation estate conserves approximately 34% (10,888 ha) of the catchment's vegetation (see Chart 3.8). The conservation estate consists of approximately 9,800 hectares of remnant and 1,000 hectares of non-remnant vegetation while the balance of the catchment's 21,519 hectares of vegetation is considered unprotected (see Table 3.15; Chart 3.8).

The remnant vegetation consists of 49 regional ecosystems, with each of the six vegetation communities represented. The eucalypt communities have the greatest representation in the estate with 26 regional ecosystems covering more than 6,000 hectares. For further details of the catchment's conservation estate vegetation communities and associated regional ecosystems, refer to Appendix D.



Map 3.10: Conservation areas in the Maroochy River catchment (excludes Land for Wildlife)

Chart 3.8: Maroochy River catchment's vegetation extents within conservation estate.



State protected areas

The catchment's State protected areas constitute 61% (6,644 ha) of the catchment's conservation estate and secures more than 6,500 hectares of remnant vegetation and 100 hectares of non-remnant vegetation (see Table 3.15). The state protected remnant vegetation includes 48 regional ecosystems with representation from all six vegetation communities. The eucalypt vegetation communities have the greatest representation with 20 regional ecosystems covering more than 4,700 hectares of vegetation (see Appendix D).

Queensland Bulk Water Supply Authority (QBWSA) manage Poona Dam, Cooloolabin Dam and Wappa Dam in the Maroochy River catchment. The QBWSA lands encompass a total area of 530 hectares and includes 151 hectares of remnant vegetation and 50 hectares of non-remnant vegetation.

Council conservation areas

Council's conservation areas constitute 19% of the conservation estate and includes more than 270 reserves helping to conserve more than 1,600 hectares of remnant vegetation and 300 hectares of non-remnant vegetation (see Table 3.15). Council's conservation areas represent approximately ten times the number of land parcels then that of the State but less than a third of the vegetation (see Table 3.15). This means Council's resources are stretched across a far greater geographic extent but has also resulted in a greater diversity of regional ecosystems (44) being conserved (see Appendix D).

Private conservation areas

The catchment's private conservation areas comprise the remaining 20% of the conservation estate. This includes 322 registered Land for Wildlife properties helping to conserve more than 1,100 hectares of remnant and 500 hectares of non-remnant vegetation. The remnant vegetation includes 34 regional ecosystems, representing foredune, heath and wallum, melaleuca, eucalypt and rainforest vegetation communities. Eucalypt regional ecosystems 12.3.2, 12.9-10.14 and 12.12.2 have the greatest representation and constitute more than half of all the remnant vegetation in voluntary conservation within the catchment. The voluntary conservation areas include five hectares of rainforest regional ecosystem 12.11.10 and 0.4 hectare of wallum 12.12.19x2 which is not represented in the catchment's other conservation areas (see Appendix D). The Land for Wildlife program helps to conserve almost as much non-remnant vegetation as the rest of the conservation tenures combined.

Map 3.10 shows the spatial extent and composition of the conservation network (excluding Land for Wildlife properties) within the Maroochy River catchment. For a comprehensive list of all the catchment's regional ecosystems and the respective extents in conservation please see Appendix D.

Table 3.15: Summary of the vegetation in the Maroochy River catchment's conservation estate (RE – regional ecosystem)

Conservation estate							
	Reserve tenure	**Number of Reserves**	**Number of Lots**	**Total area (ha)**	**Extent of remnant vegetation (ha)**	**Extent of non-remnant vegetation (ha)**	**Total vegetation area (ha)**
State	National Park[1]	6	8	4,455	4,360	57	4,417
	Conservation Park[1]	8	13	2,265	2,181	46	2,227
	Sub-total	**14**	**21**	**6,720**	**6,541**	**103**	**6,644**
Council	Nature Refuge[1]	4	11	98	94	4	98
	Freehold	45	77	821	637	79	716
	Trustee[2]	179	341	961	726	196	922
	Nominee under trust (i.e. DA contribution)	48	78	264	213	33	246
	Other (no lot plans i.e. water and road parcels)	0	46	114	50	23	73
	Sub-total	**276**	**553**	**2,254**	**1,720**	**335**	**2,055**
Private	Nature Refuge[1]	2	16	48	22	22	44
	Voluntary Covenants[1]	-	18	139	101	31	132
	Development Covenants[1]	-	580	418	289	86	375
	Land for Wildlife[#]	-	322	2,205	1,133	505	1,638
	Sub-total	**2**	**936**	**2,810**	**1,545**	**644**	**2,189**
	Total	**292**	**1,510**	**11,784**	**9,806**	**1,082**	**10,888**

1 - Tenures that have a legally binding protection mechanism.
2 - Trustee lands managed for conservation may have a gazetted purpose other than "conservation"
[#] Land for Wildlife lot data extracted from the Enquire database (August 2016) which is managed by Healthy Waterways and Catchments and represents registered properties only.

Protected areas and poorly conserved regional ecosystems

The Maroochy River catchment has 21 of the Sunshine Coast Council area's 28 poorly conserved regional ecosystems including, one melaleuca, two rainforest, three heath/wallum and 15 eucalypt regional ecosystems (see Table 3.16).

Table 3.16: Sunshine Coast Council area's poorly conserved regional ecosystems and their catchment extent in the Maroochy River catchment

Regional Ecosystems				
Vegetation community	**Poorly conserved**	**Current extent (ha)**	**Catchment extent in protected areas (ha)**	**Additional extent required to be adequately conserved at SCC LGA scale (ha)**
Heath and wallum	12.9-10.22	3	2	13
	*12.12.19	4	0	1
	*12.12.19x2	4	0	3
Melaleuca	12.3.4	18	15	351
Eucalypt	12.3.2	1,342	165	424
	12.3.11	107	16	995
	*12.3.11a	4	0	1
	12.5.2a	14	2.5	44
	12.5.3	159	20	563
	12.5.6c	183	48	5
	12.8.8	110	1	215
	12.8.14	29	3	70
	12.9-10.1	526	57	186
	12.9-10.4	136	53	348
	12.9-10.7a	95	14	142
	12.9-10.14	3,055	456	350
	12.9-10.14a	10	0	196
	12.11.14	0.87	0	287
	12.12.12	623	69	857
Rainforests	12.3.1	649	90	125
	12.8.3	203	19	1,240

** Regional ecosystems considered to have limited pre-clearing extent (less than 200 hectares) within the Sunshine Coast Council area*

The Maroochy River catchment retains significant extents of poorly conserved regional ecosystem 12.3.2, 12.9-10.1, 12.9-10.14, 12.12.12, 12.3.1 and reasonable extents of 12.5.3, 12.5.6c, 12.9-10.4 and 12.8.3. Remaining extents of regional ecosystem 12.5.6c occur almost entirely in the Maroochy River catchment and adequate representation is highly achievable. These vegetation communities and their conservation needs to be prioritised in catchment conservation planning.

For a comprehensive list of all the catchment's regional ecosystems and the respective extents currently protected please see Appendix D.

3.3 Mary River Catchment

The Mary River is one of the most environmentally and economically diverse catchments in Queensland and supports a range of activities including agriculture and tourism. Its headwaters are in the Conondale and Blackall Ranges and it flows northwards for hundreds of kilometres to the Great Sandy Strait, influencing the coastal environment of Hervey Bay and ultimately the Coral Sea. Large areas of the catchment are protected natural areas and support several iconic threatened species - notably the Mary River cod and turtle and Queensland lungfish.

Mary River at Kenilworth

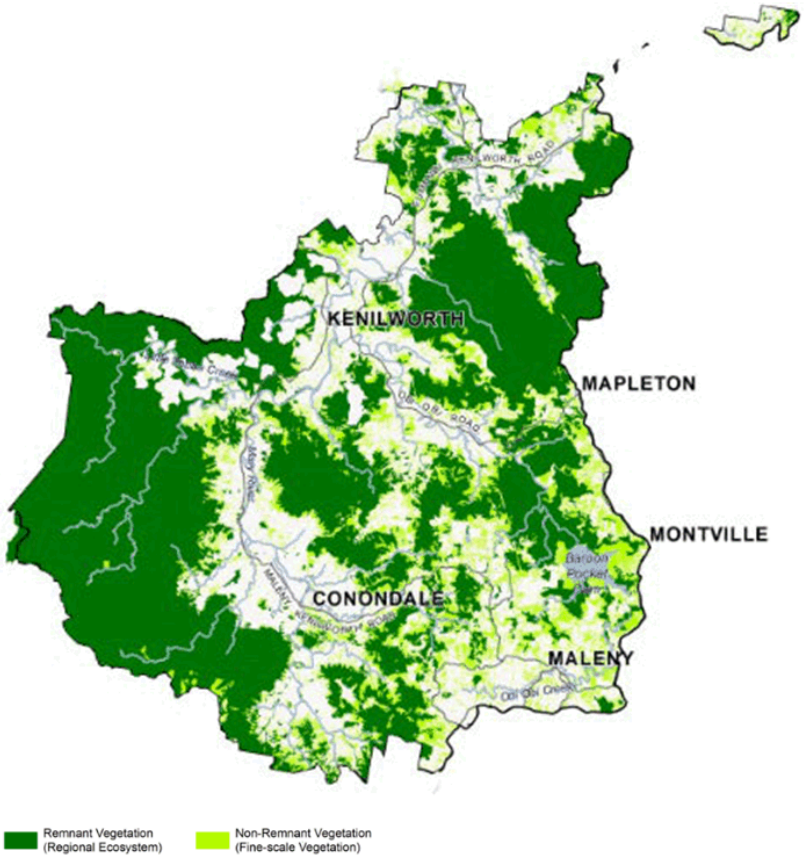
3.3.1 Vegetation

Approximately one sixth (84,458 hectares) of the Mary River catchment, largely the head waters and upper reaches, occur within the Sunshine Coast Council area. Of that extent approximately 66% is vegetated, of which 80% is remnant and 20% is non-remnant vegetation (see Table 3.17; Map 3.11).

Table 3.17: Summary of vegetation extents in the Mary River catchment

	Vegetation extent (ha)		
	Urban* area	Rural area	Total area
Catchment	1,389	83,069	84,458
Remnant vegetation	73	44,804	44,877
Non-remnant vegetation	414	10,462	10,876
Combined remnant and non-remnant vegetation	487	55,266	55,753
No vegetation	902	27,803	28,705

*Urban includes urban and rural living areas as defined by the South-east Queensland Regional Plan 2009-2031



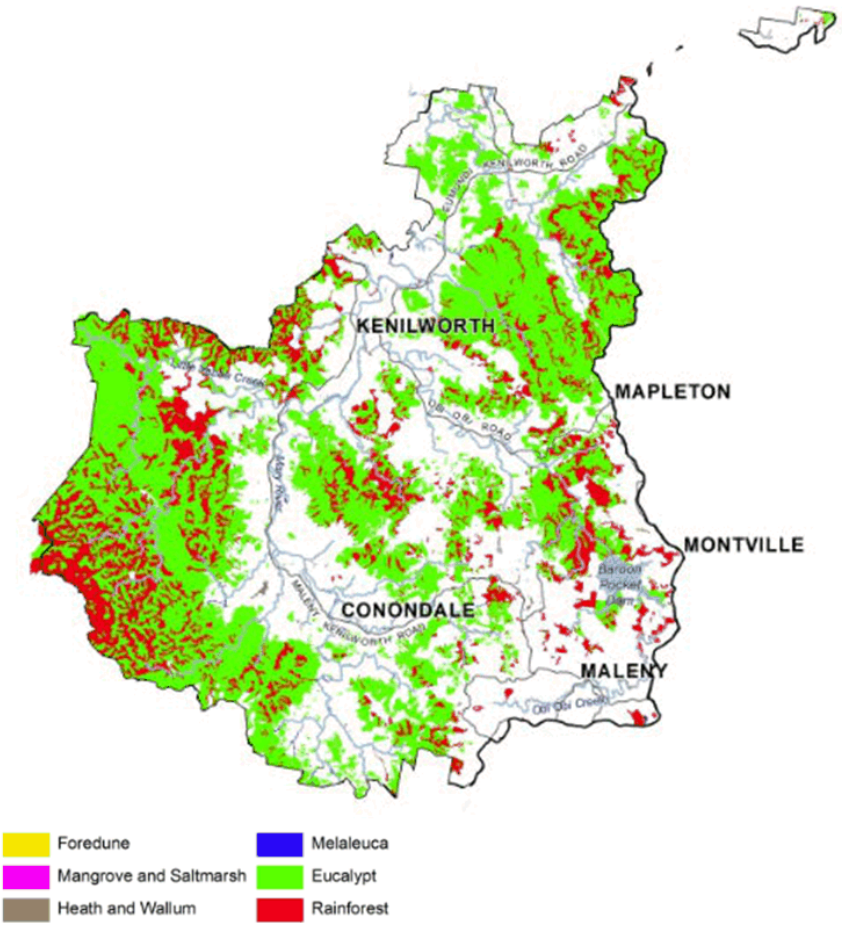
Map 3.11: Remnant and non-remnant vegetation in the Mary River catchment

Vegetation communities

The Mary River catchment's remnant vegetation consists of 37 regional ecosystems; four of the six vegetation communities are represented and the catchment comprises more than 44,000 hectares (see Table 3.18; Map 3.12).

Table 3.18: Summary of vegetation communities in the Mary River catchment

	Regional ecosystems				
	Pre-clearing number	Pre-clearing extent (ha)	Current number	Current extent (ha)	Loss (%)
Catchment	37	84,451	37	44,877	47
Heath and wallum	1	79	1	73	8
Melaleuca	3	1,099	3	542	50
Eucalypt	24	57,607	24	32,458	44
Rainforest	9	25,666	9	11,804	54



Map 3.12: Vegetation communities in the Mary River catchment

As the Sunshine Coast Council area contains only the headwaters and upper reaches of the catchment, foredune and mangrove vegetation communities are not represented. Despite the extensive clearing that has occurred along the Mary River floodplain and its tributaries, the catchment's remaining vegetation is dominated by a mix of eucalypt and rainforest communities which make up 99% of the catchment's remnant vegetation, and nearly half of the Sunshine Coast Council area's existing remnant vegetation. There are nine Sunshine Coast Council area regional ecosystems including seven eucalypt (12.8.8a, 12.8.14, 12.11.3a, 12.11.3b, 12.11.5j, 12.11.9 and 12.12.15b) and two rainforest (12.8.9 and 12.8.13) vegetation communities, found only in the Mary River catchment. For more detail of each regional ecosystem within the Mary River catchment, including pre-clearing and current extents, see Appendix H.

Vegetation loss

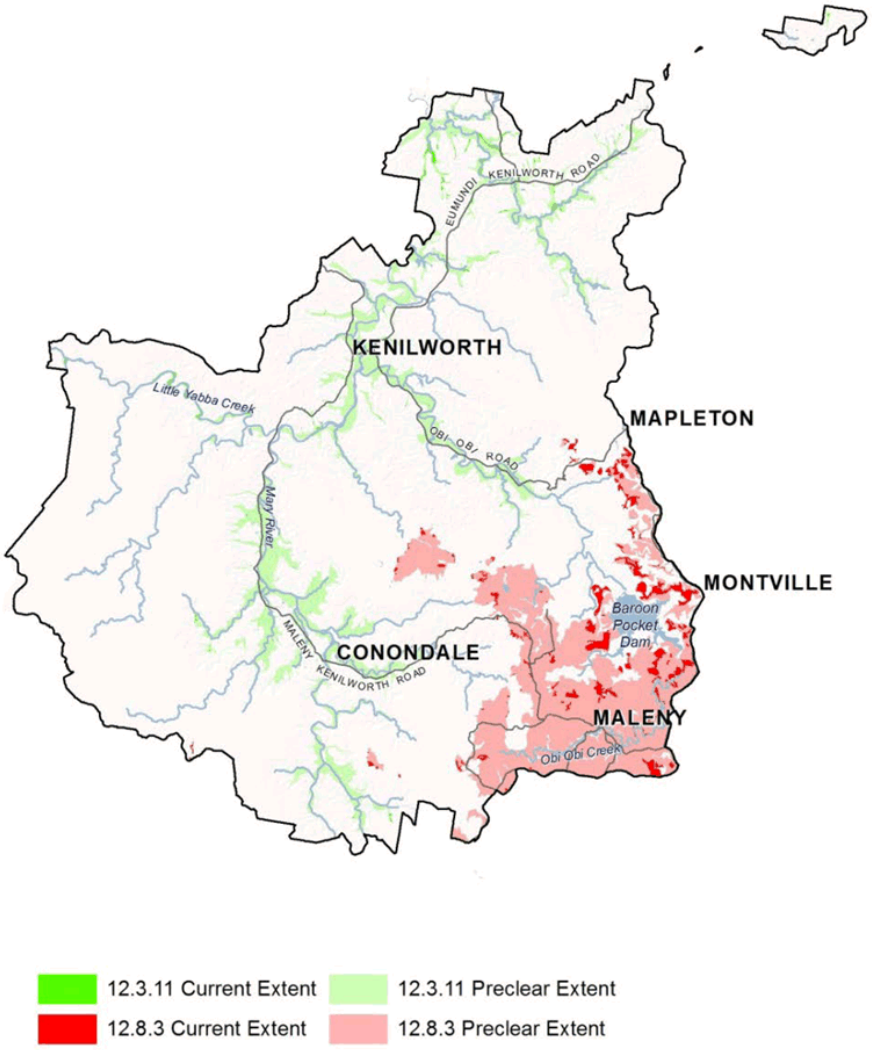
The Mary River catchment's current vegetation pattern has been influenced by more than 150 years of native timber harvesting, forestry, pastoralism and settlement. Since European settlement the catchment has lost approximately 47% of its remnant vegetation (39,576 hectares).

The eucalypt communities have had the greatest loss in the catchment with more than 25,000 hectares cleared. Regional ecosystem 12.8.14 has lost almost all of its preclear extent (46 hectares) with only half a hectare remaining. Regional ecosystem 12.3.11 (mixed eucalypt on predominately riparian alluvial soils), a vegetation community that once extensively fringed the Mary's main channel, has had the greatest loss relative to its pre-clearing extent with more than 5,100 hectares cleared (see Table 3.19, Map 3.14).

The rainforest communities have had the greatest loss relative to their pre-clearing extents with more than 54% cleared (see Table 3.18). Regional ecosystem 12.8.3 has had the most extensive loss of any regional ecosystem in the catchment with more than 7,400 hectares cleared (see Table 3.19, Map 3.14). Despite the notable loss of rainforest communities from the Mary River catchment it maintains more than 70% of the Sunshine Coast Council area's remaining rainforest communities. For a full list of the pre-clearing and existing regional ecosystem extents in the catchment see Appendix E.

Table 3.19: Pre-clearing and current extents for regional ecosystems 12.3.11 and 12.8.3 in the Mary River catchment.

Regional ecosystem			
Classification	**Pre-clearing extent (ha)**	**Current extent (ha)**	**Loss (%)**
12.3.11	5,368	263	95
12.8.3	8,278	848	90

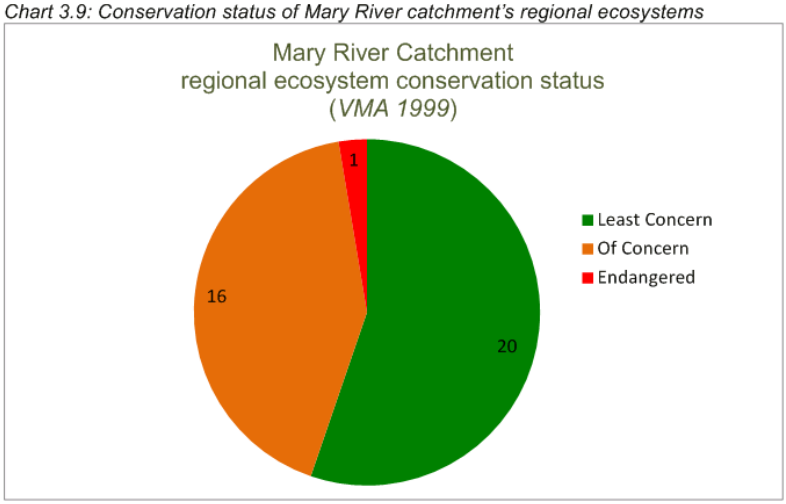


Map 3.13: Current and pre-clearing extents of regional ecosystems 12.11.10 and 12.3.11

Queensland conservation status of regional ecosystems

The Mary River catchment has one *endangered*, 16 *of concern* and 20 *least concern* regional ecosystems (see Chart 3.9). For details of each regional ecosystem's conservation status see Appendix A.

Chart 3.9: Conservation status of Mary River catchment's regional ecosystems



When reviewing the conservation status of the catchment's regional ecosystems it is important to also consider the local loss that has occurred. A regional ecosystem's conservation status does not necessarily represent an ecosystem's extent at a catchment scale, as the classification is derived at a greater bioregional scale (south-east Queensland). For example, the conservation status of the rainforest regional ecosystem 12.8.3 is *least concern* bio-regionally but the extent lost in the Mary River catchment (90%) would place it in the *endangered* status (see Appendix H).

Commonwealth listed endangered and vulnerable ecological communities

The Mary River catchment contains Lowland Rainforest of Sub-tropical Australia (LRSA) ecological communities listed as *critically endangered* under the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act 1999*.

Table *3.20: Diagnostic regional ecosystems of Commonwealth listed ecological communities for the Mary River catchment*

Commonwealth listed ecological communities	
Diagnostic LRSA Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.3.1	Endangered
12.8.3	Least Concern
12.8.13	Of Concern
12.11.1	Least Concern
12.11.10	Least Concern
12.12.1	Of Concern
12.12.16	Least Concern
*12.9-10.16	Of Concern

*Regional ecosystem 12. 9-10. 16 is only included where it is enriched with soils derived from landzone 3 (alluvia) or 8 (basalt)

Eight regional ecosystems diagnostic of the LRSA occur within the Mary River catchment. Refer to Appendix E to understand the remaining extents of the various regional ecosystems and how much is currently protected and conserved.

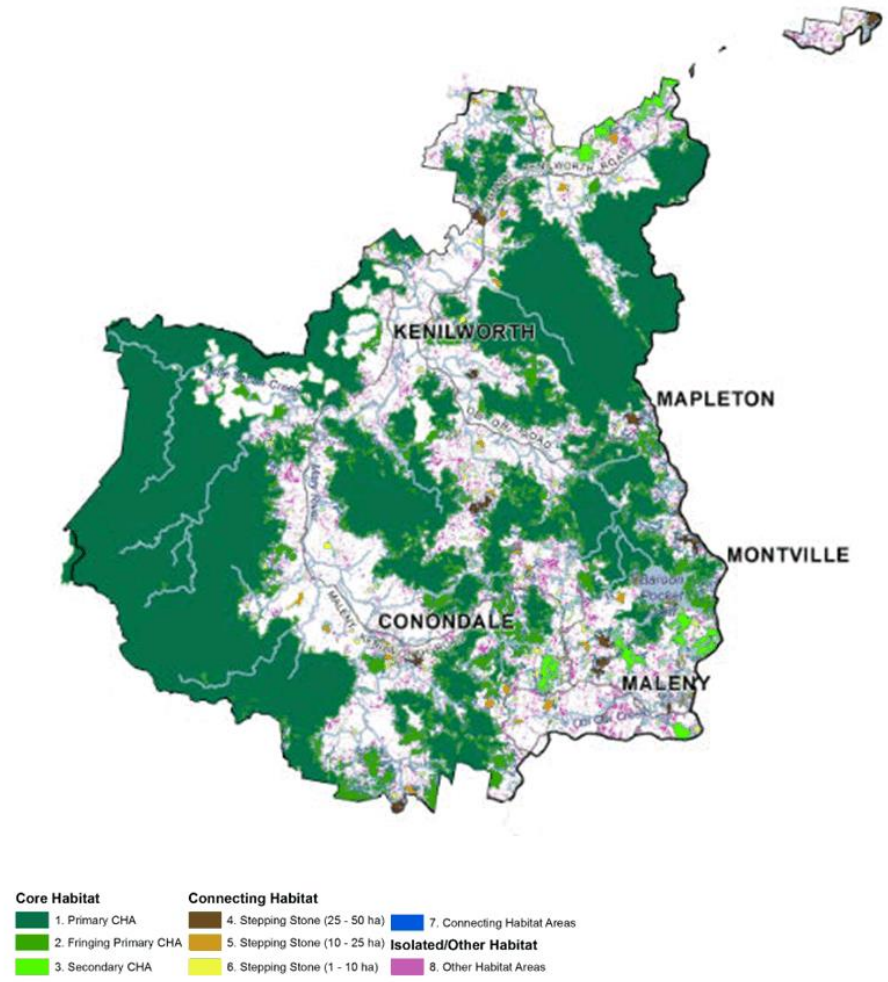
3.3.2 Habitat

The Mary River catchment's habitat network comprises 45,572 hectares of core habitat areas, 7,690 hectares of connecting habitat areas and 2,490 hectares of other habitat areas (see Table 3.21; Map 3.14).

Table 3.21 Mary River catchment's core, connecting and other habitat areas

Landscape element	Secondary Classification	Remnant Area (ha)	Non-Remnant Area (ha)	Total vegetation Area (ha)
Core habitat areas	Primary core	36,591	195	36,786
	Fringing primary core	5,842	2,293	8,135
	Secondary core	423	229	652
Sub-total		**42,855**	**2,717**	**45,572**
Connecting habitat areas	Stepping stone patches 25-50 ha	264	111	375
	Stepping stone patches 10-25 ha	265	105	370
	Stepping stone patches 1-10 ha	397	372	769
	Contiguous vegetation areas	1,051	5,125	6,176
Sub-total		**1,977**	**5,713**	**7,690**
Other habitat areas	Isolated vegetation areas	**45**	**2,445**	**2,490**
Totals		**44,877**	**10,875**	**55,752**

The Mary River catchment has more than 80% of the catchment's vegetation in primary core habitat areas. This is the highest ratio of any catchment and is an indication of the consolidated nature of the remaining vegetation. Most of primary core habitat areas are defined by extensive protected areas including the Conandale National Park, Mapleton National Park, Maleny National Park and Kondalilla National Park. See conservation estate section for more details on the reserve network.



Map 3.14: Mary River Catchment's core, connecting and other habitat areas

3.3.3 Flora and Fauna

The Mary River catchment has 59 of the Sunshine Coast Council area's 135 listed EVNT flora and fauna species (see Chart 3.10). A breakdown of these EVNT species by taxonomic group is presented in Chart 3.11. An additional 15 EVNT species may occur in the catchment but due to being unverified these species were not included in the catchment analysis. A comprehensive list of the EVNT species, including the catchments where they have been sighted, is included in Appendix B.

Chart 3.10: Number of listed EVNT fauna and flora species in the Sunshine Coast Council area and in the Mary River catchment.

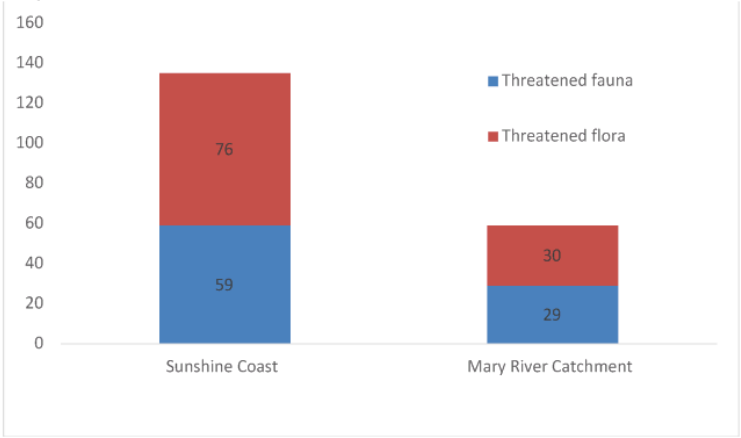
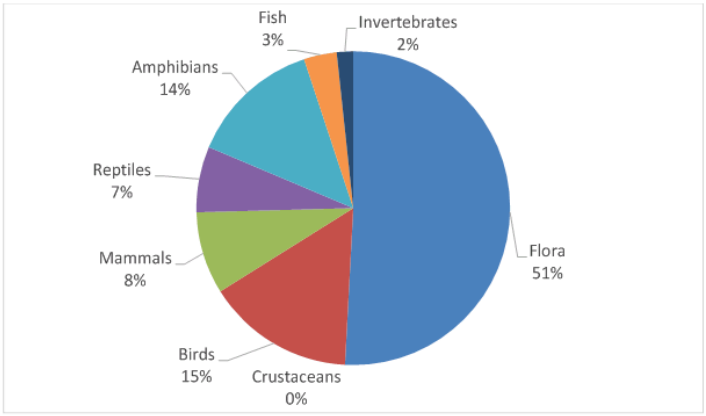


Chart 3.11: Listed EVNT fauna and flora species in the Mary River catchment by taxonomic group.



CASE BOX 5
Threatened Species Conservation

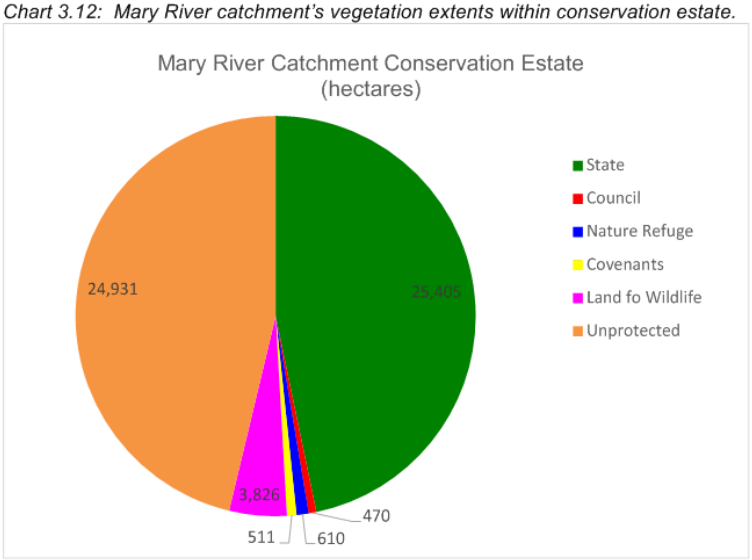
Did you know that the Mary River is the only place in the world where the Mary River turtle (*Elusor macrurus*) is found and that their numbers have dropped by a staggering 95% since 1974? Or that the Mary River cod (*Maccullochella mariensis*) can grow to be as heavy as a 12 year old child and is now found in less than one-third of its native habitat? Or that the Lungfish is an ancient creature unchanged since dinosaurs roamed the earth but is now vulnerable to extinction? All this information and more can be found in *Something about Mary - Inspiring Community Connection to Mary River Stories.* This publication by the Mary River Catchment Coordinating Committee features the five priority species which are the focus of the Mary River Threatened Species Recovery Plan.

3.3.4 Conservation Estate

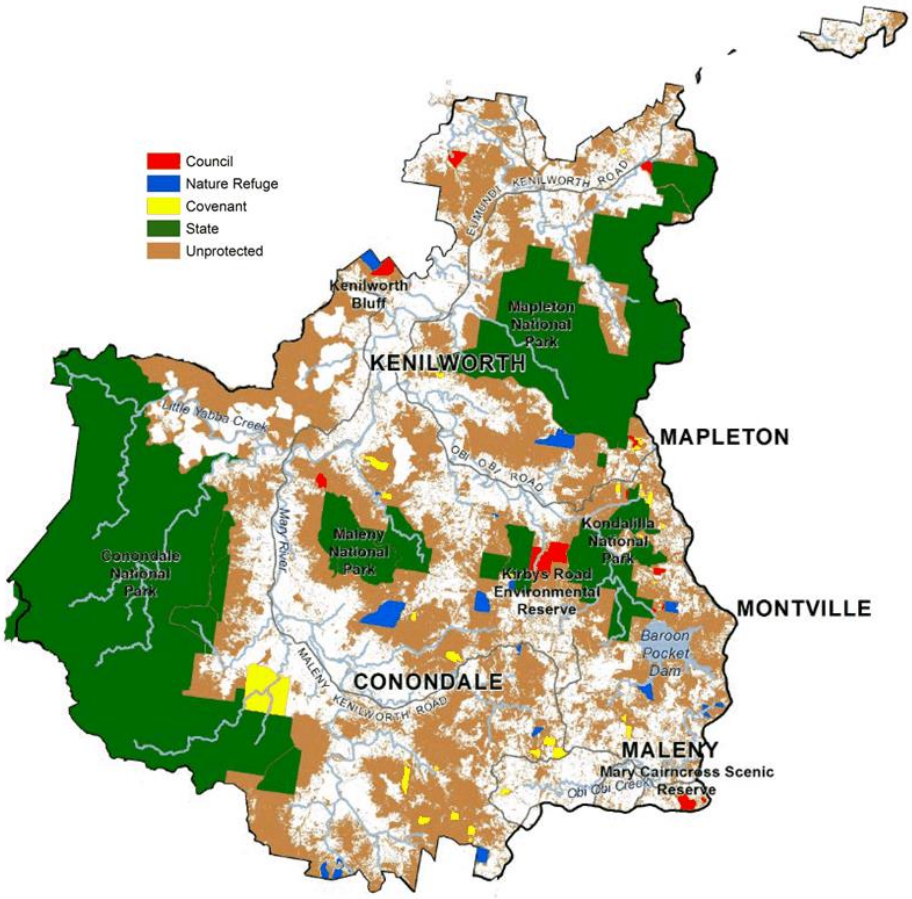
The Mary River catchment's conservation estate conserves approximately 55% (30,822 hectares) of the catchment's vegetation and consists of approximately 28,900 hectares of remnant and 1,800 hectares of non-remnant vegetation (see Table 3.22; Map 3.15). The catchment's remaining 45% (24,931 hectares) of vegetation is considered to be unprotected (see Chart 3.12).

The remnant vegetation consists of 32 regional ecosystems with representation of heath, melaleuca, eucalypt and rainforest vegetation communities. The eucalypt communities have the greatest representation in the estate with 20 regional ecosystems covering more than 20,600 hectares. For further details of the catchment's conservation estate vegetation communities and associated regional ecosystems, refer to Appendix E.

Chart 3.12: Mary River catchment's vegetation extents within conservation estate.



N.B. Land for Wildlife properties have not been identified on the map due to privacy issues



Map 3.15: Conservation areas in the Mary River catchment

Table 3.22: Summary of the vegetation in the Mary River catchment's conservation estate

Conservation estate							
	Reserve tenure	**Number of Reserves**	**Number of Lots**	**Total area (ha)**	**Extent of remnant vegetation (ha)**	**Extent of non-remnant vegetation (ha)**	**Total vegetation area (ha)**
State	National Park[1]	5	24	25,440	25,184	221	25,405
	Conservation Park[1]	0	0	0	0	0	0
	Sub-total	**5**	**24**	**25,440**	**25,184**	**221**	**25,405**
Council	Nature Refuge[1]	2	2	99	98	1	99
	Freehold	8	11	259	146	86	232
	Trustee[2]	24	34	206	146	38	184
	Nominee under trust (i.e. DA contribution)	4	6	42	39	2	41
	Other (no lot plans i.e. water and road parcels)	0	13	18	3	10	13
	Sub-total	**38**	**66**	**624**	**432**	**137**	**569**
Private	Nature Refuge[1]	0	20	527	432	79	511
	Voluntary Covenants[1]	0	22	235	168	55	223
	Development Covenants[1]	0	47	567	244	44	288
	Land for Wildlife[#]	0	268	5,874	2,501	1,325	3,826
	Sub-total	**0**	**359**	**7,203**	**3,345**	**1,503**	**4,848**
	Total	**43**	**90**	**33,267**	**28,961**	**1,861**	**30,822**

1 - Tenures that have a legally binding protection mechanism.
2 - Trustee lands managed for conservation may have a gazetted purpose other than "conservation"
[#] Land for Wildlife lot data extracted from the Enquire database (August 2016) which is managed by Healthy Waterways and Catchments and represents registered properties only.

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State protected areas

The catchment's State protected areas constitute 82% (26,526 hectares) of the catchment's conservation estate (see Table 3.22). The protected remnant vegetation consists of 25,184 hectares including 27 regional ecosystems with representation of melaleuca, eucalypt and rainforest vegetation communities. The eucalypt vegetation communites have the greatest representation with more than 17,800 hectres. For full details of the regional ecosystem extents that are protected by the State see Appendix E.

Council conservation areas

Council's conservation areas constitute 2% of the conservation estate within the catchment including 38 reserves conserving 432 hectares of remnant vegetation and 137 hectares of non-remnant vegetation (see Table 3.22). Two of the more significant reserves include the Environment Levy acquired Kirby's Road Environment Reserve that links Kondalilla National Park to Maleny National Park and the Mary Cairncross Scenic Reserve (see Map 3.15).

Queensland Bulk Water Supply Authority (QBWSA) manage Baroon Pocket Dam in the Mary River catchment. The QBWSA lands encompass a total area of 1,065 hectares and includes 261 hectares of remnant vegetation and 367 hectares of non-remnant vegetation.

Private conservation areas

The catchment's private conservation areas comprise the remaining 16% (4,848 hectares) of the conservation estate (see Table 3.21). The Land for Wildlife program makes up majority of the voluntary conservation areas with approximately 260 registered Land for Wildlife properties helping to conserve approximately 2,500 hectares of remnant and 1,300 hectares of non-remnant vegetation in the catchment. The Land for Wildlife program constitutes the second largest contribution to the catchment's conservation estate and contributes toward conserving more than double the extent of non-remnant vegetation than any other conservation tenure. This is an important distinction because it's the custodianship and management of non-remnant vegetation that may contribute toward an increase in remnant vegetation and address the on-going issue of habitat decline. The remnant vegetation consists of 25 regional ecosystems and four vegetation communities are represented. The dominant vegetation community represented are the eucalypts (1,865 hectares) consisting of 17 regional ecosystems. The Land for Wildlife properties include two eucalypt regional ecosystems (7 hectares of 12.9-10.14 and 20 hectares of 12.11.3b) that are not represented in other conservation tenures (see Appendix E).

Map 3.15 shows the spatial extent and composition of the conservation network (excluding Land for Wildlife properties) within the Mary River catchment. For a comprehensive list of all the catchment's regional ecosystems and the respective extents in conservation please see Appendix E.

Protected areas and poorly conserved regional ecosystems

The Mary River catchment has 17 of the Sunshine Coast Council area's 28 poorly conserved regional ecosystems including, three melaleuca, three rainforest and 11 eucalypt regional ecosystems (see Table 3.23).

Table 3.23: Sunshine Coast Council area's poorly conserved regional ecosystems in the Mary River catchment

Regional Ecosystems				
Vegetation community	**Poorly conserved**	**Current extent (ha)**	**Extent in protected areas (ha)**	**Additional extent required to be adequately conserved at SCC LGA scale (ha)**
Melaleuca	12.3.4	5	5	351
	12.3.7	458	29.6	73
	*12.3.7b	79	0	8
Eucalypt	12.3.2	208	50.3	424
	12.3.11	263	52	995
	12.8.8	353	122	215
	*12.8.8a	22	2	5
	12.8.14	0.5	0.17	70
	12.9-10.7a	69	0	142
	12.9-10.14	32	0	350
	12.9-10.14a	15	0	196
	*12.11.3b	101	0	13
	12.11.14	393	77	287
	12.12.12	430	51.38	857
Rainforests	12.3.1	473	88.2	125
	12.8.3	848	186	1,240
	*12.8.13	1	0	3

** Regional ecosystems considered to have limited pre-clearing extent (less than 200 hectares) within the Sunshine Coast Council area*

One melaleuca, one rainforest and four eucalypt poorly conserved regional ecosystems currently have no representation in the catchment's protected areas. Of these, regional ecosystem 12.3.7b and 12.11.3b have sufficient remaining extents to potentially contribute to meaningful catchment and local government area representation, depending on their catchment distribution.

The Mary River catchment retains almost all of the remaining melaleuca regional ecosystem 12.3.7 extent and given that a further 73 hectares is required for adequacy this should be a high priority catchment conservation target.

The catchment also retains reasonable extents of regional ecosystem 12.3.1, 12.3.2, 12.8.3, 12.8.8, 12.11.14 and 12.12.12 that may provide opportunities for further representation and contribute to adequacy.

For a comprehensive list of all the catchment's regional ecosystems and the respective extents currently in protection and conservaiton please see Appendix E.

3.4 Mooloolah River Catchment

The Mooloolah River is a relatively small river, with its headwaters in the Mooloolah Range. The River winds through rainforest and natural bushland, agricultural and grazing lands, and urban development. The lower reaches have been modified for canal estates and a marina, supporting intensive boating, fishing and tourism activities.

Aerial view of Kawana Island and Mooloolah River National Park and to Glasshouse Mountains beyond

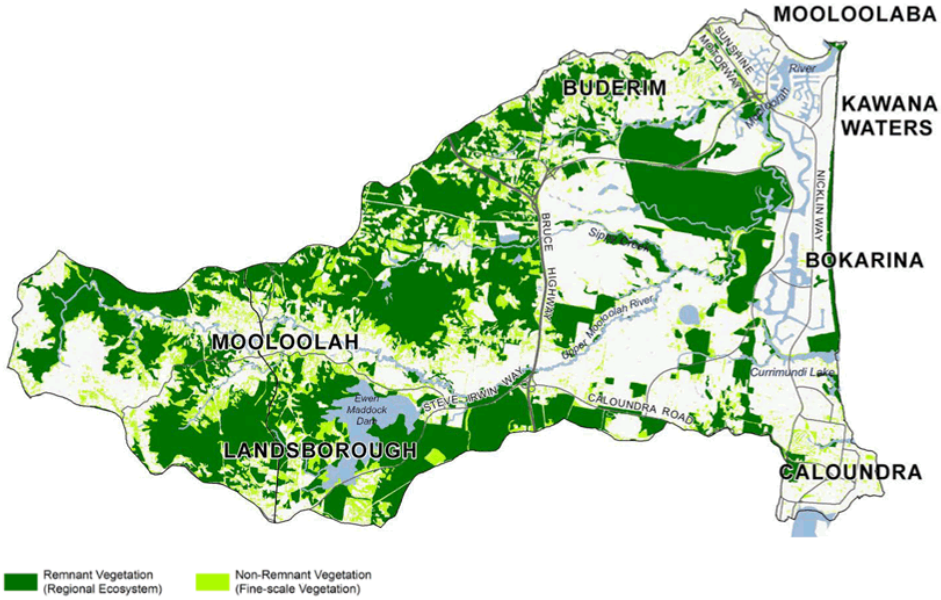
3.4.1 Vegetation

The Mooloolah River catchment occurs entirely within the Sunshine Coast Council area. Approximately 52% of the catchment's geographic extent is vegetated, of which approximately 72% is remnant and 28% non-remnant vegetation (see Table 3.24, Map 3.16).

Table 3.24: Summary of vegetation extents in the Mooloolah River catchment.

	Vegetation extents (ha)		
	Urban* area	Rural area	Total area
Catchment	10,703	11,558	22,261
Remnant vegetation	2,241	6,180	8,421
Non-remnant vegetation	1,633	1,721	3,354
Combined remnant and non-remnant vegetation	3,875	7,905	11,780
No vegetation	6,828	3,653	10,481

*Urban includes urban and rural living areas as defined by the South-east Queensland Regional Plan 2009-2031



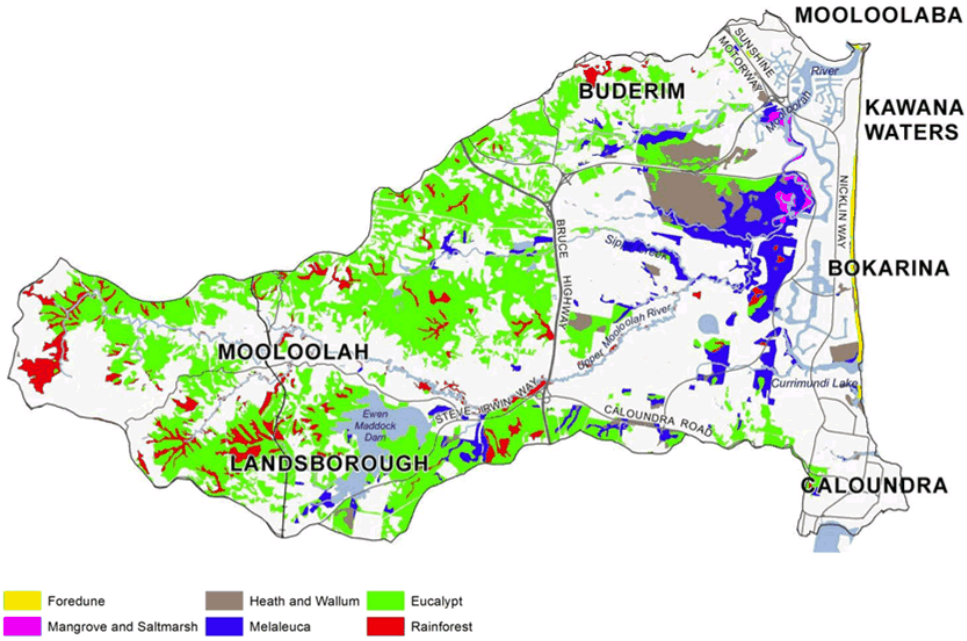
Map 3.16: Remnant and non-remnant vegetation in the Mooloolah River catchment.

Vegetation communities

The Mooloolah River catchment's remnant vegetation consists of 38 regional ecosystems comprising more than 8,400 hectares and each of the six vegetation communities is represented (see Table 3.25, Map 3.17). The majority of the catchment's vegetation clearing has occurred on the coastal floodplain east of the Bruce Highway and along the riparian areas of the upper catchment. Approximately 66% of the remaining vegetation is made up of eucalypt communities the majority of which occurs in the upper catchment. While the remaining foredune, heath, melaleuca and mangrove communities occur predominantly on the coastal floodplain (see Map 3.20).

Table 3.25: Summary of vegetation communities in the Mooloolah River catchment

		Regional ecosystem				
		Pre-clearing number	Pre-clearing extent (ha)	Current number	Current extent (ha)	Loss (%)
	Catchment	38	22,109	37	8,421	62
Vegetation community	**Mangrove and saltmarsh**	3	178	3	79	56
	Foredune	2	163	2	80	51
	Heath and wallum	10	2,685	9	635	76
	Melaleuca	4	3,748	4	1,119	70
	Eucalypt	16	13,019	16	5,606	57
	Rainforest	3	2,316	3	902	61



Map 3.17: Vegetation communities in the Mooloolah River catchment.

Vegetation loss

The Mooloolah River catchment's current vegetation pattern has been influenced by more than 150 years of native timber harvesting and milling, sugar cane farming, horticulture, agriculture and urbanisation (including canal development). Since European settlement the catchment has lost one regional ecosystem (12.12.19x2) and approximately 62% of its remnant vegetation (13,845 hectares) (see Appendix F).

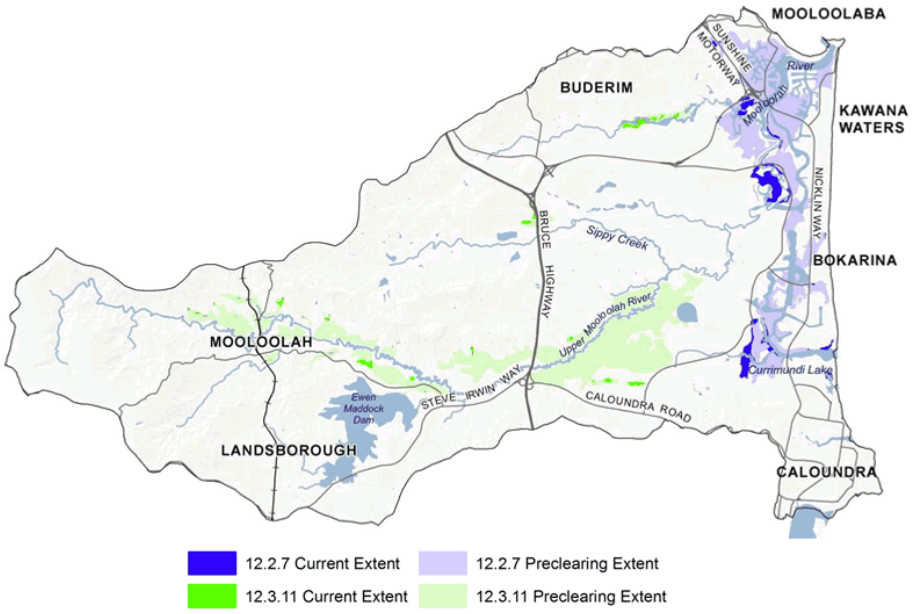
The eucalypt communities have had the greatest loss in the catchment with more than 7,500 hectares of remnant vegetation cleared. The regional ecosystem 12.9-10.14 has had the greatest loss of any regional ecosystem in the catchment with more than 2,168 hectares cleared. However, regional ecosystem 12.3.11 has had the greatest proportional loss relative to its pre-clearing extent (see Table 3.26, Map 3.18).

The melaleuca communities have lost the second largest extent of vegetation in the catchment with more than 2,600 hectares cleared. The regional ecosystem 12.3.5 has lost the greatest extent of the melaleuca communities with 1,588 hectares cleared (see Table 3.26, Map 3.18). However, regional ecosystem 12.2.7 has had the greatest loss (89%) relative to its pre-clearing extent (see Appendix F.

For a detailed list of each regional ecosystem within the Mooloolah River catchment, including their preclear and current extents see Appendix F.

Table 3.26: Pre-clearing and current extents for regional ecosystems 12.3.11 and 12.2.7 in the Mooloolah River catchment.

Regional ecosystem			
Classification	**Pre-clearing extent (ha)**	**Current extent (ha)**	**Loss (%)**
12.3.11	1,266	52	96
12.2.7	1,099	129	88

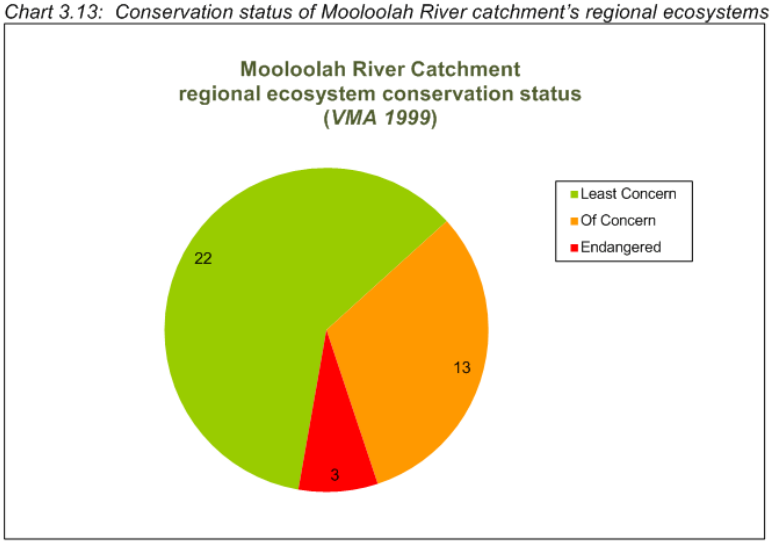


Map 3.18: Pre-clearing and current extents of regional ecosystems 12.2.7 and 12.3.11.

Queenslad conservation status of regional ecosystems

The Mooloolah River catchment has three *endangered*, 13 *of concern* and 22 *least concern* regional ecosystems (see Chart 3.13). Of the *endangered* regional ecosystems two are eucalypt and one is a rainforest community. For details on each regional ecosystem's conservation status see Appendix A.

Chart 3.13: Conservation status of Mooloolah River catchment's regional ecosystems



When reviewing the conservation status of the catchment's regional ecosystems it is important to also consider the local loss that has occurred. A regional ecosystem's conservation status does not necessarily describe an ecosystem's extent at a catchment scale, as the classification is derived at a greater bioregional scale (south-east Queensland). For example, the conservation status of the melaleuca regional ecosystems 12.2.7 is least concern bio-regionally but the loss results in the catchment indicate it is threshold endangered with only 11% of its preclear extent remaining (see Appendix F).

Commonwealth listed endangered and vulnerable ecological communities

The Mooloolah River catchment contains two ecological communities listed as threatened under the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act 1999* including the critically endangered Lowland Rainforest of Sub-tropical Australia (LRSA) and the vulnerable Subtropical and Temperate Coastal Saltmarsh (STCM).

Table 3.27: Diagnostic regional ecosystems of Commonwealth listed ecological communities for the Mooloolah River catchment

Commonwealth listed ecological communities	
Diagnostic LRSA Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.3.1	Endangered
12.8.3	Least Concern
*12.9-10.16	Of Concern
Diagnostic STCS Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.1.1	Of Concern
12.1.2	Least Concern
12.1.3	Least Concern

*Regional ecosystem 12. 9-10. 16 is only included where it is enriched with soils derived from landzone 3 (alluvia) or 8 (basalt)

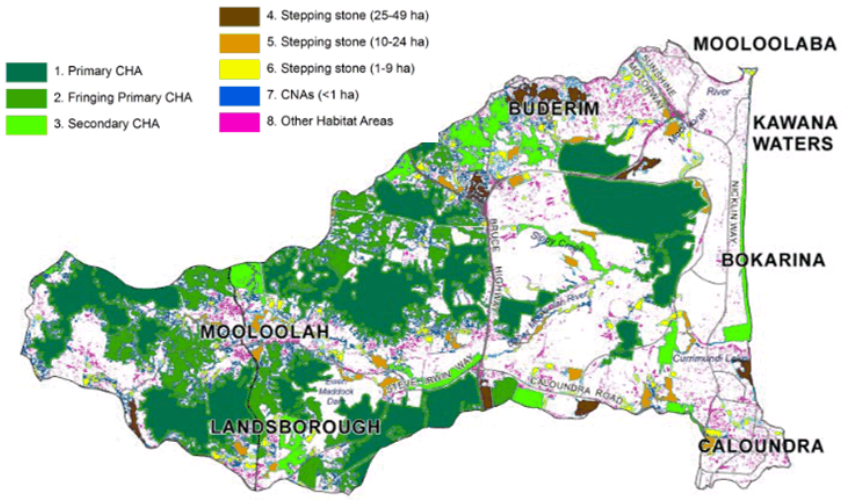
Three regional ecosystems diagnostic of the LRSA and three regional ecosystems diagnostic of STCM occur within the Mooloolah River catchment (see Table 3.27). Refer to Appendix F to understand the remaining extents of the various regional ecosystems and how much is currently protected and conserved.

3.4.2 Habitat

The Mooloolah River catchment's habitat network comprises 7,808 hectares of core habitat areas, 3,147 hectares of connecting habitat areas and 747 hectares of other habitat areas (see Map 3.19; Table 3.28).

Table 3.28: Mooloolah River catchment's core, connecting and other habitat areas

Landscape element	Secondary Classification	Remnant Area (ha)	Non-Remnant Area (ha)	Total vegetation Area (ha)
Core habitat areas	Primary core	4,344	67	4,412
	Fringing primary core	2,083	629	2,712
	Secondary core	639	44	684
	Sub-total	**7,066**	**740**	**7,808**
Connecting habitat areas	Stepping stone patches 25-50 ha	302	48	350
	Stepping stone patches 10-25 ha	330	40	370
	Stepping stone patches 1-10 ha	260	121	381
	Contiguous vegetation areas	456	1,672	2,124
	Sub-total	**1,348**	**1,881**	**3,225**
Other habitat areas	Isolated vegetation areas	**11**	**736**	**747**
	Totals	**8,425**	**3,355**	**11,780**



Map 3.19: Core and connecting habitat areas in the Mooloolah River catchment

The Mooloolah River catchment contains a number of significant primary core habitat areas. The largest primary core habitat area located on the coastal floodplain that stands out for its isolation in the landscape is the Mooloolah River National Park and the Lower Mooloolah River Environmental Reserve primary core habitat areas. Almost all other significant primary core habitat areas occur west of the Bruce Highway in the middle and upper parts of the catchment.

One of particular interest is the primary core habitat area located in the geographical centre of the catchment. This area is of interest because of its ecological functionality, connectivity and high biodiversity values but obvious lack of active conservation with almost the entire area in private ownership. This is similar for the primary core habitat area located to the south of Steve Irwin Way which is made up primarily by the Mooloolah State Forest. Whilst this is not currently a tenure for conservation purposes it does present and excellent opportunity to explore conservation opportunities. Both areas contain important eucalypt and rainforest vegetation communities.

3.4.3 Flora and fauna

The Mooloolah River catchment has 58 of the Sunshine Coast Council area's 135 listed EVNT species (see Chart 3.14). A breakdown of these EVNT species by taxonomic group is presented in Chart 3.15. An additional 15 EVNT species may occur in the catchment, but due to these species not being verified in the Sunshine Coast Council area they were not included in the catchment analysis. A comprehensive list of the EVNT species, including the catchments where they have been sighted is presented in Appendix B.

Chart 3.14: Number of listed EVNT flora and fauna species in the Sunshine Coast Council area and in the Mooloolah River catchment.

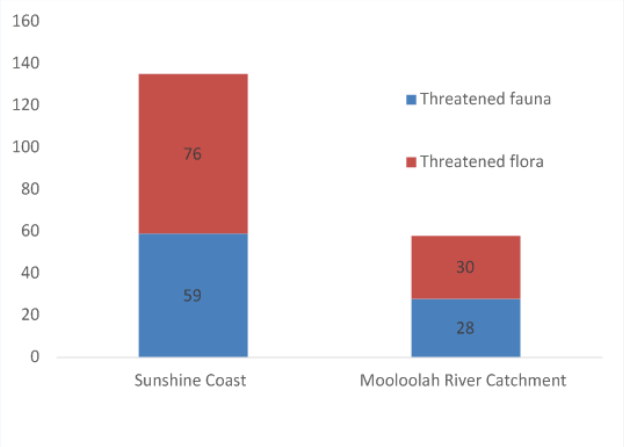
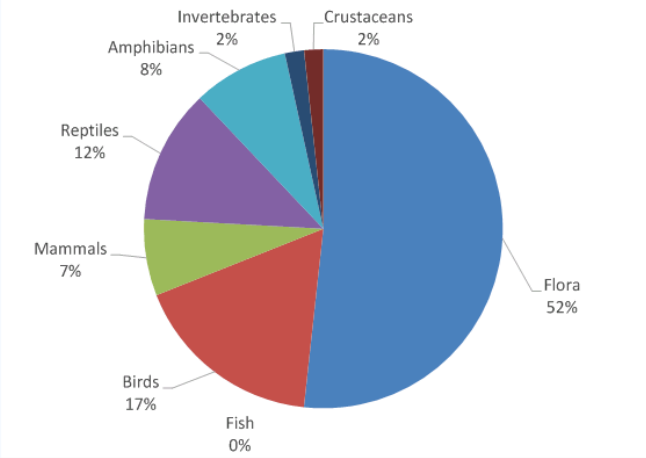


Chart 3.15: Listed EVNT flora and fauna species in the Mooloolah River catchment by taxonomic group.

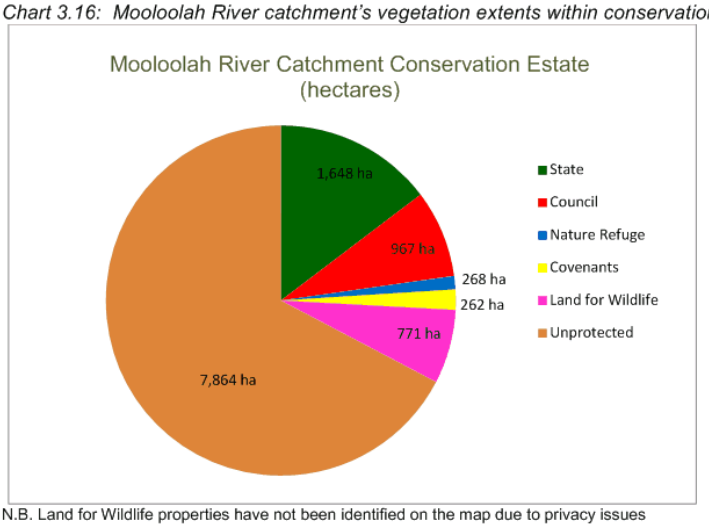


3.4.4 Conservation Estate

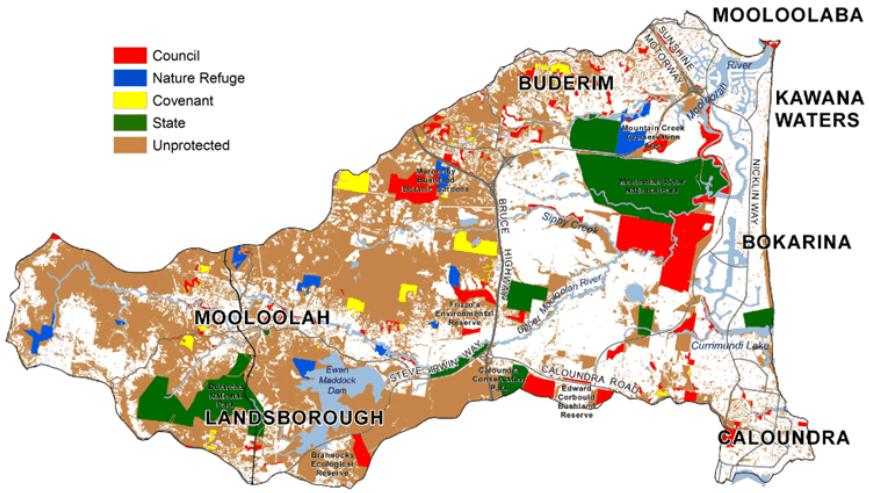
The Mooloolah River catchment's conservation estate conserves approximately 33% (3,916 hectares) of the catchment's vegetation and comprises approximately 3,400 hectares of remnant and 500 hectares of non-remnant vegetation (see Table 3.29). The catchment's remaining 7,864 hectares of vegetation is considered to be unprotected (see Chart 3.16).

The conservation estate's remnant vegetation consists of 37 regional ecosystems, with each of the six vegetation communities represented. The eucalypt communities have the greatest representation with 10 regional ecosystems covering more than 1,700 hectares. For further details of the catchment's conservation estate vegetation communities and associated regional ecosystems, refer to Appendix F.

Chart 3.16: Mooloolah River catchment's vegetation extents within conservation estate.



N.B. Land for Wildlife properties have not been identified on the map due to privacy issues



Map 3.20: Conservation areas in the Mooloolah River catchment (excludes Land for Wildlife land parcels)

Table 3.29: Summary of the vegetation associated with Mooloolah River catchment's conservation estate

Conservation estate							
	Reserve tenure	**Number of Reserves**	**Number of Lots**	**Total area (ha)**	**Extent of remnant vegetation (ha)**	**Extent of non-remnant vegetation (ha)**	**Total vegetation area (ha)**
State	National Park[1]	2	5	1,398	1,378	15	1,393
	Conservation Park[1]	5	5	260	238	17	255
	Sub-total	**7**	**10**	**1,658**	**1,616**	**32**	**1,648**
Council	Nature Refuge[1]	6	7	192	175	13	188
	Freehold	18	63	422	220	42	262
	Trustee[2]	100	219	557	411	85	496
	Nominee under trust (i.e. DA contribution)	14	19	192	125	44	169
	Other (no lot plans i.e. water and road parcels)	0	59	49	31	9	40
	Sub-total	**138**	**367**	**1,412**	**962**	**193**	**1,155**
Private	Nature Refuge[1]	0	6	83	71	9	80
	Voluntary Covenants[1]	0	4	21	20	1	21
	Development Covenants[1]	0	283	252	198	43	241
	Land for Wildlife[#]	0	108	1,138	538	233	771
	Sub-total	**0**	**401**	**1,494**	**827**	**286**	**1,113**
	Total	**145**	**778**	**4,564**	**3,405**	**511**	**3,916**

1 - Tenures that have a legally binding protection mechanism.
2 - Trustee lands managed for conservation may have a gazetted purpose other than "conservation"
[#] Land for Wildlife lot data extracted from the Enquire database (August 2016) which is managed by Healthy Waterways and Catchments and represents registered properties only.

State protected areas

The State protected areas constitute 42% (1,648 hectares) of the catchment's conservation estate. The protected remnant vegetation consists of 22 regional ecosystems with each of the six vegetation communities represented. The eucalypt vegetation communites have the greatest representation with seven regional ecosystems covering more than 602 hectares, however it is the heath and wallum (450 hectares) that has the most significant representation of regional ecosystem 12.3.13 with nearly 395 hectares. Most of this is protected in the Mooloolah River National Park (see Map 3.21; Appendix F).

Queensland Bulk Water Supply Authority (QBWSA) manage Ewan Maddock Dam in the Mooloolah River catchment. The QBWSA lands encompass a total area of 740 hectares and includes 284 hectares of remnant vegetation and 102 hectares of non-remnant vegetation. Much of the surrounding land had been purchased by Council, with the dual intent of dam catchment protection and biodiversity conservation, prior to the State changes to water supply authority and regulation.

Council conservation areas

Council's conservation areas constitute 29% of the conservation estate and includes 138 reserves helping to conserve 962 hectares of remnant vegetation and 193 hectares of non-remnant vegetation (see Table 3.27). Council conservation areas include a number of eucalypt and wallum regional ecosystems not represented in the State protected areas or other conservation tenures including 12.9-10.22, 12.12.19x3, 12.9-10.1, and 12.9-10.7a (see Appendix F).

Private conservation areas

The private conservation areas constitute 29% of the catchment's conservation estate and is made up of Nature Refuge (2%), covenants (7%) and Land for Wildlife (20%). The catchment includes over 108 registered Land for Wildlife properties helping to conserve approximately 530 hectares of remnant and 230 hectares of non-remnant vegetation in the catchment. The remnant vegetation consists of 17 regional ecosystems including melaleuca, eucalypt and rainforest vegetation communities. The Land for Wildlife properties include four eucalypt regional ecosystems (12.5.3; 12.8.8; 12.8.14 and 12.9-10.17a) that are not represented in the catchment's other conservation tenures (see Appendix F). Currently, there are more than 280 covenants with less than a hectare per covenant representing the higher development pressures within the catchment

Map 3.20 shows the spatial extent and composition of the conservation network (excluding Land for Wildlife properties) within the Mooloolah River catchment. For a comprehensive list of all the catchment's regional ecosystems and the respective extents in conservation please see Appendix F.

Protected areas and poorly conserved regional ecosystems

The Mooloolah River catchment has 16 of the Sunshine Coast Council area's 28 poorly conserved regional ecosystems including one melaleuca, two heath, two rainforest and 11 eucalypt regional ecosystems (see Table 3.30).

Table 3.30: Sunshine Coast Council area's poorly conserved regional ecosystems in the Mooloolah River catchment.

Regional Ecosystems				
Vegetation community	**Poorly conserved**	**Current extent (ha)**	**Extent in protected areas (ha)**	**Additional extent required to be adequately conserved at SCC LGA scale (ha)**
Heath and wallum	*12.2.15a	2	0	0.02
	12.9-10.22	11	8	13
Melaleuca	12.3.4	25	7	351
Eucalypt	*12.2.8	8	2	4
	12.3.2	723	224	424
	12.3.11	52	19	995
	12.5.3	7	0	563
	12.8.8	14	0	215
	12.8.14	53	0.66	70
	12.9-10.1	104	14	186
	12.9-10.4	208	113	348
	12.9-10.7a	57	8	142
	12.9-10.14	2,469	482	350
	12.9-10.14a	677	109	196
Rainforests	12.3.1	297	115	125
	12.8.3	121	34	1,240

** Regional ecosystems considered to have limited pre-clearing extent (less than 200 hectares) within the Sunshine Coast Council area*

One heath (12.2.15a) and two eucalypt (12.5.3 and 12.8.8) poorly conserved regional ecosystems currently have no representation in the catchment's protected areas. The Mooloolah River catchment retains significant extents of poorly conserved regional ecosystem 12.9-10.14, 12.9-10.14a, 12.3.2 and 12.3.1. These vegetation communities and their conservation within the catchment should form the basis of any catchment conservation planning.

For a comprehensive list of all the catchment's regional ecosystems and the respective extents currently protected please see Appendix F.

3.5 Pumicestone Passage Catchment

The Ramsar-listed Pumicestone Passage is a long, tidal waterway, enclosed between the mainland and Bribie Island. The Passage receives inflows from a network of creeks (Bells, Halls, Coochin and Coonowrin) which have their headwaters in the D'Aguilar Range, and passes through native bush, forestry, pine plantations, grazing, horticulture and urban areas.

Sand flats of the lower Pumicestone Passage

3.5.1 Vegetation

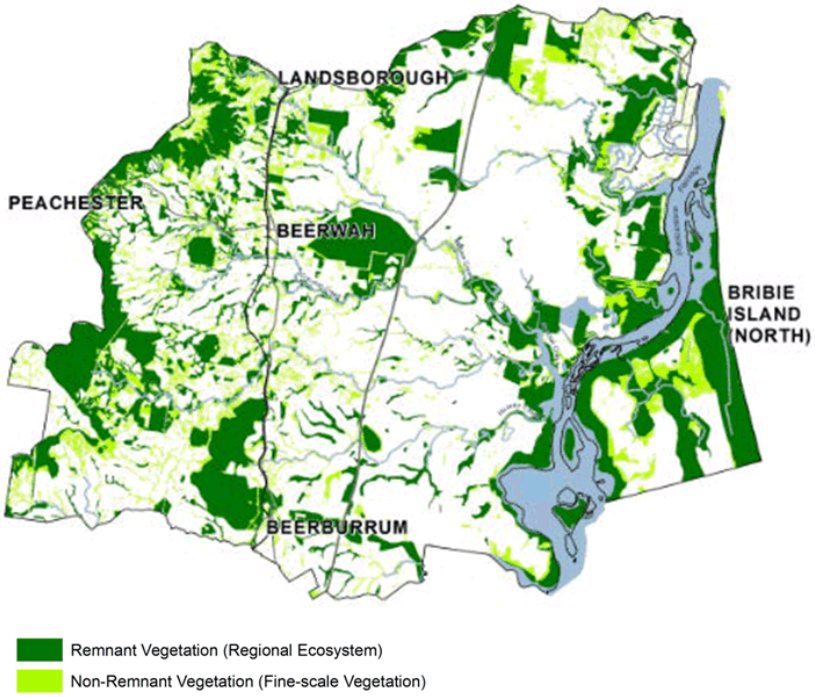
Approximately 60% of the Pumicestone Passage catchment (figures includes the northern portion of Bribie Island) occurs within the Sunshine Coast Council area. The Pumicestone Passage catchment and Bribie Island combined cover more than 45,000 hectares.

Approximately 37% of the catchment's geographic extent within the Sunshine Coast Council area is vegetated, of which approximately 74% is remnant and 26% non-remnant vegetation (see Table 3.31, Map 4.21).

Table 3.31: Summary of vegetation extents in the Pumicestone Passage (and Bribie Island) catchment.

	Vegetation extents (ha)		
	Urban* area	Rural area	Total area
Catchment	7,326	38,443	45,769
Remnant vegetation	1,235	11,515	12,750
Non-remnant vegetation	1,037	3,343	4,380
Combined remnant and non-remnant vegetation	2,272	14,859	17,131
No vegetation	5,054	23,584	28,637

*Urban includes urban and rural living areas as defined by the South-east Queensland Regional Plan 2009-2031



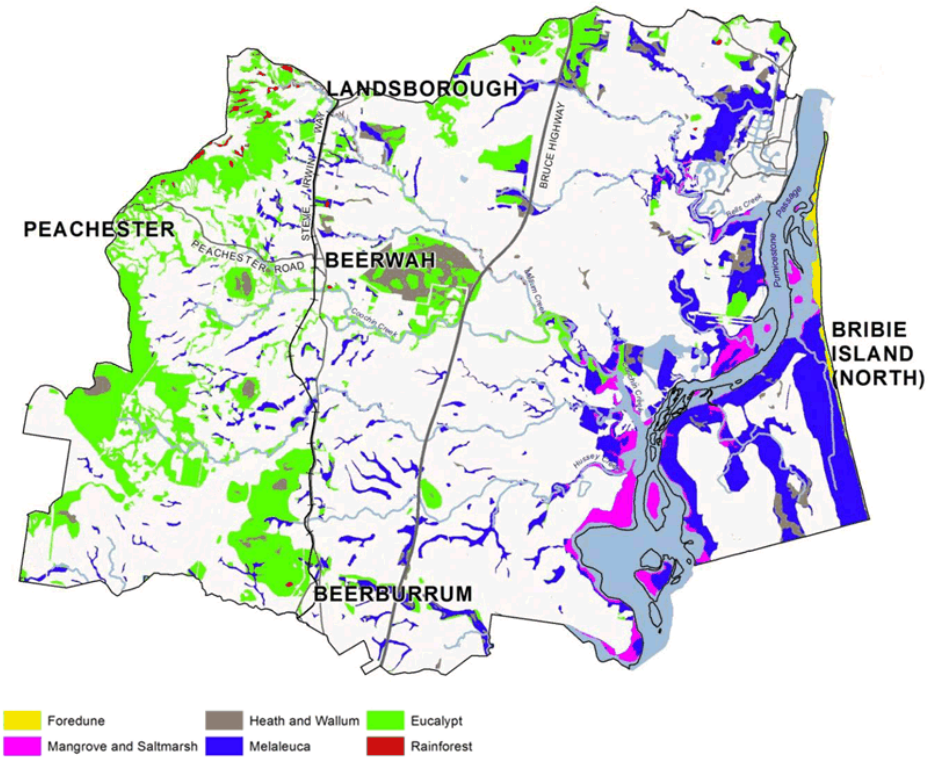
Map 3.21: Remnant and Non-remnant vegetation in the Pumicestone Passage and Bribie Island catchment

Vegetation communities

The Pumicestone Passage catchment's remnant vegetation consists of 37 regional ecosystems representing six vegetation communities comprising more than 12,750 hectares (see Table 3.32).

Table 3.32: Summary of vegetation communities in the Pumicestone Passage catchment and Bribie Island

		Regional ecosystem				
		Pre-clearing number	Pre-clearing extent (ha)	Current number	Current extent (ha)	Loss (%)
	Pumicestone Passage catchment	37	43,575	37	12,750	70
Vegetation community	**Mangrove and saltmarsh**	3	1,827	3	1,672	8
	Foredune	2	230	2	109	53
	Heath and wallum	8	3,259	8	996	69
	Melaleuca	7	14,243	7	4,510	68
	Eucalypt	14	23,758	14	5,316	78
	Rainforest	3	258	3	147	43



Map 4.22: Vegetation communities occurring in the Pumicestone Passage and Bribie Island catchment

Vegetation loss

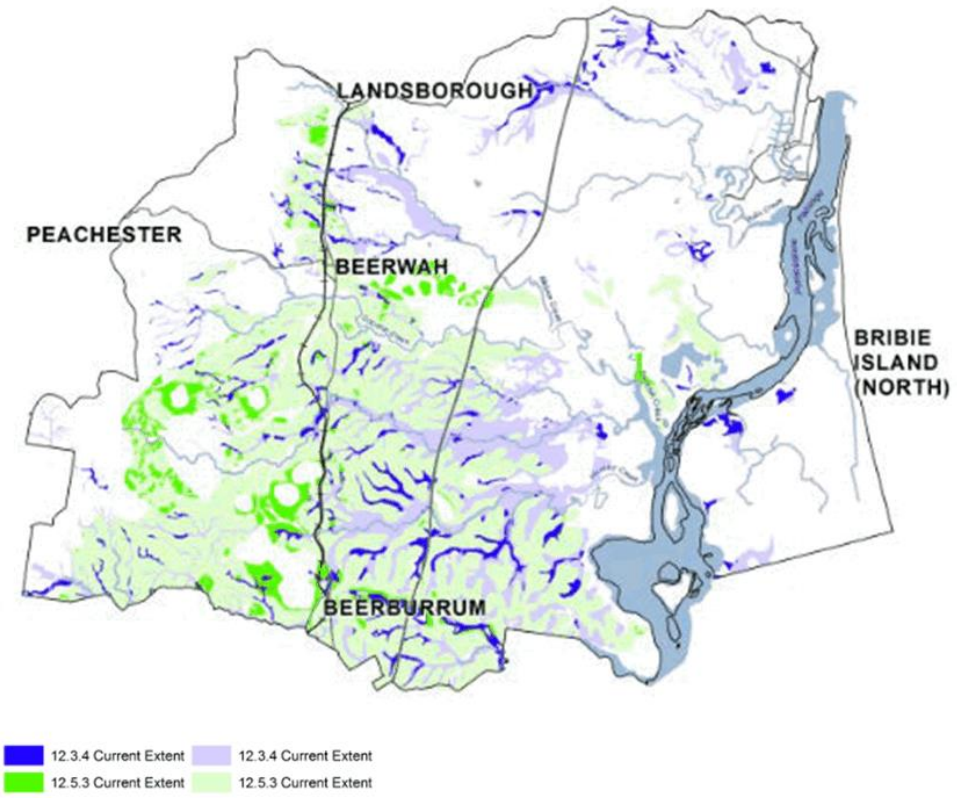
The Pumicestone Passage catchment's current vegetation pattern has been shaped by more than 150 years of land use activities including timber harvesting, horticulture (pineapple and strawberry farming) and agriculture, but most notably by forestry and urbanisation. Since European settlement, the catchment has lost two foredune regional ecosystems (12.2.5 and 12.2.14) and nearly three quarters (30,825 hectares) of its remnant vegetation (see Appendix G).

Approximately half of the remaining vegetation consists of eucalypt communities and one quarter melaleuca communities. The greatest extent loss in the Pumicestone Passage has occurred in the eucalypt communities with more than 18,500 hectares cleared, but the greatest loss relative to pre-clearing extent has occurred in the foredune communities with no representation remaining in the mainland catchment. On Bribie Island the greatest losses have occurred in the melaleuca communities, with approximately half their pre-clear extents cleared (see Table 3.33).

The mix of rich red soils and deep draining sandy soils around the Glasshouse Mountains and Beerburrum area saw the establishment of broad scale slash-pine forestry and pineapple plantations, which resulted in considerable stands of eucalypt and melaleuca forests being cleared. In particular, the regional ecosystem 12.5.3 (*Eucalyptus racemosa* on the deeply weathered soils and sand plains), now considered to be *endangered*, has had the most extensive losses in the catchment with more than 10,000 hectares cleared (Table 3.33; Appendix G). Occurring in close association with the eucalypt community is the melaleuca regional ecosystem 12.3.4 that also had significant clearing in the catchment and on Bribie Island with more than 4,000 hectares cleared (see Map 3.23, Table 3.33). Collectively these two regional ecosystems make up half of all the vegetation cleared in the catchment. For a detailed list of each regional ecosystem within the catchment, including pre-clearing and current extents see Appendix G.

Table 3.33: Pre-clearing and current extents for regional ecosystems 12.5.3 and 12.3.4 in the Pumicestone Passage River catchment.

Regional ecosystem			
Classification	**Pre-clearing extent (ha)**	**Current extent (ha)**	**Loss (%)**
12.5.3	11,181	1,119	90
12.3.4	5,416	1,260	77

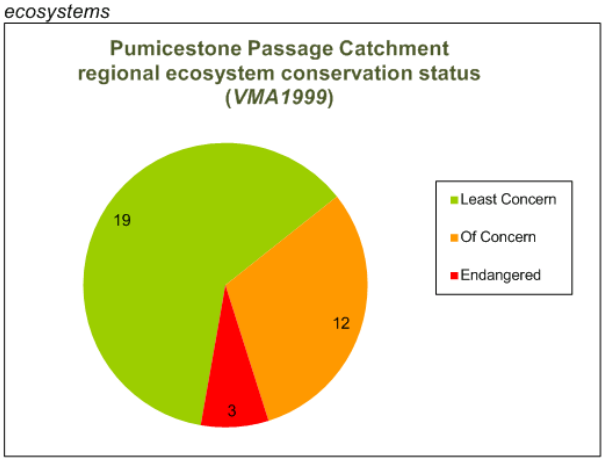


Map 3.24 Current and pre-clearing extents of regional ecosystems 12.3.4 and 12.5.3

Queensland conservation status of regional ecosystems

The Pumicestone Passage catchment has three *endangered*, 12 *of concern* and 19 *least concern* regional ecosystems (see Chart 3.17). Of the *endangered* regional ecosystems, two are eucalypt and one is a rainforest community. A regional ecosystem's conservation status does not effectively describe an ecosystem's extent at a catchment scale, as the classification is derived at a greater bioregional scale (south east Queensland). For example, the conservation status of the foredune regional ecosystems 12.2.5 is least concern bio-regionally however its pre-clearing extent has been entirely lost in the catchment. For details on each regional ecosystem's conservation status, see Appendix A.

Chart 3.17: Conservation status of Pumicestone Passage and North Bribie Island catchments' regional ecosystems



Commonwealth listed endangered and vulnerable ecological communities

The Pumicestone Passage catchment contains two ecological communities listed as threatened under the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act 1999* including the critically endangered Lowland Rainforest of Sub-tropical Australia (LRSA) and the vulnerable Subtropical and Temperate Coastal Saltmarsh (STCM).

Table 3.34 Diagnostic regional ecosystems of Commonwealth listed ecological communities for the Pumicestone Passage catchment

Commonwealth listed ecological communities	
Diagnostic LRSA Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.3.1	Endangered
12.8.3	Least Concern
*12.9-10.16	Of Concern
Diagnostic STCS Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.1.1	Of Concern
12.1.2	Least Concern
12.1.3	Least Concern

*Regional ecosystem 12. 9-10. 16 is only included where it is enriched with soils derived from landzone 3 (alluvia) or 8 (basalt)

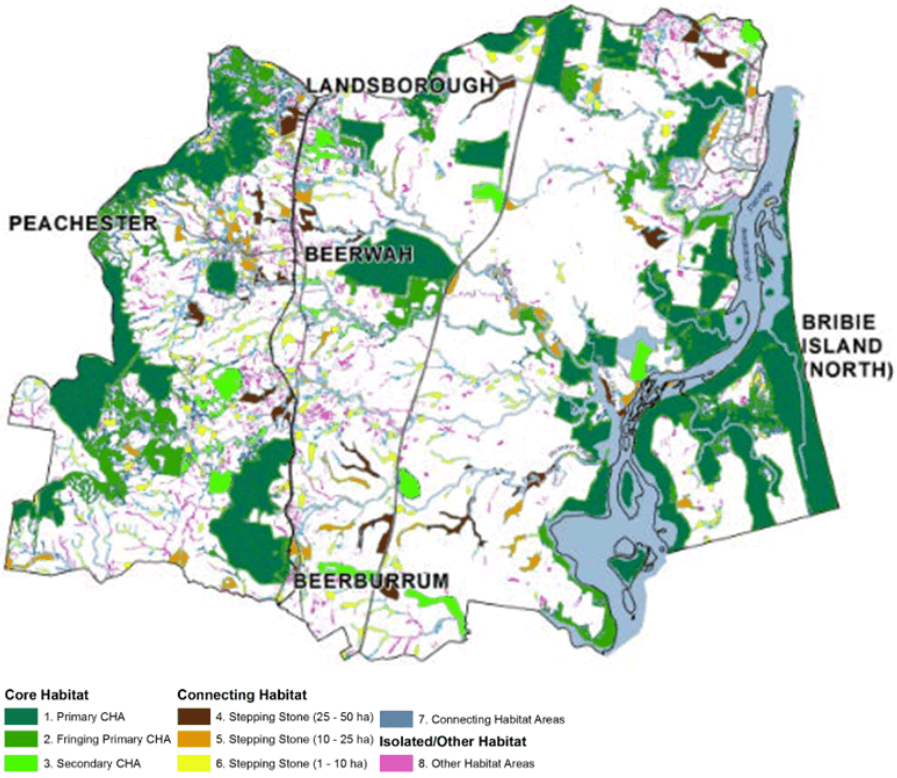
Three regional ecosystems diagnostic of the LRSA and three regional ecosystems diagnostic of STCM occur within the Pumicestone Passage catchment. Refer to Appendix G to understand the remaining extents of the various regional ecosystems and how much is currently protected and conserved.

3.5.2 Habitat

The Pumicestone Passage catchment's habitat network comprises 11,325 hectares of core habitat areas, 4,841 hectares of connecting habitat areas and 967 hectares of other habitat areas (see Map 3.24; Table 3.35).

Table 3.35 Pumicestone Passage catchment's core, connecting and other habitat areas

Landscape element	Secondary Classification	Remnant Area (ha)	Non-Remnant Area (ha)	Total vegetation Area (ha)
Core habitat areas	Primary core	6875	140	7015
	Fringing primary core	2710	841	3551
	Secondary core	690	69	759
	Sub-total	**10,275**	**1,050**	**11,325**
Connecting habitat areas	Stepping stone patches 25-50 ha	489	73	562
	Stepping stone patches 10-25 ha	582	113	695
	Stepping stone patches 1-10 ha	616	245	861
	Contiguous vegetation areas	754	1,969	2,723
	Sub-total	**2,440**	**2,400**	**4,841**
Other Habitat Areas	Isolated vegetation areas	**37**	**930**	**967**
	Totals	**12,752**	**4,380**	**17,133**



Map 3.24: Pumicestone Passage and Bribie Island's core and connecting habitat areas.

The Pumicestone Passage (and Bribie Island) catchment includes a mosaic of significant core and connecting habitat areas throughout what is the most fragmented coastal catchment in the Sunshine Coast Council area (see Table 3.33, Map 3.24).

Most of the significant primary core habitat areas are defined, for the most part, by conservation areas with the Glasshouse Mountains National Park and the Beerwah Scientific Area being the most obvious in the midland area of the catchment, west of the Bruce Highway. A cluster of primary, secondary and fringing core habitat areas occurring along both sides of Pumicestone Passage and on the northern section of Bribie Island collectively make up the Bribie Island National Park. This area contributes to the most significant core habitat area in the catchment and provides essential habitat and protected areas for RAMSAR listed acquatic, marine and migratory fauna species of international, national and local importance.

Areas of stepping stone and connecting habitat areas become increasingly important when planning is undertaken to re-establish ecological connectivity through biodiversity linkages, especially in those state tenures currently used for forestry. A number of crucial stepping stone connecting habitat areas, either side of the Bruce Highway around Wildhorse Mountain lookout represent opportunities to consolidate potential riparian links and more effectively connect the coast floodplain (i.e. Bribie Island National Park) with the upper catchment habitat areas and the Glasshouse Mountains.

3.5.3 Flora and fauna

The Pumicestone Passage catchment including Bribie Island has 50 of the Sunshine Coast Council area's 135 listed EVNT species (see Chart 3.18). A breakdown of these EVNT species by taxonomic group is presented in Chart 3.19. Another 15 EVNT species may occur in the catchment but due to these species unverified presence in the Sunshine Coast Council area they were not included in the catchment analysis. A comprehensive list of the catchment's EVNT species, including the catchments where they have been sighted is presented in Appendix B.

Chart 3.18: Number of listed EVNT flora and fauna species in the Sunshine Coast Council area and in the Pumicestone Passage catchment.

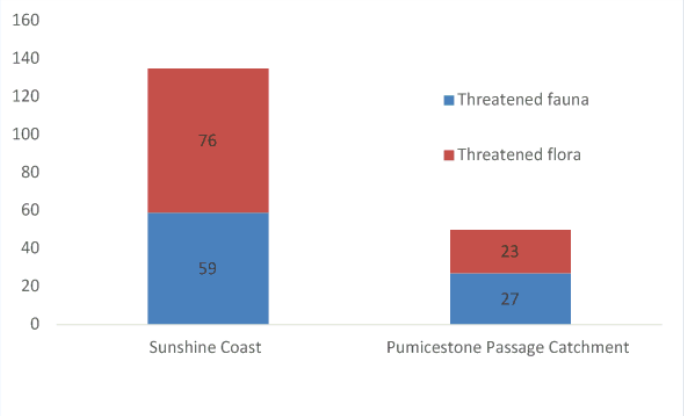
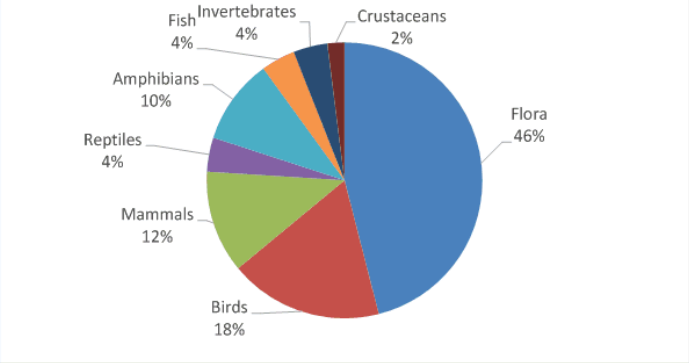


Chart 3.19: Listed EVNT flora and fauna species in the Pumicestone Passage catchment by taxonomic group.



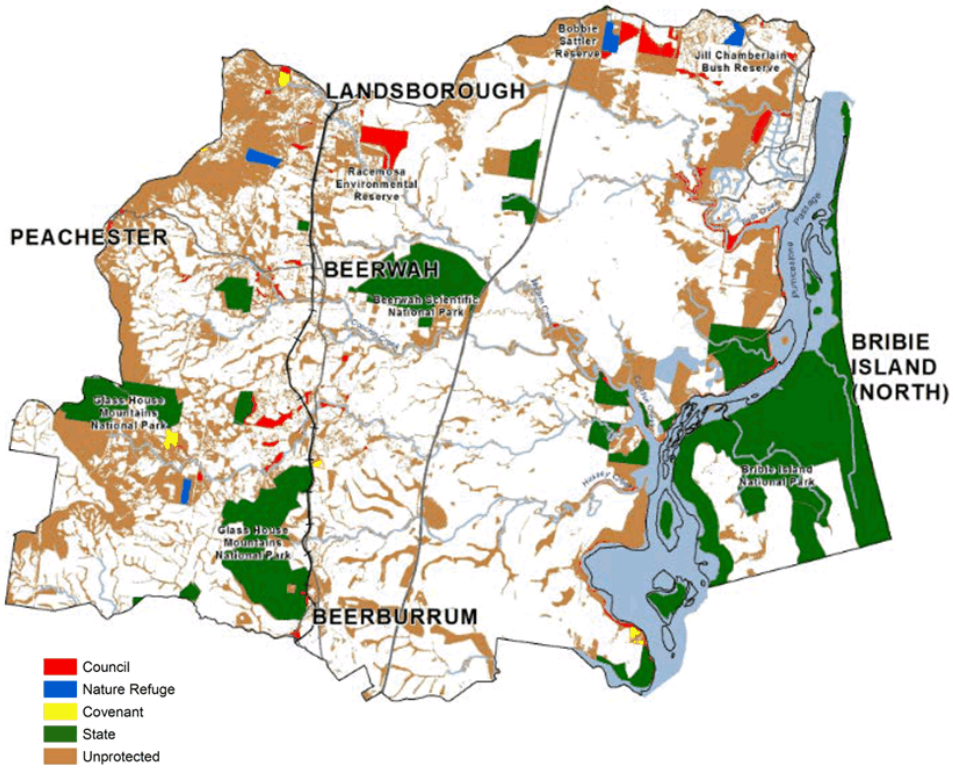
CASE STUDY 7
Glossy Black Cockatoo Conservancy

The Glossy black cockatoo (*Calyptorhynchus lathami*) (image right) is regionally threatened and listed as vulnerable under the Queensland Government's Nature Conservation Act 1992. It has a very restricted diet, feeding only on the seeds in the cones of selected trees of certain she-oak species. The birds will return to the same food tree time and time again, often ignoring nearby trees that are full of cones. These feeding patterns are poorly understood. With more detailed knowledge better conservation strategies can be put in place for the species.
The Glossy Black Cockatoo Conservancy is an independent association of local Councils, environmental consultancies, birding groups and academic institutes in south east Queensland. The Conservancy's on-line reporting tool allows the general public (bird enthusiasts and non-birders alike) to participate in an ongoing 'citizen science' project. The Conservancy database now exceeds 5,000 records. These records are available to Conservancy partners (many of them local Councils responsible for making conservation and development planning decisions), for use in developing strategic conservation plans and identifying critical habitats, while also providing a foundation for further scientific research.

3.5.4 Conservation Estate

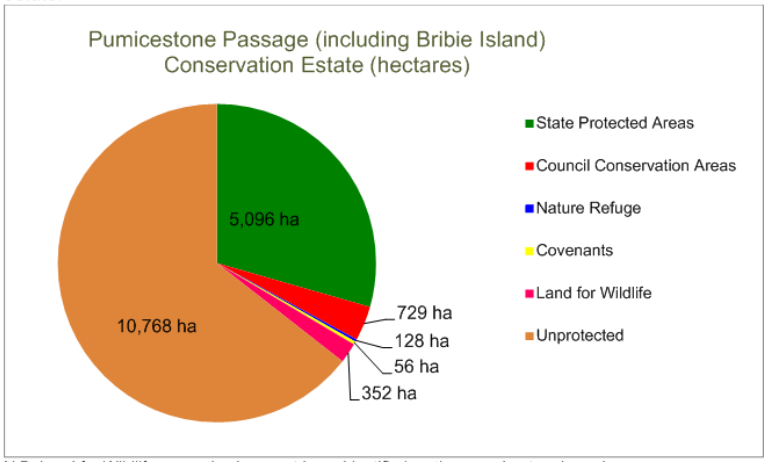
The Pumicestone Passage catchment (including north Bribie Island) conservation estate conserves approximately 37% (6,363 hectares) of the catchment's vegetation comprising approximately 5,500 hectares of remnant and 800 hectares of non-remnant vegetation (see Table 3.26). The catchment's remaining 63% (10,768 hectares) of vegetation is considered unprotected (see Chart 3.20).

The conservation estate's remnant vegetation consists of 36 regional ecosystems, with representation from each of the six vegetation communities (see Appendix G). The eucalypt communities have the greatest diversity of representation with 12 regional ecosystems covering more than 1,950 hectares, however it is the melaleuca communities that have greatest extent with more than 2,200 hectares. For further details of the catchment's conservation estate vegetation communities and associated regional ecosystems, refer to Appendix G.



Map 3.25: Conservation areas in the Pumicestone Passage catchment and Bribie Island (excludes Land for Wildlife land parcels)

Chart 3.20: Pumicestone Passage (and Bribie Island) catchment's vegetation extents within conservation estate.



N.B. Land for Wildlife properties have not been identified on the map due to privacy issues

State protected areas

The State protected areas constitute 80% (5,098 hectares) of the catchment's conservation estate and includes more than 4,500 hectare of remnant vegetation and 580 hectares of non-remnant vegetation. The protected areas remnant vegetation consists of 33 regional ecosystems with representation in each of the six vegetation communities (see Appendix G).

The melaleuca vegetation communities have the greatest representation in State protected areas with 8 regional ecosystems covering more than 2,000 hectares, most of which occurs in the Bribie Island National Park (see Map 3.25).

Council conservation areas

Council's conservation areas constitute 13% of the conservation estate and includes 73 reserves helping to conserve 743 hectares of remnant vegetation and 113 hectares of non-remnant vegetation (see Table 3.36). One of Council's most significant reserves in the catchment is the recently acquired Racemosa Environmental Reserve south east of Landsborough.

Private conservation areas

The private conservation areas contribute the remaining 7% of the catchment's conservation estate. The catchment includes 47 registered Land for Wildlife properties helping to conserve 246 hectares of remnant and 106 hectares of non-remnant vegetation in the catchment (see Table 3.36). The remnant vegetation consists of 15 regional ecosystems; and four vegetation communities represented. The eucalypt communities have the greatest representation with 10 regional ecosystems covering more than 220 hectares (see Appendix G).

Map 3.25 shows the spatial extent and composition of the conservation network (excluding Land for Wildlife properties) within the Pumicestone Passage catchment (including north Bribie Island). For a comprehensive list of all the catchment's regional ecosystems and the respective extents in conservation please see Appendix G.

Table 3.36: Summary of the vegetation associated with Pumicestone Passage catchment (including Bribie Island) conservation estate

Conservation estate							
	Reserve tenure	**Number of Reserves**	**Number of Lots**	**Total area (ha)**	**Extent of remnant vegetation (ha)**	**Extent of non-remnant vegetation (ha)**	**Total vegetation area (ha)**
State	National Park[1]	4	8	5,341	4,507	589	5,096
	Conservation Park[1]	1	1	2	2	0	2
	Sub-total	**5**	**9**	**5,343**	**4,509**	**589**	**5,098**
Council	Nature Refuge[1]	4	4	130	109	19	128
	Freehold	6	10	114	110	3	113
	Trustee[2]	60	118	363	234	70	304
	Nominee under trust (i.e. DA contribution)	3	3	8	7	0.59	7.59
	Other (no lot plans i.e. water and road parcels)	0	43	319	283	21	304
	Sub-total	**73**	**178**	**934**	**743**	**114**	**857**
Private	Nature Refuge[1]	0	0	0	0	0	0
	Voluntary Covenants[1]	0	5	23	20	2	22
	Development Covenants[1]	0	28	34	31	3	34
	Land for Wildlife[#]	0	47	455	246	106	352
	Sub-total	**0**	**82**	**512**	**297**	**111**	**408**
	Total	**78**	**269**	**6,789**	**5,549**	**814**	**6,363**

1 - Tenures that have a legally binding protection mechanism.
2 - Trustee lands managed for conservation may have a gazetted purpose other than "conservation"
[#] Land for Wildlife lot data extracted from the Enquire database (August 2016) which is managed by Healthy Waterways and Catchments and represents registered properties only.

Protected areas and poorly conserved regional ecosystems

The Pumicestone Passage (including Bribie Island) catchment has 12 of the Sunshine Coast Council area's 28 poorly conserved regional ecosystems including, one heath, one melaleuca, two rainforest and eight eucalypt regional ecosystems (see Table 3.37).

Table 3.37: Sunshine Coast Council area's poorly conserved regional ecosystems in the Pumicestone Passage (and Bribie Island) catchment.

Vegetation community	Regional Ecosystems			
	Poorly conserved	Current extent (ha)	Extent in protected areas (ha)	Additional extent required in protection to be adequately conserved at SCC LGA scale (ha)
Heath and Wallum	12.9-10.22	2	2	13
Melaleuca	12.3.4	1,260	195	351
Eucalypt	12.3.2	656	53	424
	12.3.11	161	45	995
	12.5.3	1,119	551	563
	12.8.8	24	2	215
	12.8.14	3	0	70
	12.9-10.4	948	243	348
	12.9-10.14	703	155	350
	12.9-10.14a	345	21	196
Rainforests	12.3.1	80	11	125
	12.8.3	23	5	1,240

** Regional ecosystems considered to have limited pre-clearing extent (less than 200 hectares) within the Sunshine Coast Council area*

Eucalypt regional ecosystem 12.8.14 currently has no representation in the catchment's protected areas. The Bribie Island section of the catchment contains only one poorly conserved regional ecosystem, a small portion (4,000 m^2) of the rainforest regional ecosystem 12.3.1, all of which occurs within the Bribrie Island National Park.

The Pumicestone Passage catchment retains significant extents of regional ecosystems 12.3.4, 12.3.2, 12.5.3, 12.9-10.4, 12.9-10.14 and 12.9-10.14a. These vegetation communities and their conservation within the catchment should form the basis of any catchment conservation planning.

For a comprehensive list of all the catchment's regional ecosystems and the respective extents currently protected please see Appendix G.

3.6 Upper Stanley River Catchment

The Stanley River headwaters are located in the Great Dividing Range and the Conondale Range, where large areas of land remain in a relatively natural state. The catchment contributes substantially to Brisbane's water supply through its impoundment at Somerset Dam.

Upper Stanley River fringed by picabeen rainforest ecosystems

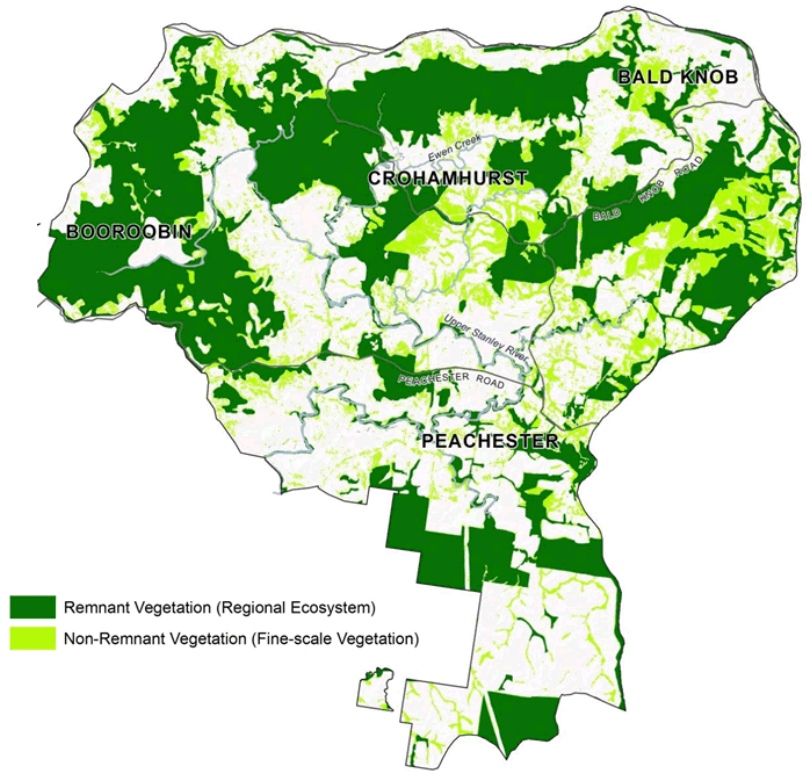
3.6.1 Vegetation

Approximately 56% of the Upper Stanley catchment's area in the Sunshine Coast Council area is vegetated, of which approximately 67% is remnant and 33% is non-remnant vegetation (see Table 3.38, Map 3.26). The Upper Stanley catchment has the greatest ratio of non-remnant vegetation of any catchment in the Sunshine Coast Council area with 18% of the vegetation extent being non-remnant.

Table 3.38: Summary of vegetation extents in the Upper Stanley River catchment

	Vegetation extent (ha)		
	Urban* area	Rural area	Total area
Catchment	536	10,685	11,221
Remnant vegetation	97	4,133	4,230
Non-remnant vegetation	173	1,917	2,090
Combined remnant and non-remnant vegetation	270	6,050	6,320
No vegetation	266	4,635	4,901

*Urban includes urban and rural living areas as defined by the South-east Queensland Regional Plan 2009-2031



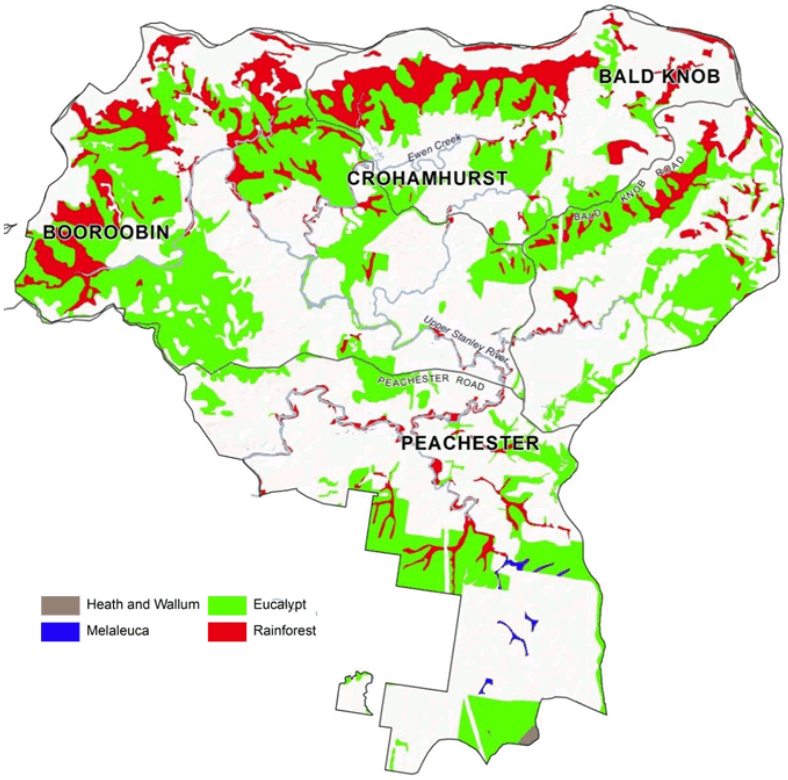
Map 3.26: Remnant and non-remnant vegetation in the Upper Stanley River catchment

Vegetation communities

The Upper Stanley River catchment's remnant vegetation consists of 23 regional ecosystems representing four of the six vegetation communities and comprises more than 4,200 hectares. The eucalypts vegetation communities has the greatest representation and distribution across the catchment compared to that of the rainforest communities that are most prominent in the northern upper reaches and along the riparian areas of the catchment. Eucalypt regional ecosystem 12.5.6c has been entirely cleared (20 hectares) from the catchment. Pockets of melaleuca and heath communities are located in the narrow southern portion of the catchment (see Table 4.39; Map 3.27). For a full list of the catchment's regional ecosystems see Appendix H.

Table 3.39: Summary of vegetation communities in the Upper Stanley River catchment.

		Regional ecosystem				
		Pre-clearing number	Pre-clearing extent (ha)	Current number	Current extent (ha)	Loss (%)
	Catchment	24	11,200	23	4,230	62
Vegetation community	**Heath and wallum**	2	11	2	11	0
	Melaleuca	1	152	1	27	82
	Eucalypt	16	8,289	15	3,047	63
	Rainforest	5	2,748	5	1,145	58



Map 3.32: Vegetation communities in the Upper Stanley River catchment.

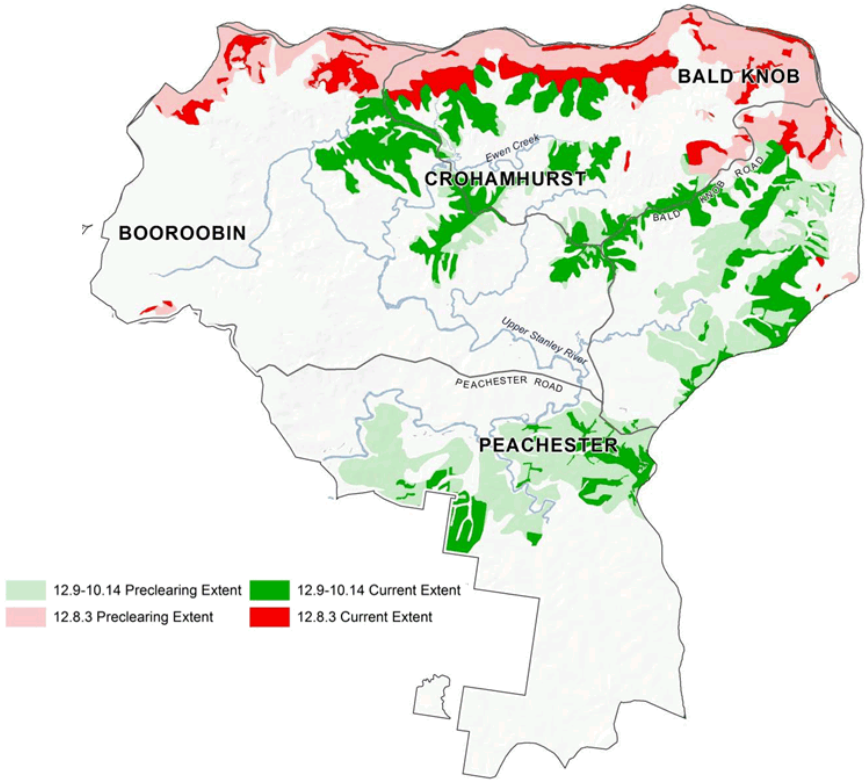
Vegetation loss

The Upper Stanley River catchment has lost approximately two thirds of its remnant vegetation (6,900 hectares). The eucalypt communities have had the greatest loss with 5,240 hectares cleared. The eucalypt regional ecosystem 12.9-10.14 (blackbutt (*Eucalyptus pilularis*) on sandstone) has had one of the largest losses in extent of any regional ecosystem in the catchment with more than 1,000 hectares cleared, with the rainforest regional ecosystem 12.8.3 (complex notophyll vine forests on the basalt soils) with more than 850 hectares cleared (see Table 3.40, Map 3.28).

For a detailed list of each regional ecosystem within the Upper Stanley catchment, including their pre-clearing and current extents see Appendix H.

Table 3.40: Upper Stanley River catchment pre-clearing and current extents for regional ecosystem 12.8.3 and 12.9-10.14

Regional ecosystem			
Classification	**Pre-clearing extent (ha)**	**Current extent (ha)**	**Loss (%)**
12.8.3	1,230	368	70
12.9-10.14	2,133	1019	52



Map 3.28: Current and pre-clearing extents of regional ecosystems 12.8.3 and 12.9-10.14

Queensland conservation status of regional ecosystems

The Upper Stanley River catchment has two *endangered*, 10 *of concern* and 11 *least concern* regional ecosystems (see chart 3.21). One of the *endangered* regional ecosystems is eucalypt and the other is a rainforest community. The Upper Stanley River catchment has a high proportion of threatened regional ecosystems with more than half of all represented communities classified as vulnerable. For details on each regional ecosystems conservation status see Appendix H.

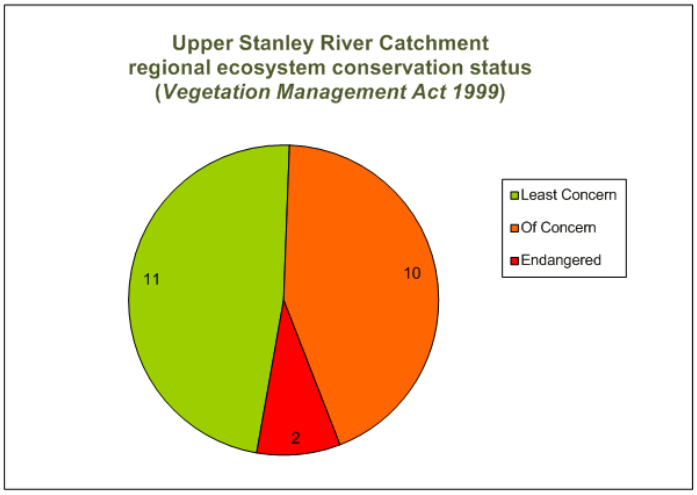


Chart 3.21: Upper Stanley River catchment's regional ecosystems conservation status.

When reviewing the conservation status of the catchment's regional ecosystems it is important to consider the local loss that has occurred. A regional ecosystem's conservation status does not necessarily represent an ecosystem's extent at a catchment scale, as the classification is derived at a greater bioregional scale (south east Queensland). For example, the conservation status of eucalypt regional ecosystems 12.3.11 is of concern bio-regionally however the loss results in the catchment indicate it is critically endangered with less than 1% of its pre-clearing extent remaining (see Appendix H).

Commonwealth listed endangered and vulnerable ecological communities

The Upper Stanley River catchment contains Lowland Rainforest of Sub-tropical Australia (LRSA) ecological community listed as *critically endangered* under the Commonwealth Government's *Environmental Protection and Biodiversity Conservation Act 1999.*

Table 3.41: Diagnostic regional ecosystems of Commonwealth listed ecological communities for the Upper Stanley River catchment

Commonwealth listed ecological communities	
Diagnostic LRSA Regional Ecosystems	**Qld conservation status under *VMA 1999***
12.3.1	Endangered
12.8.3	Least Concern
12.12.1	Of Concern
12.12.16	Least Concern
*12.9-10.16	Of Concern

*Regional ecosystem 12. 9-10. 16 is only included where it is enriched with soils derived from landzone 3 (alluvia) or 8 (basalt)

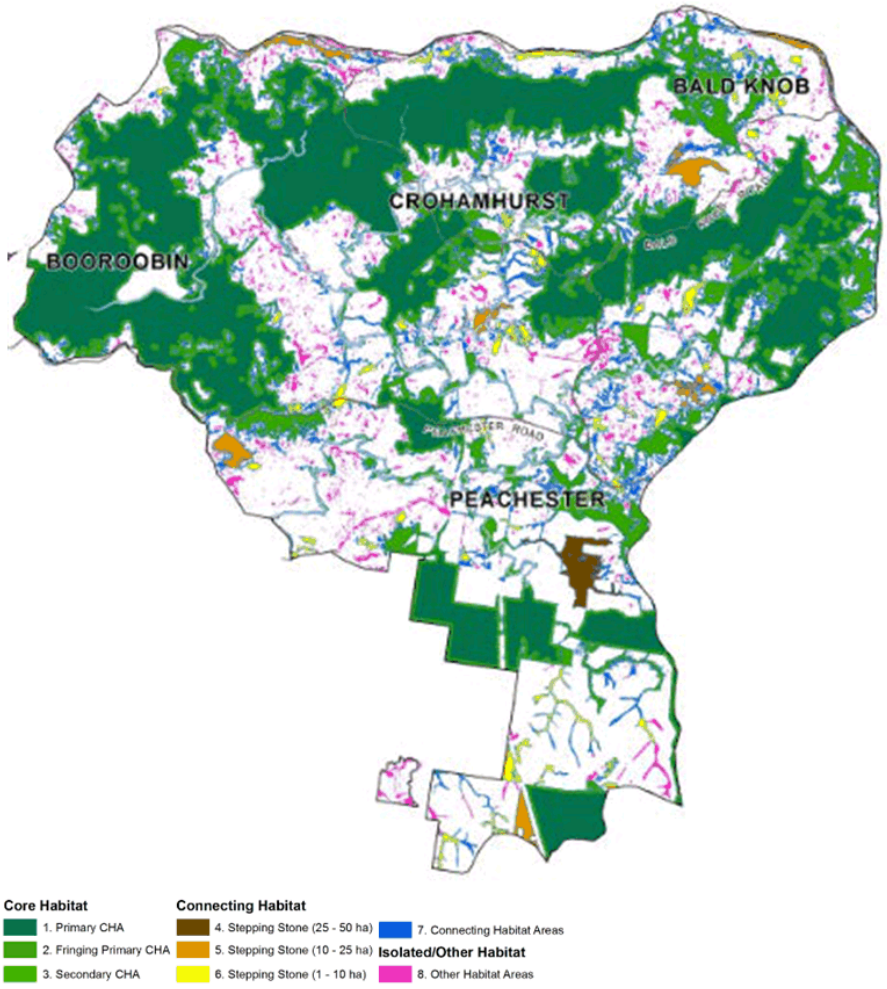
Five regional ecosystems diagnostic of the LRSA occur within the Upper Stanley River catchment. Refer to Appendix H to understand the remaining extents of the various regional ecosystems and how much is currently protected and conserved.

3.6.2 Habitat

The Upper Stanley River catchment's habitat network comprises 4,600 hectares of core habitat areas, 1,427 hectares of connecting habitat areas and 287 hectares of other habitat areas (see Map 3.29; Table 3.42).

Table 3.42 Upper Stanley River catchment's core, connecting and other habitat areas

Landscape element	Secondary Classification	Remnant Area (ha)	Non-Remnant Area (ha)	Total vegetation Area (ha)
Core habitat areas	Primary core	2,771	127	2,879
	Fringing primary core	1,103	599	1,702
	Secondary core	-	-	-
	Sub-total	**3,874**	**726**	**4,600**
Connecting habitat areas	Steeping stone patches 25-50 ha	40	9	49
	Steeping stone patches 10-25 ha	71	35	106
	Steeping stone patches 1-10 ha	52	90	143
	Contiguous vegetation areas	198	939	1,137
	Sub-total	**352**	**1,075**	**1,427**
Other habitat areas	Isolated vegetation areas	**5**	**287**	**293**
	Totals	**4,231**	**2,088**	**6,320**



Map 3.29: Core and connecting habitat areas in the Upper Stanley River catchment

The Upper Stanley River catchment includes cluster of primary core habitat areas and associated fringing core habitat areas occurring in the northern part of the catchment. The Bald Knob – Mount Mellum primary core habitat areas located in the most north-eastern extent of the catchment contains extensive conservation areas. Most notably the London Creek Environmental Resreve network where Council has been making significant investments in this area to consolidate the London Creek sub-catchment and secure the primary core habitat areas long-term protection and ecological functionality. The central northern primary core habitat areas that extends from River Road to Landsborough Maleny Road is largely characterised by Maleny Forest Reserve which has recently been gazetted as National Park (see Conservation estate Section).

3.6.3 Flora and Fauna

The Upper Stanley River catchment has 33 of the Sunshine Coast Council area's 135 listed EVNT species (see Chart 3.22). A breakdown of these EVNT species by taxonomic group is presented in Chart 3.23. An additional 15 EVNT species may occur in the catchment but were not included in the catchment analysis due to their unverified locations in the Sunshine Coast Council area. A comprehensive list of EVNT species, including the catchments where they have been sighted is presented in Appendix B.

Chart 3.22: Number of listed EVNT fauna and flora species in the Sunshine Coast Council area and in the Upper Stanley River catchment.

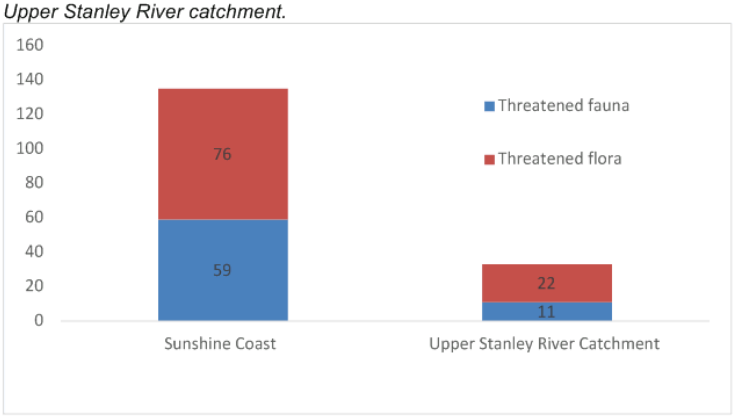
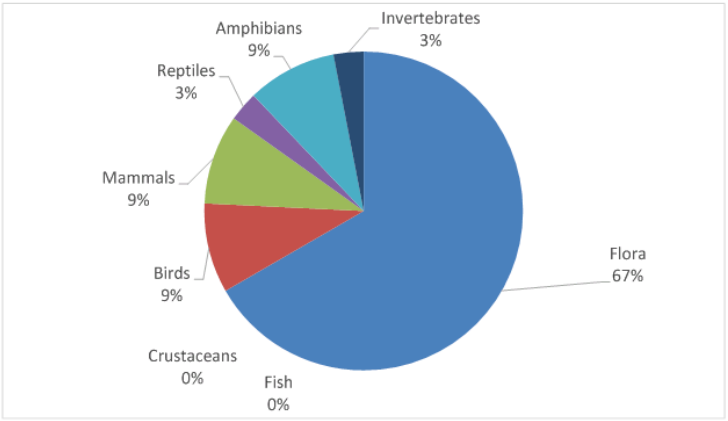


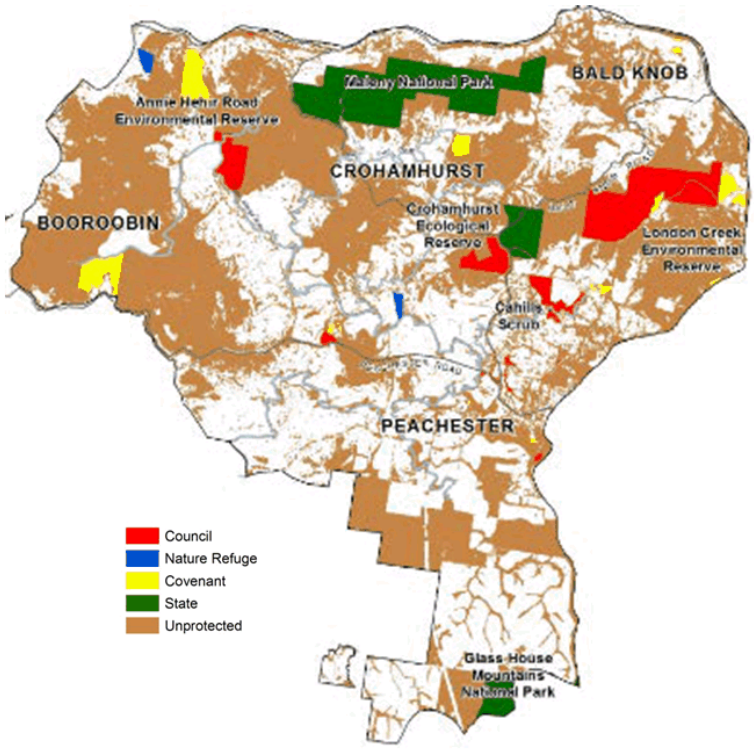
Chart 3.23: Listed EVNT fauna and flora species in the Upper Stanley River catchment by taxonomic group.



3.6.4 Conservation Estate

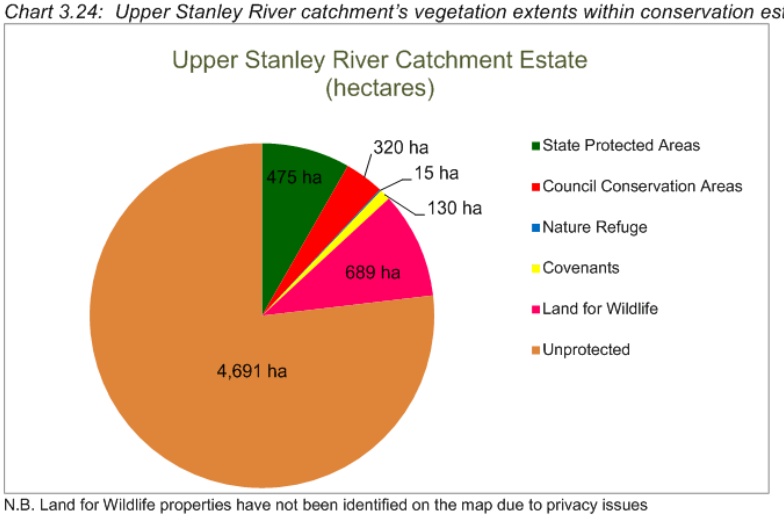
The Upper Stanley River catchment's conservation estate conserves approximately 26% (1,629 hectares) of the catchment's vegetation comprising 1,440 hectares of remnant and 408 hectares of non-remnant vegetation (see Table 3.30). The catchment's remaining 78% (4,691 hectares) of vegetation is considered to be unprotected (see Chart 3.24).

The conservation estate's remnant vegetation consists of 20 regional ecosystems with representation of heath, eucalypt and rainforest vegetation communities. The eucalypt communities have the greatest representation in the estate with 12 regional ecosystems covering more than 764 hectares. For further details of the catchment's conservation estate vegetation communities and associated regional ecosystems, refer to Appendix H.



Map 3.30: Conservation areas in the Upper Stanley River catchment

Chart 3.24: Upper Stanley River catchment's vegetation extents within conservation estate.



N.B. Land for Wildlife properties have not been identified on the map due to privacy issues

State protected areas

The State protected areas constitute 29% (475 hectares) of the catchment's conservation estate and includes 462 hectares of remnant vegetation and 13 hectares of non-remnant vegetation (see Table 3.34). The State protected areas remnant vegetation consists of 8 regional ecosystems with representation of heath, eucalypt and rainforest vegetation communities. Almost all of this vegetation, with the exception of a 50 hectare portion of the Glasshouse Mountains National Park that occurs across the catchment boundary in the south east corner, all occurs within two reserves including Maleny National Park and Crohamhurst Conservation Park (see Map 3.30).

Council conservation areas

Council's conservation areas constitute 20% of the conservation estate and includes 14 reserves currently conserving 219 hectares of remnant vegetation and 101 hectares of non-remnant vegetation (see Table 3.43). Council has recently invested into the expansion of the London Creek Environmental Reserve which is now more than 220 hectares in extent and protects vulnerable eucalypt and critically endangered rainforest communities (see Appendix H).

Private conservation areas

The private conservation areas constitute 51% (689 hectares) of catchment's conservation estate. Fifty six registered Land for Wildlife properties help to conserve more than 440 hectares of remnant and 240 hectares of non-remnant vegetation comprising 15 regional ecosystems with representation of heath, eucalypt and rainforest vegetation communities. The heath communities represent the smallest extent conserved with one hectare of regional ecosystem 12.3.8 whereas the eucalypt vegetation communities have the greatest representation of eight regional ecosystems covering more than 300 hectares. The voluntary conservation areas include one hectare of the heath regional ecosystems 12.3.8 not represented in any other conservation tenure. There has also been a focus for community partnerships with an expansion of the voluntary conservation agreements (and the associated covenants) with six landowners protecting almost 100 hectares of vegetation.

Map 3.30 shows the spatial extent and composition of the conservation network within the Upper Stanley River catchment. For a comprehensive list of all the catchment's regional ecosystems and the respective extents in conservation please see Appendix H.

Table 3.43: Summary of the vegetation associated with Upper Stanley River catchment's conservation estate

Conservation estate							
	Reserve tenure	**Number of Reserves**	**Number of Lots**	**Total area (ha)**	**Extent of remnant vegetation (ha)**	**Extent of non-remnant vegetation (ha)**	**Total vegetation area (ha)**
State	National Park[1]	1^	2	420	407	7	414
	Conservation Park[1]	1	1	63	55	6	61
	Sub-total	**2**	**3**	**483**	**462**	**13**	**475**
Council	Nature Refuge[1]	0	0	0	0	0	0
	Freehold	4	6	294	195	86	281
	Trustee[2]	9	13	39	23	15	38
	Nominee under trust (i.e. DA contribution)	1	2	1	0.63	0.36	0.99
	Other (no lot plans i.e. water and road parcels)	0	0	0	0	0	0
	Sub-total	**14**	**21**	**334**	**219**	**101**	**320**
Private	Nature Refuge[1]	0	2	17	6	9	15
	Voluntary Covenants[1]	0	6	93	60	30	90
	Development Covenants[1]	0	13	41	31	9	40
	Land for Wildlife[#]	0	56	994	443	246	689
	Sub-total	**0**	**77**	**1,145**	**540**	**294**	**834**
	Total	**16**	**101**	**1,962**	**1,440**	**408**	**1,629**

1 - Tenures that have a legally binding protection mechanism.
2 - Trustee lands managed for conservation may have a gazetted purpose other than "conservation".
[#] Land for Wildlife lot data extracted from the Enquire database (August 2016) which is managed by Healthy Waterways and Catchments and represents registered properties only.
^A 50 hectare portion of the Glasshouse National Park (located in the south east corner of the catchment the majority of reserve occurs in the Pumicestone Passage catchment) is calculated in the National Park vegetation extent in this catchment but not accounted for as an individual reserve.

Protected areas and poorly conserved regional ecosystems

The Upper Stanley River catchment has 12 of the Sunshine Coast Council area's 28 poorly conserved regional ecosystems including, eight eucalypt, two rainforest and one melaleuca regional ecosystems (see Table 3.44).

Three of the poorly conserved eucalypt regional ecosystems occurring within the catchment have no current protection while a further two eucalypt regional ecosystems have less than a hectare combined within the protected estate.

Regional ecosystem 12.9-10.7a has lost almost all of its pre-clearing extent within the catchment and none of the remaining extent is within the catchment's protected areas. The most widespread poorly conserved regional ecosystem in the catchment is 12.9-10.14 and with approximately one quarter of what remains currently in protection and requiring 350 hectares to achieve adequacy at an LGA scale this regional ecosystem presents an opportunity for 12.9-10.14 to be a catchment conservation target.

Table 3.44: Sunshine Coast Council area's poorly conserved regional ecosystems in the Upper Stanley River catchment.

Vegetation community	Regional Ecosystems			
	Poorly conserved	Current extent (ha)	Extent in protected areas (ha)	Additional extent required in protection to be adequately conserved at SCC LGA scale (ha)
Melaleuca	12.3.4	27	0	351
Eucalypt	12.3.2	113	15.7	424
	12.3.11	0.34	0	995
	12.5.3	30	0	563
	12.8.8	69	0.89	215
	12.8.14	42	0.91	70
	12.9-10.4	328	31	348
	12.9-10.7a	8	0	142
	12.9-10.14	1,019	281	350
	12.9-10.14a	374	55	196
Rainforests	12.3.1	251	25.7	125
	12.8.3	368	120	1,240

** Regional ecosystems considered to have limited pre-clearing extent (less than 200 hectares) within the Sunshine Coast Council area*

For a comprehensive list of all the catchment's regional ecosystems and the respective extents currently protected please see Appendix K.

3.7 Noosa River Catchment

The Sunshine Coast Council area contains less than 1% of the Noosa River catchment which includes an area approximately 900 hectares of predominately rural land surrounding the western and southern shores of Lake Weyba (refer to Figure 1.1 Introduction).

3.7.1 Vegetation

The Sunshine Coast Council area portion of the Noosa River catchment contains approximately 50% remnant vegetation and 21% non-remnant vegetation (see Table 3.45).

Table 3.45: Summary of vegetation extents in the Noosa River catchment

	Vegetation extent		
	Urban* extent (ha)	Rural extent (ha)	Total extent (ha)
Catchment	5	918	923
Remnant vegetation	0	457	457
Non-remnant vegetation	2	196	198
Combined remnant and non-remnant vegetation	2	653	655
No vegetation	3	265	268

*Urban includes urban and rural living areas as defined by the SEQ Regional Plan 2009-2031

Vegetation communities

The Sunshine Coast Council area portion of the Noosa River catchment contains 459 hectares of remnant vegetation including 14 regional ecosystems with representation in the heath and wallum, melaleuca and eucalypt vegetation communities (see Table 3.46 and Appendix I).

Table 3.46: Summary of vegetation communities in the Noosa River catchment

	Regional ecosystems				
	Pre-clearing number	Pre-clearing extent (ha)	Current number	Current extent (ha)	Loss (%)
Catchment	14	923	14	459	51
Heath and wallum	4	139	4	110	20
Melaleuca	4	277	4	164	41
Eucalypt	6	507	6	185	63

Vegetation loss

The melaleuca regional ecosystem 12.2.12 no longer occurs within this portion of the catchment. The eucalypt vegetation communities have had the greatest loss with more than 60% of their pre-clearing extents cleared. Regional ecosystem 12.5.3 has had the greatest loss of the eucalypt community with 78% (302 hectares) of its pre-clearing extent cleared (see Appendix L).

Conservation status of regional ecosystems

The Sunshine Coast Council area portion of the Noosa River catchment contains two *endangered*, four *of concern* and nine *least concern* regional ecosystems (See chart 3.25). Of the two endangered regional ecosystems both are eucalypt communities (12.5.3 and 12.5.6). For details on each regional ecosystems conservation status within the catchment see Appendices L.

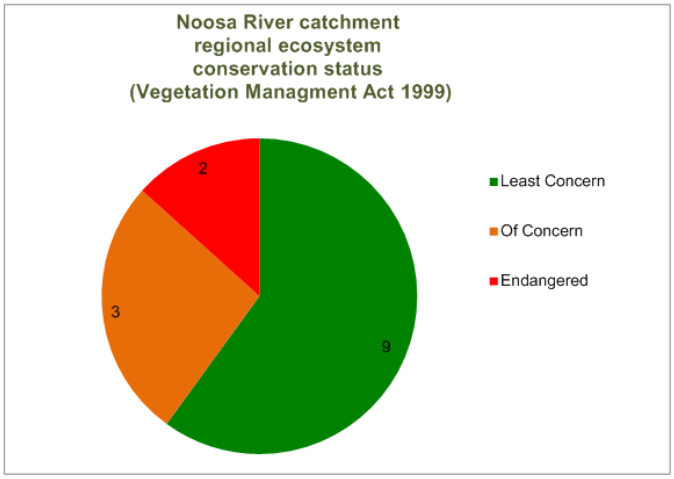


Chart 3.25 Conservation status of Noosa River catchment's regional ecosystems.

Endangered ecological communities

This portion of the Noosa River catchment does not contain any rainforest ecosystems.

3.7.2 Flora and Fauna

The Sunshine Coast Council area's portion of the Noosa River catchment contains limited records that includes, 2 flora and 6 fauna EVNT species (see Appendix B).

3.7.3 Conservation Estate

The Sunshine Coast Council area's portion of the Noosa River catchment protects more than 300 hectares of remnant and non-remnant vegetation through both state and council protected areas, Nature Refuges and vegetation protection covenants. While the Land for wildlife program helps to conserve 34 hectares of habitat (see Table 3.47 and Appendix J).

Table 3.47 summary of vegetation in the Noosa River catchment's conservation estate

	Remnant vegetation (ha)	Non-remnant vegetation (ha)	Remnant and non-remnant vegetation (ha)
State protected areas	245	0	245
Council conservation areas	**51**	**46**	**97**
Nature Refuge	16	0	16
Covenants	11	0	11
Land for Wildlife conservation program	18	0	18
Conservation estate	**323**	**46**	**387**

Approximately 240 hectares of the Noosa National Park lies within this portion of Sunshine Coast Council area and contains a number of locally and regionally important vegetation communities including the endangered and poorly conserved scribbly gum forests (12.5.3) and associated heath and wallum communities. This section of the Noosa National Park constitutes 80% of the protected areas within the catchment portion (see Table 3.47).

Council conservation areas include one Trustee reserve that contributes 97 hectares of vegetation to the conservation estate. For full details of the catchment's regional ecosystems and the extent to which they are protected or conserved see Appendix I.

Protected areas and poorly conserved regional ecosystems

The Noosa River catchment contains two of the Sunshine Coast Council area's poorly conserved regional ecosystems (see Table 3.48).

Table 3.48: Sunshine Coast Council area's poorly conserved regional ecosystems in the Noosa River catchment

Vegetation community	Regional Ecosystems			
	Poorly conserved	Current extent (ha)	Extent in protected areas (ha)	Additional extent required in protection to be adequately conserved at SCC LGA scale (ha)
Melaleuca	12.3.4	3	0	351
Eucalypt	12.5.3	83	80.7	563

4 Conclusions

The Biodiversity Report 2016 for the Sunshine Coast Council Local Government Area provides the first comprehensive assessment of the Sunshine Coast Council area's biodiversity. It establishes a reporting framework including quantifiable biodiversity indicators against which future changes can be measured. Presented using a sound, and for some measures, nationally recognised approaches, the report provides valuable data to inform future biodiversity planning and management decisions.

The Sunshine Coast Council area's landscape continues to support a diverse range of flora and fauna, ecosystems, landscapes and habitat areas making it one of the most biodiverse local government areas (LGA) in South-east Queensland. The LGAs contains a high diversity of habitats with 75 regional ecosystems made up of mangrove, saltmarsh, foredune, melaleuca, casuarina, eucalypt, rainforest, and heath and wallum vegetation communities. These habitats support a diverse range of plants and animals including 59 animal species and 76 plant species listed as endangered, vulnebale or near threatened under state and commonwealth legislation.

The Sunshine Coast Council area retains about half its vegetation cover and this compares favourably to other SEQ local governments where the average is approximately 38%. We have cleared more than 550 hectares of remnant vegetation over the past five years and the projections for the next five is likely to double.

The Sunshine Coast Council area has some of the most significant conservation areas in the region including the Conondale Ranges National Park, RAMSAR listed Pumicestone Passage and Bribie Island National Park, the world renowned Glasshouse Mountians National Park and the iconic Maroochy wallum area to highlight a few.

The eucalypt communities are the most diverse of the six broad vegetation groups and make up more than half of all regional ecosystems that occur in the Sunshine Coast Council area. Eucalypts have had the greatest area of loss with more than 84,000 hectares cleared while the melaleuca communities have had the greatest declines relative to their pre-clearing extents with 70% of all Melaleuca communities cleared.

The Sunshine Coast Council area has six river catchments each including different biodiversity values, levels of conservation and management challenges. The Mooloolah River catchment is the only catchment to occur entirely within the Sunshine Coast Council local government area boundary while the Maroochy River catchment has 99% of its watershed within the local government area. The Maroochy River catchment has known records of 75 listed rare and threatened flora and fauna species, the most of any catchment, while the neighbouring Mooloolah River catchment has experienced the greatest declines of riparian vegetation of any catchment, having lost more than 95% of the upper catchments riparian remnant vegetation.

The Mary River catchment, the largest of the six Sunshine Coast Council area river catchments, has the greatest area of habitat protected by the conservation estate with more than 30,000 hectares or nearly 60% of the Sunshine Coast local government areas conservation estate. The Upper Stanley River catchment contains the greatest proportion of non-remnant vegetation which contributes to defining a cluster of core habitat areas that extends from into the Pumicestone Passage catchment. The Pumicestone Passage catchment has had the greatest decline in remnant vegetation cover, particularly on the coastal floodplain, with almost three quarters of the catchment cleared.

5 Glossary

Biodiversity	The diversity of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.
Bioregion	A biogeographic region in which a regional ecosystem is found. These regions are based on broad landscape patterns that reflect the major structural geologies and climate as well as major changes in flora and fauna assemblages.
Catchment	The area where water is collected by the natural landscape. In a catchment, all rain and run-off water eventually flows to a creek, river, lake or ocean, or into the groundwater system.
Climate change	A descriptive term which encompasses both natural and human-induced changes to the climate.
Connecting habitat areas	Areas of remnant and non-remnant vegetation less than 50 hectares in extent, and which may comprise: • Fragmented and isolated patches of vegetation as small as $10m^2$ • A group of loosely aggregated, but proximal, small habitat fragments in natural or near natural condition • Groups of habitat fragments within discrete physical regions such as catchments and landform elements not identified as core habitat areas
Conservation	The preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife.
Conservation estate	Vegetation conserved through a legislative and/or voluntary conservation mechanism.
Core Habitat Areas (CHAs)	Contiguous remnant and non-remnant vegetation equal to or greater than 50 hectares in extent, which may comprise: • Multiple vegetation community types (or regional ecosystems) • Wetlands, rivers and wide coastal waterways that traverse the core habitat area • Known rare and threatened flora and fauna populations • Lands with a variety of tenures • Infrastructure easements that retain a grassy ground cover or shrubby understorey that reflects the characteristics of nearby habitat types • Narrow infrastructure corridors such as local roads or rail easements
Ecological functionality	The range of services provided to an organism through a subset of ecological processes and habitat structures. Each function is the result of the natural processes of the total ecological subsystem of which it is a part. Natural processes, in turn, are the result of complex interactions between biotic (living organisms) and abiotic (chemical and physical) components of ecosystems.
Ecosystem	An ecosystem is a natural unit consisting of all plants, animals and microorganisms in an area, functioning together with all the non-living physical factors, including soil, rocks, minerals, water sources and the local atmosphere.

Endangered	Under the Queensland *Nature Conservation Act 1992*, a regulation may prescribe native wildlife as endangered wildlife if: (a) there have not been thorough searches conducted for the wildlife and the wildlife has not been seen in the wild over a period that is appropriate for the life cycle or form of the wildlife (b) the habitat or distribution of the wildlife has been reduced to an extent that the wildlife may be in danger of extinction (c) the population size of the wildlife has declined, or is likely to decline, to an extent that the wildlife may be in danger of extinction (d) the survival of the wildlife in the wild is unlikely if a threatening process continues
Endemic	The situation in which a species is restricted to a particular geographic region, owing to factors such as isolation or response to soil or climatic conditions. Such a taxon is said to be endemic to that region.
Environment Levy	Refers to a levy raised by the Sunshine Coast Regional Council (in accordance with section 971 of the *Queensland local Government Act 2009*), on all rateable properties within the jurisdiction, in order to assist with environmental protection and management.
EPBC Act	The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the EPBC Act as matters of national environmental significance.
Extinct in the wild	Under the Queensland *Nature Conservation Act 1992*, a regulation may prescribe native wildlife as extinct in the wild wildlife if: (a) there have been thorough searches conducted for the wildlife (b) the wildlife has not been seen in the wild over a period that is appropriate for the life cycle or form of the wildlife
Fauna	Animal life.
Fine-scale vegetation (FSV)	Fine-scale vegetation (woody vegetation) was identified from a dataset produced by the Sunshine Coast Council generated using a combination of Aerial Laser Survey (LiDAR), Vegetation Index (NDVI), infra-red and aerial photography. It captures much of the vegetation outside the mapped blocks of vegetation through the regional ecosystem mapping. This report also refers to this data set as 'non-remnant vegetation' layer.
Flora	Plant life.
Forest reserves	The dedication of areas within State Forests, Timber Reserves, Land Act reserves or unallocated State land as protected areas under the N*ature Conservation Act 1992.*
Geographical Information System (GIS)	A system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
Geoprocessing models	These models utilise spatial data analysis tools (e.g., union, merge, append, erase, clip) within a Geographical Information System (GIS).

Habitat	(1) Place where an organism or a biological population normally lives or occurs (2) The location or environment where an organism is most likely to be found (3) The home to a particular organism where the species will attempt to be as adaptive as possible to that particular environment (4) The place being occupied by an organism, population, or community
Habitat connectivity	The connectedness between patches of habitat.
Habitat fragmentation	The situation when a continuous habitat has become divided into separate and often isolated patches of small habitat areas.
Land Acquisition Program	The acquiring of environmentally significant land under the Sunshine Coast Council's Environment Levy program.
Land for Wildlife program	Land for Wildlife is a free, voluntary conservation program that supports participants in protecting, enhancing and rehabilitating native flora and fauna on their property. Land for Wildlife registration does not alter the legal status of a property, convey the right of public access, nor represent an official wildlife sanctuary.
Landscape ecology	The science of studying and improving relationships between ecological processes in the environment and particular ecosystems. This is done within a variety of landscape scales, development spatial patterns, and organizational levels of research and policy.
Least concern	Under the Queensland *Nature Conservation Act 1992*, a regulation may prescribe native wildlife as least concern wildlife if the wildlife is common or abundant and is likely to survive in the wild.
LiDAR	Light Detection and Ranging Data (LiDAR) is aerial laser survey technology which remotely senses the height of objects on the earth's surface using laser scanners mounted to an aircraft.
Local Government Area (LGA)	The area defined by the Queensland Boundary Commissioner as being the Sunshine Coast Council area.
National Parks National Parks (Scientific) National Parks (Recovery)	A class of protected area declared under the *Nature Conservation Act 1992.*
Natural assets	Resources (actual and potential) supplied by nature including air, water, plants and animals.
Naturally restricted	Refers to a vegetation community's (or regional ecosystem) relative extent and distribution. If the pre-clearing extent within the Sunshine Coast is less than 150 hectares it is considered to be naturally restricted within a Sunshine Coast context.
Nature Conservation Act 1992	One of the Queensland government's central pieces of environmental legislation. It provides a legal framework to protect and manage state, nationally and internationally important flora, fauna and ecological communities.
Nature Refuge	A class of protected area declared under the *Nature Conservation Act 1992*
Near threatened	Under the Queensland *Nature Conservation Act 1992*, a regulation may prescribe native wildlife as:

	(a) the population size or distribution of the wildlife is small and may become smaller (b) the population size of the wildlife has declined, or is likely to decline, at a rate higher than the usual rate for population changes for the wildlife (c) the survival of the wildlife in the wild is affected to an extent that the wildlife is in danger of becoming vulnerable
Non-remnant vegetation	For the purpose of this Report, means vegetation that doesn't qualify as remnant vegetation (see below definition) and may include native, indigenous, endemic, non-native, and invasive pest flora species.
Pest plants	Usually non-indigenous and invasive, pest plants which are also referred to as weeds, cause environmental or economic harm or have the potential to cause such harm.
Pest animals	An animal, usually non-indigenous, that causes significant damage to a valued resource.
Pre-clearing regional ecosystem	Pre-clearing vegetation is defined by the *Vegetation Management Act 1999* (amended 2009) and depicted by the Queensland Herbarium's regional ecosystem mapping as the vegetation present before clearing
Regional ecosystem	A vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil (Sattler and Williams, 1999).
Regional Parks	A class of protected area declared under the *Nature Conservation Act 1992*. A Regional Park is managed to: (a) conserve and present the area's cultural and natural resources and their values; (b) provide for the permanent conservation of the area's natural condition to the greatest possible extent (c) ensure that any commercial use of the area's natural resources, including fishing and grazing, is ecologically sustainable
Remnant vegetation	As defined by the *Vegetation Management Act 1999* (amended 2009) and depicted by the Queensland Herbarium's regional ecosystem mapping. Remnant vegetation is defined as vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Resource reserves	A class of protected area prescribed under the *Nature Conservation Act 1992.*
River catchments	A catchment is defined as the area of land that contains a river system and its associated coastal waters. Catchment boundaries are often formed by high ground separating them, at a line known as a watershed.
Theory of island biogeography	Island biogeography is a field that examines the factors that affect the species richness of isolated natural communities. The theory was developed to explain the species richness of actual islands. It has since been extended and used in reference to any ecosystem surrounded by unlike ecosystems.

Threatened ecological community	Ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999*. An ecological community may be categorised as critically endangered, endangered or vulnerable.
Urbanisation	Urbanisation is the increase in the proportion of people living in towns and cities.
Vegetation	Vegetation is all the plants or plant life of a place, taken as a whole.
Vegetation community	An assembly of different species of plants growing together in a particular habitat; the floral component of an ecosystem.
Vegetation Management Act 1999	The purpose of the *Vegetation Management Act 1999* is to regulate the clearing of vegetation in a way that conserves regional ecosystems, conserves vegetation in declared areas, ensures clearing does not cause land degradation, prevents the loss of biodiversity, manages the environmental effects of clearing in relation to the abovementioned elements and reduces greenhouse emissions.
Vulnerable	Under the *Queensland Nature Conservation Act 1992*, a regulation may prescribe native wildlife as vulnerable wildlife if: (a) the population size or distribution of the wildlife has declined, or is likely to decline, to an extent that the wildlife may become endangered because of a threatening process (b) the population size of the wildlife has been seriously depleted and the protection of the wildlife is not secured (c) the population of the wildlife is (i) low or localised; (ii) dependent on habitat that has been, or is likely to be, adversely affected, in terms of quantity or quality, by a threatening process
Woody vegetation	A woody plant is a plant that produces wood as its structural tissue. Woody plants are usually either trees or shrubs. Remnant vegetation under the *Vegetation Management Act 1999* includes both woody and non-woody vegetation. Woody vegetation is mapped as remnant if the dominant canopy has greater than 70% of the height and greater than 50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.

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Appendix A

Sunshine Coast vegetation communities and regional ecosystems

Please note: All extent values have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.
Current extent value is greater than the pre extent value due to the reclassification of the regional ecosystem by the Queensland Herbarium.

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
Mangrove and saltmarsh (3)	12.1.1	*Casuarina glauca* +/- mangroves open-forest. Occurs on margins of Quaternary estuarine deposits.	**684**	**425**	38	Of Concern	3,011	2,527	484 (16%)
	12.1.2	Saltpan vegetation comprising *Sporobolus virginicus* grassland and samphire herbland. Grasses including *Zoysia macrantha* subsp. *macrantha* sometimes present in upper portions of tidal flats. Includes saline or brackish sedgelands. Occurs on Quaternary estuarine deposits. Marine plains/tidal flats.	**706**	**489**	31	Least Concern			
	12.1.3	Mangrove shrubland to low closed forest. Occurs on Quaternary estuarine deposits.	**1,621**	**1,613**	4	Least Concern			
Foredunes (2)	12.2.5	Open-forest to low closed forest. Species can include *Corymbia intermedia, C. tessellaris, Banksia integrifolia subsp. integrifolia, B. aemula, Acacia spp., Lophostemon confertus, Callitris columellaris, Livistona spp.* and *Endiandra sieberi. Melaleuca quinquenervia* in swales. Understorey generally shrubby and can include vine forest species. Occurs of Quaternary coastal dunes and beaches and sandy banks of coastal streams.	**209**	**64**	69	Least Concern	615	338	292 (44%)
	12.2.14	Strand and fore dune complex comprising Spinifex sericeus grassland *Casuarina equisetifolia subsp. incana* woodland/open-forest and with *Acacia leiocalyx, A. disparrima subsp. disparrima, Banksia integrifolia subsp. integrifolia, Pandanus tectorius, Corymbia tessellaris, Cupaniopsis anacardioides, Acronychia imperforata.* Occurs mostly on frontal dunes and beaches but can occur on exposed parts of dunes further inland.	**406**	**274**	33	Least Concern			
Heath and wallum (15)	12.2.9	*Banksia aemula* low shrubby woodland. Mallee eucalypts sometimes present, e.g. *Eucalyptus latisinensis.* Occurs on Quaternary coastal dunes and sandplains with deeply leached soils.	**179**	**69**	61	Least Concern	8,274	2,920	5,354 (65%)
	12.2.12	Closed or wet heath +/- stunted emergent shrubs/low trees. Characteristic shrubs include Banksia spp. (especially B. robur) *Boronia falcifolia, Epacris spp., Baeckea frutescens, Schoenus brevifolius, Leptospermum spp., Hakea actites, Melaleuca thymifolia, M. nodosa, Xanthorrhoea fulva with Baloskion spp.* and *Sporadanthus spp.* in ground layer. Occurs on poorly drained Quaternary coastal dunes and sandplains. Low part of sand mass coastal landscapes where water collects from both overland flow and infiltration from adjoining sand dunes.	**2,334**	**748**	68	Least Concern			
	12.2.15	Coastal sedgeland with *Baumea spp., Juncus spp. Lepironia articulata, Gahnia spp.* and *Eleocharis spp.* and associated water bodies. Occurs on Quaternary coastal dunes and beaches. Low part of coastal landscape where water collects from both overland flow and infiltration from adjoining sand dunes.	**209**	**160**	23	Least Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
	12.2.15a	Lacustrine wetland (e.g. lake). Permanent and semi-permanent window lakes. Occurs as a window into the water table on Quaternary coastal dunes and beaches. Low part of coastal landscape where water collects from both overland flow and infiltration from adjoining sand dunes.	**2**	**2**	0	Least Concern			
	12.3.8	Characteristic species include *Cyperus spp., Schoenoplectus spp., Philydrum lanuginosum, Eleocharis spp., Leersia hexandra, Triglochin procerum, Nymphaea spp., Nymphoides indica, Persicaria spp., Phragmites karka Typha spp.* and a wide range of sedges grasses or forbs. Occurs in freshwater swamps associated with floodplains.	**272**	**206**	24	Of Concern			
	12.3.13	Closed or wet heathland . Characteristic species include *Melaleuca thymifolia, Banksia robur, Xanthorrhoea fulva, Hakea actites, Leptospermum spp.* and *Baeckea frutescens*. Occurs on seasonally waterlogged Quaternary alluvial plains along coastal lowlands.	**4,175**	**1,309**	69	Least Concern			
	12.3.14	*Banksia aemula* woodland +/- mallee eucalypt low woodland. Associated canopy species include *Eucalyptus latisinensis, Corymbia intermedia, E. robusta* and *Lophostemon confertus*. Occurs on Quaternary alluvial plains along coastal lowlands.	**487**	**124**	75	Of Concern			
	12.5.9	Open or dry heath. Characteristic shrubs include *Leptospermum spp., Leucopogon spp., Ricinocarpos pinifolius, Strangea linearis, Brachyloma daphnoides, Persoonia virgata, Xanthorrhoea spp., Styphelia viridis, Monotoca scoparia, Woollsia pungens* and stunted *Allocasuarina littoralis*. Includes minor seepage areas containing *Banksia robur* and *Xanthorrhoea fulva*. Occurs on complex of remnant Tertiary surfaces and Tertiary sedimentary rocks. Lower slopes.	**50**	**23**	54	Of Concern			
	12.5.10	*Banksia aemula +/- E. latisinensis* low shrubby open-woodland. Diverse understorey of heath species. Occurs on complex of remnant Tertiary surfaces and Tertiary sedimentary rocks.	**45**	**35**	22	Least Concern			
	12.8.19	Montane shrubland, heath and rock pavement with scattered shrubs or open-woodland. Occurs on Cainozoic igneous rocks especially rhyolite and trachyte.	**207**	**207**	0	Of Concern			
	12.9-10.22	Closed sedgeland to heathland with emergent trees. Lower slopes subject to periodic water logging. Characteristic species include *Schoenus brevifolius* and/or *Baumea juncea* and/or *Banksia robur* and/or *Melaleuca nodosa*. Sometimes grading into *Banksia aemula* woodland on rises. Occurs on Cainozoic and Mesozoic sediments.	**265**	**18**	93	Of Concern			
	12.12.10	Shrubland or heath. Associated with rocky soils derived from Mesozoic to Proterozoic igneous rocks.	**7**	**7**	0	Of Concern			
	12.12.19	Vegetation complex of exposed rocky headlands. Vegetation types include *Themeda triandra* grassland and wind-sheared shrubland and woodland. Occurs on Mesozoic to Proterozoic igneous headlands.	**9**	**4**	60	Of Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
	12.12.19x2	Vegetation complex of exposed rocky headlands. Vegetation types include *Themeda triandra* grassland and wind-sheared shrubland and woodland. Occurs on headlands of Cainozoic and Mesozoic sediments.	**26**	**4**	85	Of Concern			
	12.12.19x3	Vegetation complex of exposed headlands. Vegetation types include *Themeda triandra* grassland and wind-sheared shrubland and woodland. Occurs on headlands of remnant Tertiary surfaces.	**7**	**4**	48	Of Concern			
Melaleuca (9)	12.2.7	*Melaleuca quinquenervia* or *M. viridiflora* or *M. dealbata* open-forest to woodland. Other species include *Eucalyptus tereticornis, Corymbia intermedia, E. bancroftii, E. latisinensis, E. robusta, Lophostemon suaveolens* and *Livistona decora*. A shrub layer may occur with frequent species including *Melastoma malabathricum subsp. malabathricum* or *Banksia robur*. The ground layer is sparse to dense and comprised of species including the ferns *Pteridium esculentum* and *Blechnum indicum* the sedges *Schoenus brevifolius, Baloskion tetraphyllum, Baumea rubiginosa* and *Gahnia sieberiana* and the grass *Imperata cylindrica*. Occurs on Quaternary coastal dunes and seasonally waterlogged sandplains usually fringing drainage system behind beach ridge plains or on old dunes, swales and sandy coastal creek levees.	**7,256**	**2,260**	69	Least Concern	28,311	8,563	19,748 (70%)
	12.2.7a	Palustrine wetland (e.g. vegetated swamp). *Melaleuca quinquenervia* low woodland with *Gahnia sieberiana* shrub layer. Occurs on Quaternary coastal sand dunes fringing swamps.	**74**	**30**	59	Least Concern			
	12.2.7c	Palustrine wetland (e.g. vegetated swamp). *Melaleuca quinquenervia, Eucalyptus robusta, Melicope elleryana* open forest with understorey of *Todea barbara*. Occurs along watercourses on Quaternary coastal dunes and beaches and seasonally waterlogged sandplains.	**174**	**154**	11	Least Concern			
	12.3.4	Open-forest to woodland of *Melaleuca quinquenervia* and Eucalyptus robusta. Occurs fringing drainage lines and floodplains in coastal areas.	**5,728**	**1,337**	77	Of Concern			
	12.3.5	*Melaleuca quinquenervia* open-forest to woodland. Understorey depends upon duration of water logging; sedges and ferns, especially *Blechnum indicum*, in wetter microhabitats and grasses and shrubs in drier microhabitats. Ground layer species include the grasses *Leersia hexandra* and *Imperata cylindrica,* the sedges/rushes, *Baumea rubiginosa, Gahnia sieberiana, Lepironia articulata, Schoenus brevifolius* and *Schoenus scabripes* and the fern *Lygodium microphyllum*. Other tree species that may be present as scattered individuals or clumps include Lophostemon suaveolens, Eucalyptus robusta, E. tereticornis, E. bancroftii, E. latisinensis, Corymbia intermedia, Melaleuca salicina, Livistona australis, Casuarina glauca, Endiandra sieberi. Melastoma malabathricum subsp. malabathricum, Glochidion sumatranum and Melicope elleryana are often	**9,796**	**2,929**	70	Least Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
		in understorey. Occurs on Quaternary alluvial plains in coastal areas.							
	12.3.5a	Palustrine wetland (e.g. vegetated swamp). *Melaleuca quinquenervia, Casuarina glauca* +/- *Eucalyptus tereticornis* open forest. Occurs on lowest river terraces of Quaternary alluvial plains in coastal areas.	**1,351**	**499**	63	Least Concern			
	12.3.6	*Melaleuca quinquenervia, Eucalyptus tereticornis, Lophostemon suaveolens* +/- *Corymbia intermedia* open-forest to woodland with a grassy ground layer dominated by species such as *Imperata cylindrica*. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas.	**2,827**	**814**	71	Least Concern			
	12.3.7	Narrow fringing community of *Eucalyptus tereticornis, Melaleuca viminalis, Casuarina cunninghamiana* +/- *Waterhousea floribunda*. Other species associated with this RE include *Melaleuca bracteata, M. trichostachya, M. linariifolia* and *M. fluviatilis* in north of bioregion. *Lomandra hystrix* often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region.	**1,025**	**460**	55	Least Concern			
	12.3.7b	Riverine wetland or fringing riverine wetland. Naturally occurring waterholes and lagoons, both permanent and intermittent. Includes exposed stream bed and bars. Occurs in the bed of active (may be intermittent) river channels.	**80**	**80**	0	Least Concern			
Eucalypt (36)	12.2.6	*Eucalyptus racemosa subsp. racemosa, Corymbia intermedia, C. gummifera, Angophora leiocarpa* and *E. pilularis* shrubby or grassy woodland to open-forest. Occurs on Quaternary coastal dunes and beaches. Dunes with deeply leached soils.	**41**	**6**	85	Least Concern	146,007	61,747	84,260 (58%)
	12.2.8	*Eucalyptus pilularis, E. microcorys, E. resinifera* and *Syncarpia hillii* open-forest. Occurs on parabolic high dunes.	**60**	**8**	70	Least Concern			
	12.3.2	*Eucalyptus grandis* +/- *E. microcorys, Lophostemon confertus* tall open-forest with vine forest understorey ('wet sclerophyll'). Patches of *Eucalyptus pilularis* sometimes present especially in vicinity of sedimentary rocks (e.g. around Palmwoods). Fringing streams and in narrow gullies in high rainfall areas.	**9,301**	**3,041**	67	Of Concern			
	12.3.11	Open-forest to woodland of *Eucalyptus tereticornis, E. siderophloia* and *Corymbia intermedia. Corymbia tessellaris, Lophostemon suaveolens* and *Melaleuca quinquenervia* frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include *Angophora leiocarpa, E. exserta, E. grandis, C. trachyphloia, C. citriodora, E. latisinensis, E. tindaliae, E. racemosa, Melaleuca sieberi* and *M. viridiflora. E. seeana* may be present south of Landsborough. Occurs on Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y.	**11,273**	**584**	95	Of Concern			
	12.3.11a	Open-forest of *Eucalyptus tereticornis and/or E. siderophloia* with vine forest understorey. Other canopy	**9**	**4**	56	Of Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
		species include *Corymbia intermedia, Araucaria cunninghamii* and *Agathis robusta*. Frequently occurring understorey species include *Flindersia spp., Lophostemon suaveolens, L. confertus, Cupaniopsis parvifolia, Acronychia spp., Alphitonia excelsa* and *Acacia disparrima subsp. disparrima*. Occurs on sub-coastal Quaternary alluvial plains. Rainfall usually exceeds 1000mm/y.							
	12.3.14a	*Eucalyptus racemosa* woodland to open-forest. Other canopy species may include *Corymbia intermedia, C. gummifera, Eucalyptus latisinensis, E. tindaliae* and *Melaleuca quinquenervia*. Occurs on Quaternary alluvial plains in near coastal areas.	**876**	**196**	78	Of Concern			
	12.5.2a	*Corymbia intermedia, Eucalyptus tereticornis* woodland. Other species can include *Lophostemon suaveolens, Angophora leiocarpa, Eucalyptus acmenoides* or *E. portuensis, E. siderophloia* or *E. crebra, Corymbia tessellaris* and *Melaleuca quinquenervia* (lower slopes). *Eucalyptus exserta* is usually present in northern parts of bioregion. Occurs on complex of remnant Tertiary surfaces +/- Cainozoic and Mesozoic sediments usually in coastal areas with deep red soils.	**471**	**19**	96	Endangered			
	12.5.3	*Eucalyptus tindaliae* and/or *E. racemosa subsp. racemosa* open-forest with *Corymbia intermedia, E. siderophloia* +/- *E. resinifera, E. pilularis, E. microcorys, Angophora leiocarpa. Melaleuca quinquenervia* is often a prominent feature of lower slopes. Minor patches (<1ha) dominated by *Corymbia citriodora* can sometimes occur. Occurs on complex of remnant Tertiary surfaces +/- Cainozoic and Mesozoic sediments.	**12,126**	**1,397**	88	Endangered			
	12.5.4	Eucalyptus spp.-*Corymbia spp.-Melaleuca spp.* shrubby or grassy open-forest to woodland. Characteristic species include *Angophora leiocarpa, Eucalyptus latisinensis, E. siderophloia, E. exserta, Corymbia intermedia, C. trachyphloia, Lophostemon suaveolens, Melaleuca viridiflora, M. quinquenervia, M. nodosa* and *Grevillea banksii*. Patches of *Allocasuarina luehmannii* or *Banksia oblongifolia* present locally and *Xanthorrhoea johnsonii* common in ground layer. Occurs on complex of remnant Tertiary surfaces and Tertiary sedimentary rocks.	**40**	**27**	33	Least Concern			
	12.5.6c	*Eucalyptus pilularis* open forest +/- *E. siderophloia, E. propinqua, Corymbia intermedia, E. microcorys, E. acmenoides, E. tereticornis, E. biturbinata, Lophostemon confertus* with *E. saligna, E. montivaga* at higher altitudes. Occurs on remnant Tertiary surfaces. Usually deep red soils.	**620**	**290**	53	Endangered			
	12.8.8	*Eucalyptus saligna* or *E. grandis* tall open-forest often with vine forest understorey ('wet sclerophyll'). Other species include *Eucalyptus microcorys, E. acmenoides, Lophostemon confertus, Syncarpia glomulifera subsp. glomulifera*. Occurs on Cainozoic igneous rocks and areas subject to local enrichment from Cainozoic igneous rocks.	**3,457**	**579**	83	Of Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
	12.8.8a	*Eucalyptus siderophloia, E. microcorys, E. propinqua, Corymbia intermedia +/- Eucalyptus carnea* open forest on Cainozoic igneous rocks. Occurs on Cainozoic igneous rocks and areas subject to local enrichment from Cainozoic igneous rocks.	**67**	**22**	67	Of Concern			
	12.8.14	*Eucalyptus eugenioides, E. tereticornis, E. melliodora, E. biturbinata, Allocasuarina torulosa +/- E. moluccana* grassy open-forest. Localised occurrences of *Eucalyptus laevopinea* and *E. banksii* may occur. Occurs on Cainozoic igneous rocks, especially basalt.	**747**	**127**	83	Least Concern			
	12.8.20	Low shrubby woodland to open-woodland complex. Canopy trees include *Eucalyptus racemosa subsp. racemosa, E. dura, Corymbia trachyphloia, E. carnea, Allocasuarina littoralis, Acacia spp.* and *Lophostemon confertus.* Occurs on Cainozoic igneous rocks, especially rhyolite.	**722**	**667**	7	Of Concern			
	12.9-10.1	Shrubby open-forest. Canopy species include *Eucalyptus resinifera, E. grandis, E. robusta, Corymbia intermedia +/- E. microcorys, Melaleuca quinquenervia, Syncarpia glomulifera subsp. glomulifera* and *Lophostemon confertus.* Occurs on Cainozoic and Mesozoic sediments.	**2,569**	**631**	75	Of Concern			
	12.9-10.4	Open-forest to woodland with *Eucalyptus racemosa subsp. racemosa* locally prominent. Other species can include *Angophora leiocarpa, Eucalyptus seeana, E. siderophloia, Corymbia intermedia, E. tindaliae* with *Lophostemon suaveolens, Melaleuca quinquenervia, E. tereticornis* on lower slopes. Occurs on Cainozoic and Mesozoic sediments +/- remnant Tertiary surfaces.	**7,881**	**1,620**	79	Least Concern			
	12.9-10.7a	*Eucalyptus tereticornis, E. siderophloia* and/or *E. crebra, Corymbia intermedia* and *Lophostemon suaveolens* woodland. Occurs on Cainozoic and Mesozoic sediments in near coastal areas.	**1,636**	**230**	86	Of Concern			
	12.9-10.14	*Eucalyptus pilularis* tall open-forest with shrubby understorey. Other species include *Syncarpia glomulifera subsp. glomulifera, S. verecunda, Corymbia intermedia, Angophora woodsiana* and *Eucalyptus microcorys* in coastal areas and species of RE 12.9-10.5 in drier sub coastal areas. *Eucalyptus pilularis* sometimes extends onto colluvial lower slopes. Occurs on Cainozoic and Mesozoic sediments especially sandstone.	**17,235**	**7,279**	58	Least Concern			
	12.9-10.14a	Open-forest of *Eucalyptus grandis, Lophostemon confertus, E. microcorys, Syncarpia glomulifera subsp. glomulifera +/- E. pilularis.* Occurs on Cainozoic and Mesozoic sediments especially sandstone in wet gullies and southern slopes.	**3,819**	**1,421**	63	Least Concern			
	12.9-10.17a	*Lophostemon confertus* dominated open-forest. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.	**203**	**116**	43	Least Concern			
	12.9-10.17d	Open-forest with *Eucalyptus siderophloia, E. propinqua, Corymbia intermedia +/- E. microcorys, E. acmenoides or E. portuensis, Lophostemon confertus, Eucalyptus tereticornis, E. moluccana, Angophora subvelutina* and occasional vine forest species. Other species that may be	**3,418**	**1,947**	43	Least Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
		present locally include *Corymbia trachyphloia, E. major, E. fibrosa subsp. fibrosa* and *Angophora leiocarpa* Hills and ranges on Cainozoic and Mesozoic sediments.							
	12.11.2	*Eucalyptus saligna* or *E. grandis, E. microcorys, E. acmenoides, Lophostemon* confertus tall open forest on metamorphics +/- interbedded volcanics.	**4,748**	**3,543**	25	Least Concern			
	12.11.3	Open-forest generally with *Eucalyptus siderophloia* and *E. propinqua* +/- *E. microcorys, Lophostemon confertus, Corymbia intermedia, E. biturbinata, E. acmenoides, E. tereticornis, E. moluccana, Angophora leiocarpa, Syncarpia verecunda* with vine forest species and *E. grandis* or *E. saligna* in gullies. *Eucalyptus pilularis* and *E. tindaliae* sometimes present e.g. mid D'Aguilar Range, Conondale Range. Occurs predominantly on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**13,333**	**9,336**	30	Least Concern			
	12.11.3a	Open-forest of Lophostemon confertus +/- *Eucalyptus microcorys, E. propinqua, E. carnea, E. major, E. siderophloia.* Occurs in gullies and exposed ridges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**137**	**114**	17	Least Concern			
	12.11.3b	Open-forest of *Eucalyptus pilularis*. Frequent species are *E. microcorys, E. siderophloia, E. eugenioides, Corymbia intermedia.* Occasionally present are *Syncarpia verecunda, E. saligna*. Occurs on higher altitude (>300m) subcoastal hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**127**	**101**	20	Least Concern			
	12.11.5j	Woodland to open forest of *Eucalyptus racemosa subsp. racemosa* and/or *E. seeana.* Other characteristic species include *Lophostemon suaveolens, Corymbia intermedia, E. siderophloia, C. citriodora, E. pilularis* on low-altitude coastal metamorphics around Brisbane. *Melaleuca quinquenervia* may be present and at times becomes locally co-dominant. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**32**	**32**	0	Least Concern			
	12.11.9	Open-forest to woodlands with *Eucalyptus tereticornis*. Other canopy species include *Eucalyptus biturbinata, E. melliodora, Corymbia intermedia, E. longirostrata, E. eugenioides, Allocasuarina torulosa, E. moluccana, E. saligna, E siderophloia* and *Angophora subvelutina.* Occurs on ridges and upper slopes especially at higher altitudes on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. These occurrences are often associated with small areas of intermediate and basic volcanic rocks. Minor occurrences on low coastal ridges and upper slopes.	**1,150**	**1,101**	5	Of Concern			
	12.11.9x1	*Eucalyptus montivaga* open forest. Other canopy species can include *Corymbia trachyphloia, E. acmenoides,*	**20**	**20**	0	Of Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
		Syncarpia glomulifera subsp. *glomulifera and C. intermedia*. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. Altitude >500m. (BVG1M: 8b)							
	12.11.14	*Eucalyptus crebra, E. tereticornis* grassy woodland. Other species including *Eucalyptus melanophloia, Corymbia clarksoniana, C. erythrophloia, C. tessellaris, Angophora spp.* may be present in low densities or in patches. Mid-layer generally sparse but can include low trees such as *Acacia bidwillii, Capparis spp., Dodonaea triquetra, Alphitonia excelsa* and *Xanthorrhoea spp*. Occurs on mid and lower slopes on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**3,642**	**394**	89	Of Concern			
	12.12.2	*Eucalyptus pilularis* tall open-forest with shrubby understorey. Other canopy species include *Syncarpia verecunda, Angophora woodsiana, Eucalyptus microcorys, E. resinifera, E. tindaliae, E. propinqua and E. saligna*. Occurs on Mesozoic to Proterozoic igneous rocks.	**12,284**	**9,325**	24	Least Concern			
	12.12.12	*Eucalyptus tereticornis, E. crebra* (sometimes *E. siderophloia*) open-forest to woodland. Other species present can include *Eucalyptus melanophloia, Corymbia tessellaris, Angophora subvelutina, A. leiocarpa, C. clarksoniana* (central and northern parts) and *E. siderophloia, C. intermedia* with *Melaleuca quinquenervia, Lophostemon suaveolens* near drainage lines in moister areas. Occurs on Mesozoic to Proterozoic igneous rocks, especially granite lowlands and basins.	**9,771**	**1,053**	89	Of Concern			
	12.12.14	Shrubby woodland. Canopy species include *Eucalyptus racemosa subsp. racemosa, Corymbia trachyphloia, E. carnea, E. tindaliae, E. exserta, Angophora woodsiana, E. resinifera* and *E. microcorys*. Occurs on Mesozoic to Proterozoic igneous rocks.	**1,539**	**1,157**	24	Of Concern			
	12.12.15	Open-forest with *Eucalyptus propinqua, Corymbia intermedia, E siderophloia +/- E. microcorys, E. acmenoides, Lophostemon confertus, E. moluccana, Angophora subvelutina* and occasional vine forest species. Patches of *Eucalyptus pilularis* sometimes present. Occurs on Mesozoic to Proterozoic igneous rocks.	**16,068**	**11,617**	28	Least Concern			
	12.12.15a	*E. grandis* tall open-forest +/- vine forest understorey. Other canopy species *include E. microcorys, E. acmenoides, Lophostemon confertus, E. siderophloia, E. propinqua, Corymbia intermedia* Occurs in wet gullies on Mesozoic to Proterozoic igneous rocks.	**5,692**	**2,958**	48	Least Concern			
	12.12.15b	*Lophostemon confertus* open-forest +/- *Eucalyptus microcorys, E. siderophloia, E. carnea* and *E. propinqua*. Vine forest species are often present in understorey. Occurs in gullies and exposed ridges on Mesozoic to Proterozoic igneous rocks often amongst vine forest.	**531**	**501**	6	Least Concern			
	12.12.23	Open-forest to woodland generally with *Eucalyptus tereticornis +/- E. eugenioides*. Other species present, vary from place to place but commonly include *Corymbia intermedia, Eucalyptus acmenoides +/- E. biturbinata, E.*	**362**	**284**	22	Least Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
		longirostrata, E. melliodora, Corymbia trachyphloia, Lophostemon confertus (tree form and whipstick form), *Angophora subvelutina, E. crebra* and *Allocasuarina torulosa*. Occurs at higher altitudes on granite hills and ranges.							
Rainforest (10)	12.3.1	Complex to simple notophyll vine forest. *Waterhousea floribunda* is predominant fringing stream channels. Other species can include *Cryptocarya hypospodia, C. obovata, C. triplinervis, Argyrodendron trifoliolatum, Ficus coronata, F. fraseri, F. macrophylla forma macrophylla, Aphananthe philippinensis, Elaeocarpus grandis, Grevillea robusta, Castanospermum australe* and *Syzygium francisii. Ficus racemosa* and *Nauclea orientalis* in north of bioregion. Eucalyptus spp. emergents (e.g. *E. grandis*) and *Araucaria cunninghamii*; less commonly *Agathis robusta* may also be present. Occurs on Quaternary alluvial plains and channels.	**4,554**	**1,752**	62	Endangered	39,235	16,769	22,466 (57%)
	12.5.13a	Microphyll to notophyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include *Araucaria cunninghamii, Cupaniopsis parvifolia, Dendrocnide photinophylla, Rhodosphaera rhodanthema, Flindersia australis, F. schottiana, F. xanthoxyla, Drypetes deplanchei, Olea paniculata, Diospyros geminata, Gossia bidwillii, Excoecaria dallachyana* and *Vitex lignum-vitae. Argyrodendron trifoliolatum* sometimes present especially in subregion 6. Occurs on remnant Tertiary surfaces especially lateritised basalt.	**1**	**0.84**	43	Endangered			
	12.8.3	Complex notophyll vine forest. Characteristic species include *Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Olea paniculata, Castanospermum australe, Cryptocarya obovata, Ficus macrophylla forma macrophylla, Syzygium francisii, Diploglottis australis, Pseudoweinmannia lachnocarpa, Podocarpus elatus, Beilschmiedia obtusifolia, Neolitsea dealbata* and *Archontophoenix cunninghamiana*. Occurs on Cainozoic igneous rocks, especially basalt <600m altitude.	**12,758**	**1,563**	88	Least Concern			
	12.8.9	*Lophostemon confertus* open-forest often with vine forest understorey ('wet sclerophyll') Occurs on Cainozoic igneous rocks. Tends to occur mostly in gullies and on exposed ridges on basalt.	**4**	**4**	0	Least Concern			
	12.8.13	Microphyll and microphyll/notophyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include *Araucaria cunninghamii, A. bidwillii, Cupaniopsis parvifolia, Dendrocnide photinophylla, Rhodosphaera rhodanthema, Flindersia australis, F. schottiana, F. xanthoxyla, Drypetes deplanchei, Olea paniculata, Diospyros geminata, Gossia bidwillii, Excoecaria dallachyana, Pleiogynium timorense* (north of bioregion) and *Vitex lignum-vitae. Argyrodendron trifoliolatum* sometimes present especially in subregion 6. Occurs on Cainozoic igneous rocks, especially basalt.	**25**	**1**	96	Of Concern			
	12.9-10.16	Microphyll to notophyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include	**1,733**	**1,177**	32	Of Concern			

	Regional ecosystem								
Vegetation communities (Number of regional ecosystems within each)	Classification	Description	Pre-clearing extent (Ha)	Current extent (Ha)	Loss (%)	Conservation status (VMA 1999)	Combined pre-clearing extent (Ha)	Combined current extent (Ha)	Combined extent loss (ha) (%)
		Argyrodendron sp.(Kin Kin W.D.Francis AQ81198), *Araucaria cunninghamii, Agathis robusta, Backhousia myrtifolia, Cupaniopsis parvifolia, Dendrocnide photinophylla, Rhodosphaera rhodanthema, Flindersia australis, F. xanthoxyla, Drypetes deplanchei, Olea paniculata, Diospyros geminata, Gossia bidwillii, Excoecaria dallachyana* and *Vitex lignum-vitae*. Occurs on Cainozoic and Mesozoic sediments.							
	12.11.1	Simple notophyll vine forest often with abundant *Archontophoenix cunninghamiana* (gully vine forest) on metamorphics +/- interbedded volcanics	**4,480**	**4,088**	9	Least Concern			
	12.11.10	Notophyll and notophyll/microphyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include *Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Choricarpia subargentea, Dissiliaria baloghioides, Brachychiton discolor, Beilschmiedia obtusifolia, Diospyros pentamera, Grevillea robusta, Gmelina leichhardtii* and *Ficus macrophylla forma macrophylla*. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**6,425**	**2,579**	60	Least Concern			
	12.12.1	Notophyll and notophyll/microphyll vine forest, sometimes with *Archontophoenix cunninghamiana* and/or *Lophostemon confertus* closed forest. The plant families Lauraceae, Myrtaceae and Elaeocarpaceae are diagnostic of the type and Pouteria queenslandica is common in the northern half of the bioregion. *Araucaria cunninghamii* is often present on margins. Occurs in gullies on Mesozoic to Proterozoic igneous rocks especially granite and rhyolite.	**5,386**	**4,057**	25	Of Concern			
	12.12.16	Notophyll vine forest. Characteristic species include *Araucaria bidwillii, A. cunninghamii, Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Choricarpia subargentea, Brachychiton discolor, Beilschmiedia obtusifolia, Diospyros pentamera, Grevillea robusta, Gmelina leichhardtii, Ficus macrophylla forma macrophylla and Sloanea woollsii. Eucalyptus spp.* especially *E. siderophloia, E. propinqua* and *E. grandis* may be present as emergents. Occurs on Mesozoic to Proterozoic igneous rocks.	**3,869**	**1,547**	60	Least Concern			

Appendix B

The below acronyms/information are incorporate into the following three tables of EVNT data;
Table B1: Sunshine Coast rare and threatened flora and fauna species
• CE (critically endangered), E (endangered), V (vulnerable), NT (near threatened), LC (least concern), EX (extinct), PE (extinct), C (confirmed), U (unconfirmed), O (Other), RSC (resident of the Sunshine coast), RM (regular migrant), OM (occasional migrant), RV (rare vagrant)
• Confirmed - Officially vetted sighting by the Queensland Herbarium or Queensland Museum
• Unconfirmed - Unvalidated records in the Wildnet database
• Other - Record validated by local experts but not officially validated by the State departments
• Confirmed - Officially vetted sighting by the Queensland Herbarium or Queensland Museum
• Regular migrant - sunshine coast council area provides necessary seasonal habitat for these species life cycle requirements
• Occasional migrant - these species occasionally utilise habitat areas in the sunshine coast council area.
• Rare vagrant -sunshine coast council area provides no real known habitat attributes for these species and it is considered unlikely that any conservation actions will directly benefit the conservation or recovery of the species.

Table B1: Sunshine Coast rare and threatened flora and fauna species

							Sightings in major catchments							
Kingdom	**Class**	**Common Name**	**Scientific Name**	**NCA status**	**EPBC status**	**Shire sighting status**	**Maroochy River**	**Mooloolah River**	**Noosa River**	**Pumicestone Passage**	**Mary River**	**Upper Stanley River**	**Occurrence**	**Comments**
animals	amphibians	tusked frog	*Adelotus brevis*	V		C	✓	✓	×	✓	✓	✓	RSC	
animals	amphibians	wallum froglet	*Crinia tinnula*	V		C	✓	✓	✓	✓	✓	×	RSC	
animals	amphibians	Cooloola sedgefrog	*Litoria cooloolensis*	NT		U	undisclosed location						RSC	
animals	amphibians	wallum rocketfrog	*Litoria freycineti*	V		C	✓	✓	×	✓	✓	×	RSC	
animals	amphibians	wallum sedgefrog	*Litoria olongburensis*	V	V	C	✓	✓	×	✓	×	×	RSC	
animals	amphibians	cascade treefrog	*Litoria pearsoniana*	V		C	✓	×	×	×	✓	✓	RSC	
animals	amphibians	Fleay's barred frog	*Mixophyes fleayi*	E	E	C	×	×	×	×	✓	×	RSC	
animals	amphibians	giant barred frog	*Mixophyes iteratus*	E	E	C	✓	✓	×	✓	✓	✓	RSC	
animals	amphibians	southern gastric brooding frog	*Rheobatrachus silus*	PE	EX	C	×	×	×	×	✓	×		NCA status change - previously E
animals	amphibians	southern dayfrog	*Taudactylus diurnus*	PE	EX	U	×	×	×	×	✓	×		NCA status change - previously E
animals	birds	regent honeyeater	*Anthochaera phrygia*	E	CE	U	undisclosed location						OM	EPBC status change - previously E. NB: recently recorded in MBRC area
animals	birds	glossy black-cockatoo (eastern)	*Calyptorhynchus lathami lathami*	V		C	✓	✓	✓	✓	✓	✓	RSC	
animals	birds	Coxen's fig-parrot	*Cyclopsitta diophthalma coxeni*	E	E	C	✓	✓	×	×	✓	×		Insufficient knowledge of population & distribution
animals	birds	eastern bristlebird	*Dasyornis brachypterus*	E	E	C	✓	×	×	×	✓	×	RSC	Addition to list since previous, however, possibly locally extinct
animals	birds	wandering albatross	*Diomedea exulans*	V	V	C	✓	×	×	✓	×	×	RV	
animals	birds	red goshawk	*Erythrotriorchis radiatus*	E	V	C	×	×	×	×	✓	×		No recent records in SEQ region
animals	birds	beach stone-curlew	*Esacus magnirostris*	V		C	✓	✓	✓	✓	×	×	RSC	
animals	birds	Grey falcon	*Falco hypoleucos*	V		O	✓	×	✓	×	×	×	RV	NCA status change - previously NT
animals	birds	swift parrot	*Lathamus discolor*	E	CE	U	undisclosed location						OM	EPBC status change - previously E. Non-breeding migrant, rare to this area
animals	birds	southern giant-petrel	*Macronectes giganteus*	E	E	C	×	×	×	✓	×	×	RV	
animals	birds	northern giant-petrel	*Macronectes halli*	V	V	C	×	×	×	✓	×	×	RV	
animals	birds	powerful owl	*Ninox strenua*	V		C	✓	✓	×	✓	✓	✓	RSC	

							Sightings in major catchments							
Kingdom	Class	Common Name	Scientific Name	NCA status	EPBC status	Shire sighting status	Maroochy River	Mooloolah River	Noosa River	Pumicestone Passage	Mary River	Upper Stanley River	Occurrence	Comments
animals	birds	eastern curlew	*Numenius madagascariensis*	V	CE	C	✓	✓	×	✓	×	×	RM	NCA status change - previously NT, EPBC status change - previously not listed
animals	birds	ground parrot	*Pezoporus wallicus wallicus*	V		C	undisclosed location						RSC	
animals	birds	red-tailed tropicbird	*Phaethon rubricauda*	V		C	×	✓	×	✓	×	×	RM	
animals	birds	plumed frogmouth	*Podargus ocellatus plumiferus*	V		C	✓	✓	×	×	✓	✓	RSC	
animals	birds	Australian painted snipe	*Rostratula australis*	V	E	U	×	✓	×	×	×	×	RM	EPBC status change - previously V
animals	birds	little tern	*Sternula albifrons*	E		C	✓	✓	×	✓	✓	×	RM	
animals	birds	southern emu-wren	*Stipiturus malachurus*	V		C	✓	✓	×	×	✓	×	RSC	
animals	birds	black-breasted button-quail	*Turnix melanogaster*	V	V	C	✓	×	×	×	✓	×	RSC	
animals	bony fish	Mary River cod	*Maccullochella mariensis*		E	C	×	×	×	×	✓	×	RSC	
animals	bony fish	Oxleyan pygmy perch	*Nannoperca oxleyana*	V	E	C	×	×	×	✓	×	×	RSC	
animals	bony fish	Australian lungfish	*Neoceratodus forsteri*		V	U	×	×	×	×	✓	×	RSC	
animals	bony fish	honey blue eye	*Pseudomugil mellis*	V	V	C	×	×	×	✓	×	×	RSC	
animals	insects	Australian fritillary	*Argyreus hyperbius inconstans*	E		U	✓	×	×	✓	×	×	RSC	
animals	insects	Richmond birdwing	*Ornithoptera richmondia*	V		C	✓	✓	×	✓	✓	✓	RSC	
animals	mammals	northern quoll	*Dasyurus hallucatus*		E	C	×	×	×	×	✓	×	RSC	Hasn't been recorded locally for some time
animals	mammals	spotted-tailed quoll (southern subspecies)	*Dasyurus maculatus maculatus*	V	E	U	undisclosed location						RSC	Hasn't been recorded locally for some time
animals	mammals	dugong	*Dugong dugon*	V		C	✓	✓	×	✓	×	×	RM	
animals	mammals	humpback whale	*Megaptera novaeangliae*	V	V	C	✓	✓	×	✓	×	×	RM	
animals	mammals	eastern long-eared bat	*Nyctophilus corbeni*	V	V	U	undisclosed location							
animals	mammals	koala	*Phascolarctos cinereus*	V	V	C	✓	✓	✓	✓	✓	✓	RSC	
animals	mammals	long-nosed potoroo	*Potorous tridactylus tridactylus*	V	V	C	✓	×	×	✓	✓	✓	RSC	
animals	mammals	Hastings River mouse	*Pseudomys oralis*	V	E	C	×	×	×	×	✓	×	RSC	
animals	mammals	grey-headed flying-fox	*Pteropus poliocephalus*		V	C	✓	✓	✓	✓	✓	✓	RSC	
animals	mammals	Indo-Pacific humpback dolphin	*Sousa chinensis*	V		U	undisclosed location						RM	NCA status change - previously NT
animals	mammals	Australian humpback dolphin	*Sousa sahulensis*	V		C	undisclosed location						RM	Addition to list since previous list
animals	mammals	water mouse	*Xeromys myoides*	V	V	C	✓	×	×	✓	×	×	RSC	
animals	reptiles	common death adder	*Acanthophis antarcticus*	V		C	✓	✓	×	✓	✓	×	RSC	NCA status change - previously NT
animals	reptiles	striped blind snake	*Anilios silvia*	NT		C	✓	✓	×	×	×	×	RSC	Addition to list since previous list
animals	reptiles	loggerhead turtle	*Caretta caretta*	E	E	C	✓	✓	×	×	×	×	RM	
animals	reptiles	green turtle	*Chelonia mydas*	V	V	C	✓	✓	×	✓	×	×	RM	
animals	reptiles	three-toed snake-tooth skink	*Coeranoscincus reticulatus*		V	C	×	×	×	×	✓	✓	RSC	NCA status change - previously NT
animals	reptiles	southern snapping turtle	*Elseya albagula*	E	CE		×	×	×	×	✓	×	RSC	Addition to list since previous list
animals	reptiles	Mary River turtle	*Elusor macrurus*	E	E	U	×	×	×	×	✓	×	RSC	
animals	reptiles	hawksbill turtle	*Eretmochelys imbricata*	V	V		×	✓	×	×	×	×	RM	Addition to list since previous list
animals	reptiles	flatback turtle	*Natator depressus*	V	V	U	✓	✓	×	×	×	×	RM	

							Sightings in major catchments							
Kingdom	Class	Common Name	Scientific Name	NCA status	EPBC status	Shire sighting status	Maroochy River	Mooloolah River	Noosa River	Pumicestone Passage	Mary River	Upper Stanley River	Occurrence	Comments
animals	reptiles	Cooloola blind snake / striped blind snake	*Ramphotyphlops silvia / Anilios silvia*	NT		C	✓	✓	×	×	×	×	RSC	
animals	crustaceans		*Tenuibranchiurus glypticus*	E		C	✓	✓	×	✓	×	×		Addition to list since previous list
plants	ferns	slender tree fern	*Cyathea cunninghamii*	NT		U	undisclosed location							
plants	ferns		*Dryopteris wattsii*	V		O	✓	×	×	×	×	✓		*Revwattsia fragilis* (sp.on 2011 list) has been superseded
plants	ferns		*Thelypteris confluens*	V		U	undisclosed location							
plants	higher dicots	whipstick wattle	*Acacia attenuata*	V	V	C	×	✓	×	✓	×	✓		
plants	higher dicots	tiny wattle	*Acacia baueri subsp. baueri*	V		C	✓	✓	×	✓	×	×		
plants	higher dicots	Mt Emu she-oak	*Allocasuarina emuina*	E	E	C	✓	✓	×	×	×	×		
plants	higher dicots	Mt Beerwah she-oak	*Allocasuarina filidens*	V		C	×	×	×	✓	×	✓		NCA status change - previously NT
plants	higher dicots	Mt Coolum she-oak	*Allocasuarina thalassoscopica*	E	E	U	✓	×	×	×	×	×		
plants	higher dicots		*Banksia conferta*	V		C	×	×	×	✓	×	✓		
plants	higher dicots	Mt Coolum bertya	*Bertya sharpeana*	NT		U	✓	×	×	×	×	×		
plants	higher dicots	Wide Bay boronia	*Boronia rivularis*	NT		C	×	✓	×	×	×	×		
plants	higher dicots	Three-leaved Bosistoa	*Bosistoa transversa*		V	C	✓	✓	×	✓	✓	✓		
plants	higher dicots	southern corynocarpus	*Corynocarpus rupestris subsp. arborescens*	V		C	✓	✓	×	×	✓	×		
plants	higher dicots		*Dodonaea rupicola*	V	V	U	×	×	×	✓	×	×		
plants	higher dicots	durringtonia	*Durringtonia paludosa*	NT		C	✓	×	×	×	×	×		
plants	higher dicots	swamp stringybark	*Eucalyptus conglomerata*	E	E	C	✓	✓	×	✓	×	✓		
plants	higher dicots	Plunkett mallee	*Eucalyptus curtisii*	NT		C	×	×	×	✓	×	×		
plants	higher dicots	Mt Beerwah mallee	*Eucalyptus kabiana*	V	V	C	×	×	×	✓	×	✓		
plants	higher dicots	ball nut	*Floydia praealta*	V	V	C	✓	×	×	×	✓	×		
plants	higher dicots		*Gonocarpus effusus*	V		C	×	×	×	✓	×	✓		NCA status change - previously NT
plants	higher dicots	sweet myrtle	*Gossia fragrantissima*	E	E	U	×	✓	×	×	×	×		
plants	higher dicots	angle-stemmed myrtle	*Gossia gonoclada*	E	E	U	undisclosed location							
plants	higher dicots	thready barked myrtle	*Gossia inophloia*	NT		C	✓	✓	×	✓	✓	✓		
plants	higher dicots	reticulated holly	*Graptophyllum reticulatum*	E	E	C	✓	✓	×	×	×	×		
plants	higher dicots	Coochin Hills grevillea	*Grevillea hodgei*	V		C	×	×	×	✓	×	×		
plants	higher dicots	rusty oak	*Helicia ferruginea*	V		C	×	✓	×	×	×	✓		
plants	higher dicots	small-leaved jasmine	*Jasminum jenniae*	E		U	✓	×	×	×	×	×		
plants	higher dicots		*Lenwebbia sp. (Blackall Range P.R.Sharpe 5387)*	E		C	✓	✓	✓	×	✓	×		
plants	higher dicots	fine-leaved tuckeroo	*Lepiderema pulchella*	V		U	×	×	×	×	✓	✓		
plants	higher dicots	Glass House Mountains tea tree	*Leptospermum luehmannii*	V		C	×	×	×	✓	×	✓		
plants	higher dicots		*Leptospermum oreophilum*	V		C	✓	×	×	✓	×	×		
plants	higher dicots		*Leucopogon recurvisepalus*	E		U	×	×	×	✓	×	×		
plants	higher dicots	native lobelia	*Lobelia membranacea*	NT		O	✓	✓	×	×	×	×		
plants	higher dicots	macadamia nut	*Macadamia integrifolia*	V	V	C	✓	✓	×	×	✓	×		
plants	higher dicots	bopple nut	*Macadamia ternifolia*	V	V	C	✓	✓	×	×	✓	✓		
plants	higher dicots	rough-shelled bush nut	*Macadamia tetraphylla*	V	V	C	×	×	×	×	✓	×		

							Sightings in major catchments							
Kingdom	Class	Common Name	Scientific Name	NCA status	EPBC status	Shire sighting status	Maroochy River	Mooloolah River	Noosa River	Pumicestone Passage	Mary River	Upper Stanley River	Occurrence	Comments
plants	higher dicots		*Mallotus megadontus*	V		C	✓	×	×	×	×	×		Addition to list since previous list
plants	higher dicots	slender milkvine	*Marsdenia coronata*	V		C	✓	✓	✓	✓	✓	×		EPBC status change - previously V
plants	higher dicots	Kingaroy bottlebrush	*Melaleuca formosa*	NT		O	×	×	×	×	✓	×		*Callistemon formosus* (sp.on 2011 list) has been superseded
plants	higher dicots	grove's paperbark	*Melaleuca groveana*	NT		C	×	×	×	✓	×	✓		
plants	higher dicots	corky cucumber	*Nothoalsomitra suberosa*	NT		C	✓	✓	×	×	✓	✓		
plants	higher dicots	large-flowered silkpod	*Parsonsia largiflorens*	E		U	✓	✓	×	×	✓	✓		
plants	higher dicots	slender silkpod	*Parsonsia tenius*	V		C	×	✓	×	×	×	×		
plants	higher dicots	hawkweed	*Picris evae*	V	V	C	×	×	×	×	✓	×		
plants	higher dicots	shiny-leaved condoo	*Planchonella eerwah*	E	E	C	✓	×	×	×	✓	×		
plants	higher dicots		*Plectranthus omissus*	E	E	U	×	×	×	×	✓	×		
plants	higher dicots		*Plectranthus torrenticola*	E	E	U	✓	×	×	×	✓	×		
plants	higher dicots	hairy ricinocarpus	*Ricinocarpos speciosus*	V		U	✓	✓	×	×	✓	×		
plants	higher dicots	hairy hazelwood	*Symplocos harroldii*	NT		C	✓	✓	×	×	✓	×		
plants	higher dicots	red lilly pilly	*Syzygium hodgkinsoniae*	V	V	C	✓	✓	×	✓	✓	✓		
plants	higher dicots	Fraser Island creeper	*Tecomanthe hillii*	NT		U	✓	×	×	×	×	×		
plants	higher dicots	glossy spice bush	*Triunia robusta*	E	E	C	✓	×	×	×	✓	×		
plants	higher dicots		*Westringia blakeana*	NT		C	×	×	×	×	✓	×		
plants	higher dicots		*Westringia grandifolia*	E		C	×	×	×	✓	×	✓		
plants	higher dicots	Nambour zieria	*Zieria bifida*	E	E	C	✓	×	×	×	×	×		
plants	higher dicots		*Zieria exsul*	E		U	×	✓	×	×	×	×		
plants	higher dicots		*Zieria furfuracea subsp. gymnocarpa*	E		O	×	×	×	×	✓	×		
plants	lower dicots	stinking cryptocarya	*Cryptocarya foetida*	V	V	C	✓	✓	×	×	×	×		
plants	lower dicots	birdwing butterfly vine	*Pararistolochia praevenosa*	NT		C	✓	✓	×	✓	✓	✓		
plants	monocots	Queensland lace	*Aponogeton elongatus subsp. elongatus*	NT		U	✓	×	×	×	×	×		
plants	monocots		*Aponogeton elongatus subsp. fluitans*	V		U	✓	×	×	×	×	×		
plants	monocots		*Arthraxon hispidus*	V	V	C	✓	✓	×	×	✓	×		
plants	monocots	Christmas bells	*Blandfordia grandiflora*	E		C	✓	✓	×	✓	×	×		
plants	monocots	miniature moss-orchid	*Bulbophyllum globuliforme*	NT	V	U	undisclosed location							
plants	monocots		*Eulophia bicallosa*	NT		U	×	×	×	×	✓	×		
plants	monocots		*Genoplesium cranei*	V		U	undisclosed location							
plants	monocots		*Genoplesium sigmoideum*	NT		U	undisclosed location							
plants	monocots		*Liparis simmondsii*	NT		U	×	✓	×	×	✓	×		
plants	monocots	Beckler's Papillilabium	*Papillilabium beckleri*	NT		U	×	×	×	×	✓	×		
plants	monocots	yellow swamp orchid/ Greater Swamp orchid	*Phaius australis*	E	E	U	✓	✓	×	✓	✓	✓		*Phaius tancarvilleae* (sp.on 2011 list) has been superseded
plants	monocots		*Prasophyllum exilis*	NT		U	✓	✓	×	✓	×	×		
plants	monocots	Wallum leek orchid	*Prasophyllum wallum*	V	V		undisclosed location							Addition to list since previous list
plants	monocots	dark greenhood	*Pterostylis nigricans*	NT		U	✓	×	×	×	×	×		
plants	monocots		*Romnalda strobilacea*	V	V	U	✓	✓	×	×	✓	✓		
plants	monocots	ravine orchid	*Sarcochilus fitzgeraldii*	E	V	U	✓	×	×	×	×	✓		
plants	monocots		*Thismia rodwayi*	NT		U	×	×	×	×	✓	×		

Table B2: EVNT species not considered to occur or seasonally occur in SCC LGA

Kingdom	Class	Common Name	Scientific Name	2016 NCA status	2016 EPBC status	Comments
animals	birds	Major Mitchell's cockatoo	*Lophochroa leadbeateri*	V		Records within SCC LGA are likely to be aviary escapees
animals	birds	Albert's lyrebird	*Menura alberti*	NT		Previous records in SCC LGA are now erroneous
animals	reptiles	collared delma	*Delma torquata*	V	V	
plants	ferns		*Cyathea exilis*	E	E	Distribution is considered to be restricted to Cape York
plants	higher dicots		*Allocasuarina rigida subsp. exsul*	V		
plants	higher dicots	jointed baloghia	*Baloghia marmorata*	V	V	
plants	higher dicots	Dunn's white gum	*Eucalyptus dunnii*	V		
plants	higher dicots	holly-leaved graptophyllum	*Graptophyllum ilicifolium*	V	V	
plants	higher dicots	bulberin nut	*Macadamia jansenii*	E	E	
plants	higher dicots		*Prostanthera sp. (Mt Tinbeerwah P.R.Sharpe 4781)*	V		
plants	higher dicots		*Samadera bidwillii*	V	V	
plants	higher dicots		*Senegalia pennata*	NT		
plants	higher dicots	brush sophora	*Sophora fraseri*	V	V	
plants	higher dicots	southern penda	*Xanthostemon oppositifolius*	V	V	
plants	lower dicots	cudgerie	*Hernandia bivalis*	NT		

Table B3: Previously species no longer listed as EVNT by NCA

						Sightings in major catchments							
Kingdom	Class	Common Name	Scientific Name	2016 NCA status	Shire sighting status	Maroochy River	Mooloolah River	Noosa River	Pumicestone Passage	Mary River	Upper Stanley River	Comments	2012 NCA status
animals	amphibians	pouched frog	*Assa darlingtoni*	LC	C	×	×	×	×	✓	✓	status change	NT
animals	amphibians	green thighed frog	*Litoria brevipalmata*	LC	C	✓	✓	×	✓	✓	✓	status change	NT
animals	amphibians	whirring treefrog	*Litoria revelata*	LC	U	undisclosed location						status change	NT
animals	birds	grey goshawk	*Accipiter novaehollandiae*	LC	C	✓	✓	×	✓	✓	✓	status change	NT
animals	birds	Australian swiftlet	*Aerodramus terraereginae*	LC	U	undisclosed location						status change	NT
animals	birds	red-browed treecreeper	*Climacteris erythrops*	LC	C	✓	×	×	✓	✓	×	status change	NT
animals	birds	black-necked stork	*Ephippiorhynchus asiaticus*	LC	C	✓	✓	✓	✓	✓	×	status change	NT
animals	birds	sooty oystercatcher	*Haematopus fuliginosus*	LC	C	✓	✓	×	✓	×	×	status change	NT
animals	birds	Lewin's rail	*Lewinia pectoralis*	LC	C	✓	✓	×	✓	✓	✓	status change	NT
animals	birds	square-tailed kite	*Lophoictinia isura*	LC	C	✓	✓	×	✓	✓	×	status change	NT
animals	birds	black-chinned honeyeater	*Melithreptus gularis*	LC	C	×	✓	×	×	✓	×	status change	NT
animals	birds	turquoise parrot	*Neophema pulchella*	LC	C	✓	×	✓	×	✓	×	status change	NT
animals	birds	cotton pygmy-goose	*Nettapus coromandelianus*	LC	C	✓	✓	×	×	✓	×	status change	NT
animals	birds	freckled duck	*Stictonetta naevosa*	LC	C	✓	✓	×	×	✓	×	status change	NT
animals	birds	sooty owl	*Tyto tenebricosa tenebricosa*	LC	C	✓	✓	×	✓	✓	✓	status change	NT
animals	mammals	golden-tipped bat	*Kerivoula papuensis*	LC	C	×	×	×	×	✓	×	status change	NT
animals	reptiles	elf skink	*Eroticoscincus graciloides*	LC	C	✓	✓	×	✓	✓	✓	status change	NT
animals	reptiles	Rose's shadeskink	*Saproscincus rosei*	LC	C	✓	×	×	×	✓	✓	status change	NT

plants	ferns	coarse tassel fern	*Phlegmariurus phlegmaria*	LC	O	×	✓	×	✓	×	×	name change from *Huperzia phlegmaria*	NT
plants	higher dicots		*Acomis acoma*	LC	C	×	×	×	×	✓	×	status change	NT
plants	higher dicots	doughwood	*Acronychia octandra*	LC	O	×	×	×	×	✓	×	status change	
plants	higher dicots	giant ironwood	*Backhousia subargentea*	LC	O	✓	×	×	×	✓	×	name change from *Choricarpia subargentea*	NT
plants	higher dicots		*Commersonia salviifolia*	LC	U	undisclosed location						status change	NT
plants	higher dicots	rusty vine	*Marsdenia hemiptera*	LC	C	✓	✓	×	×	✓	✓	status change	NT
plants	higher dicots		*Senna acclinis*	LC	U	✓	×	×	×	✓	✓	status change	NT
plants	monocots	mountain reed grass	*Arundinella montana*	LC	C	×	×	×	✓	×	✓	status change	NT
plants	monocots	stream lily	*Helmholtzia glaberrima*	LC	U	×	✓	×	×	×	×	status change	NT
plants	monocots		*Paspalidium scabrifolium*	LC	C	×	×	×	✓	×	×	status change	NT
plants	monocots		*Schoenus scabripes*	LC	C	✓	✓	×	×	×	×	status change	NT

Appendix C

Sunshine Coast Conservation Estate

Please note: All extent values have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.
Current extent value is greater than the pre extent value due to the reclassification of the regional ecosystem by the Queensland Herbarium.

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
Mangrove and saltmarsh (3)	12.1.1	*Casuarina glauca* +/- mangroves open-forest. Occurs on margins of Quaternary estuarine deposits.	**684**	**425**	0	0	158	129	287	0	287
	12.1.2	Saltpan vegetation comprising *Sporobolus virginicus* grassland and samphire herbland. Grasses including *Zoysia macrantha* subsp. *macrantha* sometimes present in upper portions of tidal flats. Includes saline or brackish sedgelands. Occurs on Quaternary estuarine deposits. Marine plains/tidal flats.	**706**	**489**	0	0	147	66	213	0	213
	12.1.3	Mangrove shrubland to low closed forest. Occurs on Quaternary estuarine deposits.	**1,621**	**1,613**	0	0	315	295	610	0	610
Foredunes (2)	12.2.5	Open-forest to low closed forest. Species can include *Corymbia intermedia, C. tessellaris, Banksia integrifolia subsp. integrifolia, B. aemula, Acacia spp., Lophostemon confertus, Callitris columellaris, Livistona spp.* and *Endiandra sieberi. Melaleuca quinquenervia* in swales. Understorey generally shrubby and can include vine forest species. Occurs of Quaternary coastal dunes and beaches and sandy banks of coastal streams.	**209**	**64**	0	4	45	1	50	4	54
	12.2.14	Strand and fore dune complex comprising Spinifex sericeus grassland *Casuarina equisetifolia subsp. incana* woodland/open-forest and with *Acacia leiocalyx, A. disparrima subsp. disparrima, Banksia integrifolia subsp. integrifolia, Pandanus tectorius, Corymbia tessellaris, Cupaniopsis anacardioides, Acronychia imperforata*. Occurs mostly on frontal dunes and beaches but can occur on exposed parts of dunes further inland.	**406**	**274**	0	0	99	2	101	9	110
Heath and wallum (15)	12.2.9	*Banksia aemula* low shrubby woodland. Mallee eucalypts sometimes present, e.g. *Eucalyptus latisinensis*. Occurs on Quaternary coastal dunes and sandplains with deeply leached soils.	**179**	**69**	0	0	41	7	48	0	48

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
	12.2.12	Closed or wet heath +/- stunted emergent shrubs/low trees. Characteristic shrubs include Banksia spp. (especially B. robur) *Boronia falcifolia, Epacris spp., Baeckea frutescens, Schoenus brevifolius, Leptospermum spp., Hakea actites, Melaleuca thymifolia, M. nodosa, Xanthorrhoea fulva with Baloskion spp.* and *Sporadanthus spp.* in ground layer. Occurs on poorly drained Quaternary coastal dunes and sandplains. Low part of sand mass coastal landscapes where water collects from both overland flow and infiltration from adjoining sand dunes.	**2,334**	**748**	0	2	484	36	522	0.33	522
	12.2.15	Coastal sedgeland with *Baumea spp., Juncus spp. Lepironia articulata, Gahnia spp.* and *Eleocharis spp.* and associated water bodies. Occurs on Quaternary coastal dunes and beaches. Low part of coastal landscape where water collects from both overland flow and infiltration from adjoining sand dunes.	**209**	**160**	0	0	135	6	141	0	141
	12.2.15a	Lacustrine wetland (e.g. lake). Permanent and semi-permanent window lakes. Occurs as a window into the water table on Quaternary coastal dunes and beaches. Low part of coastal landscape where water collects from both overland flow and infiltration from adjoining sand dunes.	**2**	**2**	0	0	0	0	0	0	0
	12.3.8	Characteristic species include *Cyperus spp., Schoenoplectus spp., Philydrum lanuginosum, Eleocharis spp., Leersia hexandra, Triglochin procerum, Nymphaea spp., Nymphoides indica, Persicaria spp., Phragmites karka Typha spp.* and a wide range of sedges grasses or forbs. Occurs in freshwater swamps associated with floodplains.	**272**	**206**	5	3	50	33	91	2	93
	12.3.13	Closed or wet heathland . Characteristic species include *Melaleuca thymifolia, Banksia robur, Xanthorrhoea fulva, Hakea actites, Leptospermum spp.* and *Baeckea frutescens*. Occurs on seasonally waterlogged Quaternary alluvial plains along coastal lowlands.	**4,175**	**1,309**	72	3	767	118	960	10	970
	12.3.14	*Banksia aemula* woodland +/- mallee eucalypt low woodland. Associated canopy species include *Eucalyptus latisinensis, Corymbia intermedia, E. robusta* and *Lophostemon confertus*. Occurs on Quaternary alluvial plains along coastal lowlands.	**487**	**124**	0	0	102	10	112	0	112

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Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
	12.5.9	Open or dry heath. Characteristic shrubs include *Leptospermum spp., Leucopogon spp., Ricinocarpos pinifolius, Strangea linearis, Brachyloma daphnoides, Persoonia virgata, Xanthorrhoea spp., Styphelia viridis, Monotoca scoparia, Woollsia pungens* and stunted *Allocasuarina littoralis*. Includes minor seepage areas containing *Banksia robur* and *Xanthorrhoea fulva*. Occurs on complex of remnant Tertiary surfaces and Tertiary sedimentary rocks. Lower slopes.	**50**	**23**	7	6	9	0	22	0	22
	12.5.10	*Banksia aemula* +/- *E. latisinensis* low shrubby open-woodland. Diverse understorey of heath species. Occurs on complex of remnant Tertiary surfaces and Tertiary sedimentary rocks.	**45**	**35**	0	0.03	28	0	28	2	30
	12.8.19	Montane shrubland, heath and rock pavement with scattered shrubs or open-woodland. Occurs on Cainozoic igneous rocks especially rhyolite and trachyte.	**207**	**207**	0	0	203	0	203	0	203
	12.9-10.22	Closed sedgeland to heathland with emergent trees. Lower slopes subject to periodic water logging. Characteristic species include *Schoenus brevifolius* and/or *Baumea juncea* and/or *Banksia robur* and/or *Melaleuca nodosa*. Sometimes grading into *Banksia aemula* woodland on rises. Occurs on Cainozoic and Mesozoic sediments.	**265**	**18**	0	0	2	12	14	0	14
	12.12.10	Shrubland or heath. Associated with rocky soils derived from Mesozoic to Proterozoic igneous rocks.	**7**	**7**	0	0	7	0	7	0	7
	12.12.19	Vegetation complex of exposed rocky headlands. Vegetation types include *Themeda triandra* grassland and wind-sheared shrubland and woodland. Occurs on Mesozoic to Proterozoic igneous headlands.	**9**	**4**	0	0	0	0	0	0	0
	12.12.19x2	Vegetation complex of exposed rocky headlands. Vegetation types include *Themeda triandra* grassland and wind-sheared shrubland and woodland. Occurs on headlands of Cainozoic and Mesozoic sediments.	**26**	**4**	0	0	0	0	0	0.36	0.36
	12.12.19x3	Vegetation complex of exposed headlands. Vegetation types include *Themeda triandra* grassland	**7**	**4**	0	0	0	2	2	0	2

			Vegetation (Ha)		Conservation estate						
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Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
		and wind-sheared shrubland and woodland. Occurs on headlands of remnant Tertiary surfaces.									
Melaleuca (9)	12.2.7	*Melaleuca quinquenervia* or *M. viridiflora* or *M. dealbata* open-forest to woodland. Other species include *Eucalyptus tereticornis, Corymbia intermedia, E. bancroftii, E. latisinensis, E. robusta, Lophostemon suaveolens* and *Livistona decora*. A shrub layer may occur with frequent species including *Melastoma malabathricum subsp. malabathricum* or *Banksia robur*. The ground layer is sparse to dense and comprised of species including the ferns *Pteridium esculentum* and *Blechnum indicum* the sedges *Schoenus brevifolius*, *Baloskion tetraphyllum, Baumea rubiginosa* and *Gahnia sieberiana* and the grass *Imperata cylindrica*. Occurs on Quaternary coastal dunes and seasonally waterlogged sandplains usually fringing drainage system behind beach ridge plains or on old dunes, swales and sandy coastal creek levees.	**7,256**	**2,260**	0	0.65	1,249	239	1,489	7	1,496
	12.2.7a	Palustrine wetland (e.g. vegetated swamp). *Melaleuca quinquenervia* low woodland with *Gahnia sieberiana* shrub layer. Occurs on Quaternary coastal sand dunes fringing swamps.	**74**	**30**	0	0	29	0	29	0	29
	12.2.7c	Palustrine wetland (e.g. vegetated swamp*). Melaleuca quinquenervia, Eucalyptus robusta, Melicope elleryana* open forest with understorey of *Todea barbara*. Occurs along watercourses on Quaternary coastal dunes and beaches and seasonally waterlogged sandplains.	**174**	**154**	0	0	152	0	152	0	152
	12.3.4	Open-forest to woodland of *Melaleuca quinquenervia* and Eucalyptus robusta. Occurs fringing drainage lines and floodplains in coastal areas.	**5,728**	**1,337**	14	2	109	97	222	8	230
	12.3.5	*Melaleuca quinquenervia* open-forest to woodland. Understorey depends upon duration of water logging; sedges and ferns, especially *Blechnum indicum*, in wetter microhabitats and grasses and shrubs in drier microhabitats. Ground layer species include the grasses *Leersia hexandra* and *Imperata cylindrica,* the sedges/rushes, *Baumea rubiginosa, Gahnia sieberiana, Lepironia articulata, Schoenus brevifolius* and *Schoenus scabripes* and the fern *Lygodium microphyllum*. Other tree species that may be present	**9,796**	**2,929**	12	6	832	529	1379	10	1389

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		as scattered individuals or clumps include Lophostemon suaveolens, Eucalyptus robusta, E. tereticornis, E. bancroftii, E. latisinensis, Corymbia intermedia, Melaleuca salicina, Livistona australis, Casuarina glauca, Endiandra sieberi. Melastoma malabathricum subsp. malabathricum, Glochidion sumatranum and Melicope elleryana are often in understorey. Occurs on Quaternary alluvial plains in coastal areas.									
	12.3.5a	Palustrine wetland (e.g. vegetated swamp). *Melaleuca quinquenervia, Casuarina glauca* +/- *Eucalyptus tereticornis* open forest. Occurs on lowest river terraces of Quaternary alluvial plains in coastal areas.	**1,351**	**499**	0	0	287	56	343	0	343
	12.3.6	*Melaleuca quinquenervia, Eucalyptus tereticornis, Lophostemon suaveolens* +/- *Corymbia intermedia* open-forest to woodland with a grassy ground layer dominated by species such as *Imperata cylindrica*. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas.	**2,827**	**814**	0	8	488	52	548	7	555
	12.3.7	Narrow fringing community of *Eucalyptus tereticornis, Melaleuca viminalis, Casuarina cunninghamiana* +/- *Waterhousea floribunda*. Other species associated with this RE include *Melaleuca bracteata, M. trichostachya, M. linariifolia* and *M. fluviatilis* in north of bioregion. *Lomandra hystrix* often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region.	**1,025**	**460**	2	24	3	0.60	30	31	61
	12.3.7b	Riverine wetland or fringing riverine wetland. Naturally occurring waterholes and lagoons, both permanent and intermittent. Includes exposed stream bed and bars. Occurs in the bed of active (may be intermittent) river channels.	**80**	**80**	0	0	0	0	0	0.1	0.1
Eucalypt (36)	12.2.6	*Eucalyptus racemosa subsp. racemosa, Corymbia intermedia, C. gummifera, Angophora leiocarpa* and *E. pilularis* shrubby or grassy woodland to open-forest. Occurs on Quaternary coastal dunes and beaches. Dunes with deeply leached soils.	**41**	**6**	0	0	0	5	5	0	5

			Vegetation (Ha)		Conservation estate						
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Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
	12.2.8	*Eucalyptus pilularis, E. microcorys, E. resinifera* and *Syncarpia hillii* open-forest. Occurs on parabolic high dunes.	**60**	**8**	0	0	0	2	2	0	2
	12.3.2	*Eucalyptus grandis* +/- *E. microcorys, Lophostemon confertus* tall open-forest with vine forest understorey ('wet sclerophyll'). Patches of *Eucalyptus pilularis* sometimes present especially in vicinity of sedimentary rocks (e.g. around Palmwoods). Fringing streams and in narrow gullies in high rainfall areas.	**9,301**	**3,041**	39	65	195	207	506	178	684
	12.3.11	Open-forest to woodland of *Eucalyptus tereticornis, E. siderophloia* and *Corymbia intermedia. Corymbia tessellaris, Lophostemon suaveolens* and *Melaleuca quinquenervia* frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include *Angophora leiocarpa, E. exserta, E. grandis, C. trachyphloia, C. citriodora, E. latisinensis, E. tindaliae, E. racemosa, Melaleuca sieberi* and *M. viridiflora. E. seeana* may be present south of Landsborough. Occurs on Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y.	**11,273**	**584**	4	7	83	38	132	14	146
	12.3.11a	Open-forest of *Eucalyptus tereticornis and/or E. siderophloia* with vine forest understorey. Other canopy species include *Corymbia intermedia, Araucaria cunninghamii* and *Agathis robusta*. Frequently occurring understorey species include *Flindersia spp., Lophostemon suaveolens, L. confertus, Cupaniopsis parvifolia, Acronychia spp., Alphitonia excelsa* and *Acacia disparrima subsp. disparrima.* Occurs on sub-coastal Quaternary alluvial plains. Rainfall usually exceeds 1000mm/y.	**9**	**4**	0	0	0	0	0	0	0
	12.3.14a	*Eucalyptus racemosa* woodland to open-forest. Other canopy species may include *Corymbia intermedia, C. gummifera, Eucalyptus latisinensis, E. tindaliae* and *Melaleuca quinquenervia*. Occurs on Quaternary alluvial plains in near coastal areas.	**876**	**196**	14	2	120	2	138	4	142
	12.5.2a	*Corymbia intermedia, Eucalyptus tereticornis* woodland. Other species can include *Lophostemon suaveolens, Angophora leiocarpa, Eucalyptus acmenoides* or *E. portuensis, E. siderophloia* or *E. crebra, Corymbia tessellaris* and *Melaleuca quinquenervia* (lower slopes). *Eucalyptus exserta* is	**471**	**19**	0.40	0.10	0	3	3	0	3

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		usually present in northern parts of bioregion. Occurs on complex of remnant Tertiary surfaces +/- Cainozoic and Mesozoic sediments usually in coastal areas with deep red soils.									
	12.5.3	*Eucalyptus tindaliae* and/or *E. racemosa subsp. racemosa* open-forest with *Corymbia intermedia, E. siderophloia* +/- *E. resinifera, E. pilularis, E. microcorys, Angophora leiocarpa. Melaleuca quinquenervia* is often a prominent feature of lower slopes. Minor patches (<1ha) dominated by *Corymbia citriodora* can sometimes occur. Occurs on complex of remnant Tertiary surfaces +/- Cainozoic and Mesozoic sediments.	**12,126**	**1,397**	7	9	574	23	613	46	659
	12.5.4	Eucalyptus spp.-*Corymbia spp.-Melaleuca spp.* shrubby or grassy open-forest to woodland. Characteristic species include *Angophora leiocarpa, Eucalyptus latisinensis, E. siderophloia, E. exserta, Corymbia intermedia, C. trachyphloia, Lophostemon suaveolens, Melaleuca viridiflora, M. quinquenervia, M. nodosa* and *Grevillea banksii*. Patches of *Allocasuarina luehmannii* or *Banksia oblongifolia* present locally and *Xanthorrhoea johnsonii* common in ground layer. Occurs on complex of remnant Tertiary surfaces and Tertiary sedimentary rocks.	**40**	**27**	0	0	20	0	20	0	20
	12.5.6c	*Eucalyptus pilularis* open forest +/- *E. siderophloia, E. propinqua, Corymbia intermedia, E. microcorys, E. acmenoides, E. tereticornis, E. biturbinata, Lophostemon confertus* with *E. saligna, E. montivaga* at higher altitudes. Occurs on remnant Tertiary surfaces. Usually deep red soils.	**620**	**290**	13	2	26	16	57	5	62
	12.8.8	*Eucalyptus saligna* or *E. grandis* tall open-forest often with vine forest understorey ('wet sclerophyll'). Other species include *Eucalyptus microcorys, E. acmenoides, Lophostemon confertus, Syncarpia glomulifera subsp. glomulifera*. Occurs on Cainozoic igneous rocks and areas subject to local enrichment from Cainozoic igneous rocks.	**3,457**	**579**	15	6	105	5	131	74	205
	12.8.8a	*Eucalyptus siderophloia, E. microcorys, E. propinqua, Corymbia intermedia* +/- *Eucalyptus carnea* open forest on Cainozoic igneous rocks. Occurs on	**67**	**22**	2	0	0	0	2	0.05	2.05

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		Cainozoic igneous rocks and areas subject to local enrichment from Cainozoic igneous rocks.									
	12.8.14	*Eucalyptus eugenioides, E. tereticornis, E. melliodora, E. biturbinata, Allocasuarina torulosa* +/- *E. moluccana* grassy open-forest. Localised occurrences of *Eucalyptus laevopinea* and *E. banksii* may occur. Occurs on Cainozoic igneous rocks, especially basalt.	**747**	**127**	0	0.98	3	0.64	5	6	11
	12.8.20	Low shrubby woodland to open-woodland complex. Canopy trees include *Eucalyptus racemosa subsp. racemosa, E. dura, Corymbia trachyphloia, E. carnea, Allocasuarina littoralis, Acacia spp.* and *Lophostemon confertus*. Occurs on Cainozoic igneous rocks, especially rhyolite.	**722**	**667**	0	0.05	596	2	598	0.03	598
	12.9-10.1	Shrubby open-forest. Canopy species include *Eucalyptus resinifera, E. grandis, E. robusta, Corymbia intermedia* +/- *E. microcorys, Melaleuca quinquenervia, Syncarpia glomulifera subsp. glomulifera* and *Lophostemon confertus*. Occurs on Cainozoic and Mesozoic sediments.	**2,569**	**631**	0.31	6	26	39	71	29	100
	12.9-10.4	Open-forest to woodland with *Eucalyptus racemosa subsp. racemosa* locally prominent. Other species can include *Angophora leiocarpa, Eucalyptus seeana, E. siderophloia, Corymbia intermedia, E. tindaliae* with *Lophostemon suaveolens, Melaleuca quinquenervia, E. tereticornis* on lower slopes. Occurs on Cainozoic and Mesozoic sediments +/- remnant Tertiary surfaces.	**7,881**	**1,620**	11	5	307	116	439	0	439
	12.9-10.7a	*Eucalyptus tereticornis, E. siderophloia* and/or *E. crebra, Corymbia intermedia* and *Lophostemon suaveolens* woodland. Occurs on Cainozoic and Mesozoic sediments in near coastal areas.	**1,636**	**230**	0	5	0	12	17	25	42
	12.9-10.14	*Eucalyptus pilularis* tall open-forest with shrubby understorey. Other species include *Syncarpia glomulifera subsp. glomulifera, S. verecunda, Corymbia intermedia, Angophora woodsiana* and *Eucalyptus microcorys* in coastal areas and species of RE 12.9-10.5 in drier sub coastal areas. *Eucalyptus pilularis* sometimes extends onto colluvial lower slopes. Occurs on Cainozoic and Mesozoic sediments especially sandstone.	**17,235**	**7,279**	139	198	620	417	1374	562	1936

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	12.9-10.14a	Open-forest of *Eucalyptus grandis, Lophostemon confertus, E. microcorys, Syncarpia glomulifera subsp. glomulifera +/- E. pilularis*. Occurs on Cainozoic and Mesozoic sediments especially sandstone in wet gullies and southern slopes.	**3,819**	**1,421**	42	40	62	42	186	103	289
	12.9-10.17a	*Lophostemon confertus* dominated open-forest. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.	**203**	**116**	20	0	0	1	21	8	29
	12.9-10.17d	Open-forest with *Eucalyptus siderophloia, E. propinqua, Corymbia intermedia +/- E. microcorys, E. acmenoides or E. portuensis, Lophostemon confertus, Eucalyptus tereticornis, E. moluccana, Angophora subvelutina* and occasional vine forest species. Other species that may be present locally include *Corymbia trachyphloia, E. major, E. fibrosa subsp. fibrosa* and *Angophora leiocarpa* Hills and ranges on Cainozoic and Mesozoic sediments.	**3,418**	**1,947**	19	66	221	62	368	240	608
	12.11.2	*Eucalyptus saligna* or *E. grandis, E. microcorys, E. acmenoides, Lophostemon* confertus tall open forest on metamorphics +/- interbedded volcanics.	**4,748**	**3,543**	8	4	2,978	0.11	2,990	161	3,151
	12.11.3	Open-forest generally with *Eucalyptus siderophloia* and *E. propinqua +/- E. microcorys, Lophostemon confertus, Corymbia intermedia, E. biturbinata, E. acmenoides, E. tereticornis, E. moluccana, Angophora leiocarpa, Syncarpia verecunda* with vine forest species and *E. grandis* or *E. saligna* in gullies. *Eucalyptus pilularis* and *E. tindaliae* sometimes present e.g. mid D'Aguilar Range, Conondale Range. Occurs predominantly on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**13,333**	**9,336**	3	28	4,553	52	4,636	248	4,884
	12.11.3a	Open-forest of Lophostemon confertus +/- *Eucalyptus microcorys, E. propinqua, E. carnea, E. major, E. siderophloia.* Occurs in gullies and exposed ridges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**137**	**114**	0	0	88	0	88	0	88

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
	12.11.3b	Open-forest of *Eucalyptus pilularis*. Frequent species are *E. microcorys, E. siderophloia, E. eugenioides, Corymbia intermedia*. Occasionally present are *Syncarpia verecunda, E. saligna*. Occurs on higher altitude (>300m) subcoastal hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**127**	**101**	0	0	0	0	0	18	18
	12.11.5j	Woodland to open forest of *Eucalyptus racemosa subsp. racemosa* and/or *E. seeana*. Other characteristic species include *Lophostemon suaveolens, Corymbia intermedia, E. siderophloia, C. citriodora, E. pilularis* on low-altitude coastal metamorphics around Brisbane. *Melaleuca quinquenervia* may be present and at times becomes locally co-dominant. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.	**32**	**32**	0	0	29	0	29	0	29
	12.11.9	Open-forest to woodlands with *Eucalyptus tereticornis*. Other canopy species include *Eucalyptus biturbinata, E. melliodora, Corymbia intermedia, E. longirostrata, E. eugenioides, Allocasuarina torulosa, E. moluccana, E. saligna, E siderophloia* and *Angophora subvelutina*. Occurs on ridges and upper slopes especially at higher altitudes on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. These occurrences are often associated with small areas of intermediate and basic volcanic rocks. Minor occurrences on low coastal ridges and upper slopes.	**1,150**	**1,101**	0	5	825	0.86	831	0.18	831
	12.11.9x1	*Eucalyptus montivaga* open forest. Other canopy species can include *Corymbia trachyphloia*, *E. acmenoides*, *Syncarpia glomulifera* subsp. *glomulifera and C. intermedia*. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. Altitude >500m. (BVG1M: 8b)	**20**	**20**	0	0	20	0	20	0	20
	12.11.14	*Eucalyptus crebra, E. tereticornis* grassy woodland. Other species including *Eucalyptus melanophloia, Corymbia clarksoniana, C. erythrophloia, C. tessellaris, Angophora spp.* may be present in low densities or in patches. Mid-layer generally sparse but	**3,642**	**394**	0	0	77	0	77	11	88

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
		can include low trees such as *Acacia bidwillii, Capparis spp., Dodonaea triquetra, Alphitonia excelsa* and *Xanthorrhoea spp*. Occurs on mid and lower slopes on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.									
	12.12.2	*Eucalyptus pilularis* tall open-forest with shrubby understorey. Other canopy species include *Syncarpia verecunda, Angophora woodsiana, Eucalyptus microcorys, E. resinifera, E. tindaliae, E. propinqua and E. saligna*. Occurs on Mesozoic to Proterozoic igneous rocks.	**12,284**	**9,325**	3	122	5,865	65	6,055	480	6,535
	12.12.12	*Eucalyptus tereticornis, E. crebra* (sometimes *E. siderophloia*) open-forest to woodland. Other species present can include *Eucalyptus melanophloia, Corymbia tessellaris, Angophora subvelutina, A. leiocarpa, C. clarksoniana* (central and northern parts) and *E. siderophloia, C. intermedia* with *Melaleuca quinquenervia, Lophostemon suaveolens* near drainage lines in moister areas. Occurs on Mesozoic to Proterozoic igneous rocks, especially granite lowlands and basins.	**9,771**	**1,053**	0.38	24	50	46	120	88	208
	12.12.14	Shrubby woodland. Canopy species include *Eucalyptus racemosa subsp. racemosa, Corymbia trachyphloia, E. carnea, E. tindaliae, E. exserta, Angophora woodsiana, E. resinifera* and *E. microcorys*. Occurs on Mesozoic to Proterozoic igneous rocks.	**1,539**	**1,157**	2	24	812	43	881	16	897
	12.12.15	Open-forest with *Eucalyptus propinqua, Corymbia intermedia, E siderophloia +/- E. microcorys, E. acmenoides, Lophostemon confertus, E. moluccana, Angophora subvelutina* and occasional vine forest species. Patches of *Eucalyptus pilularis* sometimes present. Occurs on Mesozoic to Proterozoic igneous rocks.	**16,068**	**11,617**	211	233	5,350	291	6,085	953	7,038
	12.12.15a	*E. grandis* tall open-forest +/- vine forest understorey. Other canopy species *include E. microcorys, E. acmenoides, Lophostemon confertus, E. siderophloia, E. propinqua, Corymbia intermedia* Occurs in wet gullies on Mesozoic to Proterozoic igneous rocks.	**5,692**	**2,958**	88	33	597	20	738	405	1,143

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
	12.12.15b	*Lophostemon confertus* open-forest +/- *Eucalyptus microcorys, E. siderophloia, E. carnea* and *E. propinqua*. Vine forest species are often present in understorey. Occurs in gullies and exposed ridges on Mesozoic to Proterozoic igneous rocks often amongst vine forest.	**531**	**501**	6	19	348	0.01	373	22	395
	12.12.23	Open-forest to woodland generally with *Eucalyptus tereticornis* +/- *E. eugenioides*. Other species present, vary from place to place but commonly include *Corymbia intermedia, Eucalyptus acmenoides* +/- *E. biturbinata, E. longirostrata, E. melliodora, Corymbia trachyphloia, Lophostemon confertus* (tree form and whipstick form), *Angophora subvelutina, E. crebra* and *Allocasuarina torulosa*. Occurs at higher altitudes on granite hills and ranges.	**362**	**284**	1	0.83	153	1	156	19	175
Rainforest (10)	12.3.1	Complex to simple notophyll vine forest. *Waterhousea floribunda* is predominant fringing stream channels. Other species can include *Cryptocarya hypospodia, C. obovata, C. triplinervis, Argyrodendron trifoliolatum, Ficus coronata, F. fraseri, F. macrophylla forma macrophylla, Aphananthe philippinensis, Elaeocarpus grandis, Grevillea robusta, Castanospermum australe* and *Syzygium francisii. Ficus racemosa* and *Nauclea orientalis* in north of bioregion. Eucalyptus spp. emergents (e.g. *E. grandis*) and *Araucaria cunninghamii*; less commonly *Agathis robusta* may also be present. Occurs on Quaternary alluvial plains and channels.	**4,554**	**1,752**	17	17	145	149	328	82	410
	12.5.13a	Microphyll to notophyll vine forest +/- *Araucaria cunninghamii*. Characteristic species include *Araucaria cunninghamii, Cupaniopsis parvifolia, Dendrocnide photinophylla, Rhodosphaera rhodanthema, Flindersia australis, F. schottiana, F. xanthoxyla, Drypetes deplanchei, Olea paniculata, Diospyros geminata, Gossia bidwillii, Excoecaria dallachyana* and *Vitex lignum-vitae. Argyrodendron trifoliolatum* sometimes present especially in subregion 6. Occurs on remnant Tertiary surfaces especially lateritised basalt.	**1**	**0.84**	0	0	0	0.84	1	0	1
	12.8.3	Complex notophyll vine forest. Characteristic species include *Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Olea paniculata, Castanospermum australe, Cryptocarya obovata,*	**12,758**	**1,563**	66	46	202	51	365	255	620

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
		Ficus macrophylla forma macrophylla, Syzygium francisii, Diploglottis australis, Pseudoweinmannia lachnocarpa, Podocarpus elatus, Beilschmiedia obtusifolia, Neolitsea dealbata and *Archontophoenix cunninghamiana.* Occurs on Cainozoic igneous rocks, especially basalt <600m altitude.									
	12.8.9	*Lophostemon confertus* open-forest often with vine forest understorey ('wet sclerophyll') Occurs on Cainozoic igneous rocks. Tends to occur mostly in gullies and on exposed ridges on basalt.	**4**	**4**	0	0	4	0	4	0	4
	12.8.13	Microphyll and microphyll/notophyll vine forest +/- *Araucaria cunninghamii.* Characteristic species include *Araucaria cunninghamii, A. bidwillii, Cupaniopsis parvifolia, Dendrocnide photinophylla, Rhodosphaera rhodanthema, Flindersia australis, F. schottiana, F. xanthoxyla, Drypetes deplanchei, Olea paniculata, Diospyros geminata, Gossia bidwillii, Excoecaria dallachyana, Pleiogynium timorense* (north of bioregion) and *Vitex lignum-vitae. Argyrodendron trifoliolatum* sometimes present especially in subregion 6. Occurs on Cainozoic igneous rocks, especially basalt.	**25**	**1**	0	0	0	0	0	0	0
	12.9-10.16	Microphyll to notophyll vine forest +/- *Araucaria cunninghamii.* Characteristic species include *Argyrodendron sp.*(Kin Kin W.D.Francis AQ81198), *Araucaria cunninghamii, Agathis robusta, Backhousia myrtifolia, Cupaniopsis parvifolia, Dendrocnide photinophylla, Rhodosphaera rhodanthema, Flindersia australis, F. xanthoxyla, Drypetes deplanchei, Olea paniculata, Diospyros geminata, Gossia bidwillii, Excoecaria dallachyana* and *Vitex lignum-vitae.* Occurs on Cainozoic and Mesozoic sediments.	**1,733**	**1,177**	25	34	212	111	382	130	512
	12.11.1	Simple notophyll vine forest often with abundant *Archontophoenix cunninghamiana* (gully vine forest) on metamorphics +/- interbedded volcanics	**4,480**	**4,088**	3	6	3,647	0	3,656	34	3,690
	12.11.10	Notophyll and notophyll/microphyll vine forest +/- *Araucaria cunninghamii.* Characteristic species include *Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Choricarpia subargentea, Dissiliaria baloghioides, Brachychiton*	**6,425**	**2,579**	0	13	1,156	2	1,171	78	1,249

			Vegetation (Ha)		Conservation estate						
					Protected areas (Ha)					Voluntary conservation areas (Ha)	Total extent of regional ecosystem within conservation estate (Ha)
Vegetation community (Number of regional ecosystem's)	Regional ecosystem classification	Regional ecosystem description	Regional ecosystem pre-clearing extent	Regional ecosystem current extent	Nature Refuge	Covenants	State	Council	Total extent of regional ecosystem within the protected areas	Land for Wildlife	
		discolor, Beilschmiedia obtusifolia, Diospyros pentamera, Grevillea robusta, Gmelina leichhardtii and *Ficus macrophylla forma macrophylla*. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics.									
	12.12.1	Notophyll and notophyll/microphyll vine forest, sometimes with *Archontophoenix cunninghamiana* and/or *Lophostemon confertus* closed forest. The plant families Lauraceae, Myrtaceae and Elaeocarpaceae are diagnostic of the type and Pouteria queenslandica is common in the northern half of the bioregion. *Araucaria cunninghamii* is often present on margins. Occurs in gullies on Mesozoic to Proterozoic igneous rocks especially granite and rhyolite.	**5,386**	**4,057**	77	57	2,550	61	2,745	331	3,076
	12.12.16	Notophyll vine forest. Characteristic species include *Araucaria bidwillii, A. cunninghamii, Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Choricarpia subargentea, Brachychiton discolor, Beilschmiedia obtusifolia, Diospyros pentamera, Grevillea robusta, Gmelina leichhardtii, Ficus macrophylla forma macrophylla and Sloanea woollsii. Eucalyptus spp.* especially *E. siderophloia, E. propinqua* and *E. grandis* may be present as emergents. Occurs on Mesozoic to Proterozoic igneous rocks.	**3,869**	**1,547**	78	36	359	78	551	162	713
		Total Area of Remnant Regional Ecosystem Vegetation	**225,453**	**92,864**	**1,026**	**1,173**	**38,719**	**3,645**	**44,563**	**4,878**	**49,441**
		Total Area of Non-Remnant Vegetation		**31,417**	**155**	**304**	**965**	**892**	**2,317**	**2,416**	**4,733**
		Total Area of Vegetation	**225,453**	**124,281**	**1,181**	**1,477**	**39,684**	**4,537**	**46,880**	**7,294**	**54,174**

Appendix D

Maroochy River catchment vegetation and conservation estate

					Conservation estate				
	Regional ecosystem				Protected areas (Ha)				Voluntary conservation areas (Ha)
Vegetation community	Classification	Pre-clearing extent (ha)	Current extent (ha)	Extent loss (%)	State	Council	Nature Refuge	Covenants	Land for Wildlife
Mangrove and saltmarsh	12.1.1	428	253	41	35	114	0	0	0
	12.1.2	97	70	31	12	32	0	0	0
	12.1.3	481	454	5	150	118	0	0	0
	Total	1,006	777	23	197	264	0	0	0
Foredune	12.2.5	61	24	74	8	1	0	4	4
	12.2.14	146	118	22	20	0.44	0	0	9
	Total	207	142	43	28	1.44	0	4	13
Heath and wallum	12.2.9	68	55	15	41	7	0	0	0
	12.2.12	1,243	594	46	428	33	0	2	0.33
	12.2.15	96	65	15	46	6	0	0	0
	12.3.8	138	103	25	48	33	5	0.06	0
	12.3.13	412	163	57	44	38	12	2	8
	12.5.10	38	29	24	23	0	0	0.03	2
	12.8.19	66	66	0	66	0	0	0	0
	12.9-10.22	11	3	21	0	2	0	0	0
	12.12.10	7	7	0	7	0	0	0	0
	12.12.19	9	4	83	0	0	0	0	0
	12.12.19x2	7	4	50	0	0	0	0	0.36
	Total	2,095	1,093	42	703	119	17	4	11
Melaleuca	12.2.7	3,278	753	75	334	118	0	0.65	8
	12.3.4	79	18	76	0	15	0	0	0
	12.3.5	3,493	914	74	113	279	12	6	3
	12.3.5a	1,295	462	64	282	53	0	0	0
	12.3.6	627	50	92	11	0.55	0	0	6
	Total	8,772	2,197	74	740	466	12	7	17
Eucalypt	12.3.2	5,372	1,342	75	79	58	2	26	109
	12.3.11	4,188	107	97	1	10	0.04	5	4
	12.3.11a	9	4	56	0	0	0	0	0
	12.3.14a	12	12	0	0.7	0	0	0	0
	12.5.2a	343	14	96	0	2	0.4	0.1	0
	12.5.3	354	159	52	15	5	0	0	1
	12.5.4	9	2	81	2	0	0	0	0
	12.5.6c	266	183	31	17	16	13	2	3
	12.8.8	1,047	110	89	0.06	0.15	0	1	13
	12.8.14	219	29	87	3	0.07	0	0	0.13
	12.8.20	36	33	8	30	0.43	0	0	0
	12.9-10.1	2,217	526	73	26	25	0	6	19
	12.9-10.4	610	136	66	31	16	0	6	0
	12.9-10.7a	994	95	89	0	12	0	2	17
	12.9-10.14	8,268	3,055	62	172	144	48	92	257
	12.9-10.14a	13	10	23	0	0	0	0	3
	12.9-10.17a	58	3	95	0	1	0	0	0
	12.9-10.17d	673	317	51	0	20	0	11	38
	12.11.2	6	9	-37*	0	0	0	0	0
	12.11.3	1	0	100	0	0	0	0	0
	12.11.14	34	0.87	97	0	0	0	0	0
	12.12.2	6,890	4,968	28	2,780	54	3	67	252
	12.12.12	4,853	623	87	11	44	0	14	31
	12.12.14	977	596	37	291	33	0	27	15
	12.12.15	3,637	2,156	40	783	158	0	40	81
	12.12.15a	1,466	524	64	115	7	0	2	64
	12.12.23	42	9	79	0	1	0	0.83	0.16
	Total	42,594	15,023	64	4,357	607	66	302	907
Rainforest	12.3.1	1,384	649	53	25	45	4	16	28
	12.5.13a	1	0.84	16	0	0.84	0	0	0
	12.8.3	2,268	203	91	9	2	6	2	21
	12.9-10.16	662	361	45	1	48	11	16	28
	12.11.10	696	117	81	0	0	0	0	5
	12.12.1	944	576	39	363	37	0.99	16	18
	12.12.16	2,213	786	65	118	60	0	37	92
	Total	8,168	2,693	67	516	192.84	22.0	87	192

Please note: All extent figures have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.

Appendix E

Mary River catchment vegetation and conservation estate

					Conservation estate				
	Regional ecosystem				Protected areas (Ha)				Voluntary conservation areas (Ha)
Vegetation community	Classification	Pre-clearing extent (Ha)	Current extent (Ha)	Extent loss (%)	State	Council	Nature Refuge	Covenants	Land for Wildlife
Heath and wallum	12.3.8	86	79	8	0	0	0	3	0.6
Melaleuca	12.3.4	5	5	0	0	5	0	0	0
	12.3.7	1,015	458	55	3	0.60	2	24	31
	12.3.7b	78	78	0	0	0	0	0	0.10
	Total	1,098	541	55	3	6	2	24	31
Eucalypt	12.3.2	804	209	74	42	3	5	0.3	16
	12.3.11	5,439	266	95	34	17	0	1	9
	12.8.8	1,940	358	82	99	5	15	3	33
	12.8.8a	67	22	68	0	0	2	0	0.05
	12.8.14	46	0	99	0.17	0	0	0	0
	12.9-10.1	2	2	2	0	0	0	0	0
	12.9-10.7a	259	70	73	0	0	0	0	12
	12.9-10.14	106	32	69	0	0	0	0	7
	12.9-10.14a	17	15	13	0	0	0	0	0
	12.9-10.17a	126	99	21	0	0	20	0	2
	12.11.2	4,690	3,482	26	2,932	0.11	8	4	161
	12.11.3	13,182	9,294	29	4,553	52	3	28	248
	12.11.3a	137	114	17	88	0	0	0	0
	12.11.3b	127	101	21	0	0	0	0	18
	12.11.5j	32	32	0	29	0	0	0	0
	12.11.9	1,148	1,100	4	824	0.87	0	5	0.18
	12.11.9x1	20	20	0	20	0	0	0	0
	12.11.14	3,604	395	89	77	0	0	0	11
	12.12.2	4,396	3,851	12	3,079	11	0	32	151
	12.12.6x1	20	20	0	0	0	0	0	0
	12.12.12	4,925	439	91	39	2	0.38	10	57
	12.12.14	569	567	0	522	10	2	0	0
	12.12.15	12,004	9,284	23	4548	128	192	175	850
	12.12.15a	3,265	1,992	39	482	0.01	87	24	249
	12.12.15b	530	500	6	348	0	6	17	22
	12.12.23	318	273	14	149	0	1	0	19
	Total	57,751	32,515	44	17,865	229	341	299	1,865
Rainforest	12.3.1	1,473	553	62	80	7	0.6	0.6	26
	12.8.3	8,328	858	90	76	48	24	38	131
	12.8.9	4	4	0	4	0	0	0	0
	12.8.13	25	1	96	0	0	0	0	0
	12.9-10.16	30	23	24	0	0	5	0	0.05
	12.11.1	4,385	3,993	9	3,574	0	3	6	34
	12.11.10	5,726	2,471	57	1,156	2	0	13	74
	12.12.1	4,126	3,262	21	2,186	24	76	27	269
	12.12.16	1,586	705	56	241	19	78	0	70
	Total	25,683	11,870	54	7,317	100	187	85	604

Please note: All extent figures have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.

Appendix F

Mooloolah River catchment vegetation and conservation estate

					Conservation estate				
	Regional ecosystem				Protected areas (Ha)				Voluntary conservation areas (Ha)
Vegetation community	Classification	Pre-clearing extent (Ha)	Current extent (Ha)	Extent loss (%)	State	Council	Nature Refuge	Covenants	Land for Wildlife
Mangrove and saltmarsh	12.1.1	58	9	84	6	3	0	0	0
	12.1.2	45	9	80	3	2	0	0	0
	12.1.3	74	60	19	21	13	0	0	0
	Total	177	78	56	30	18	0	0	0
Foredune	12.2.5	27	0.44	98	0	0.5	0	0	0
	12.2.5a	20	9	55	0	0	0	0	0
	12.2.14	151	80	47	7	2	0	0	0
	Total	198	89	55	7	2.5	0	0	0
Heath and wallum	12.2.9	40	6	85	0	0	0	0	0
	12.2.12	837	70	92	36	0.5	0	0	0
	12.2.15	20	6	70	4	0	0	0	0
	12.2.15a	2	2	0	0	0	0	0	0
	12.3.8	4	2	50	0	0	0	0	0
	12.3.13	1,504	535	64	395	21	48	0.43	0
	12.3.14	19	17	11	15	0	0	0	0
	12.9-10.22	246	12	95	0	8	0	0	0
	12.12.10	0	0	0	0	0	0	0	0
	12.12.19	0	0	0	0	0	0	0	0
	12.12.19x2	19	0	100	0	0	0	0	0
	12.12.19x3	7	4	43	0	2	0	0	0
	Total	2,698	654	76	450	31.5	48	0	0
Melaleuca	12.2.7	1,117	127	89	43	38	0	0	0
	12.3.4	54	29	46	0	7	0	0	0
	12.3.5	2,526	938	63	250	202	0	0.03	2
	12.3.6	127	52	59	74	10	0	0	0
	Total	3,824	1,146	70	367	257	0	0	2
Eucalypt	12.2.6	37	3	92	0	1	0	0	0
	12.2.8	24	7	71	0	2	0	0	0
	12.3.2	1,513	736	51	59	106	27	32	25
	12.3.11	1,254	53	96	9	5	4	0.95	0.6
	12.3.14a	255	103	60	79	2	12	0	0
	12.5.2	138	5	96	0	1	0	0	0
	12.5.3	111	7	94	0	0	0	0	0.3
	12.8.8	89	9	90	0	0	0	0	4
	12.8.14	281	51	82	0	0	0	0.66	3
	12.9-10.1	352	107	70	0	13	0.31	0.44	11
	12.9-10.4	1,035	216	79	66	47	0	0	0
	12.9-10.7a	271	54	80	0	5	0	3	0
	12.9-10.14	4,656	2,488	47	152	172	69	89	197
	12.9-10.14a	1,276	679	47	35	9	27	38	34
	12.9-10.17a	18	14	22	0	0	0	0	5
	12.9-10.17d	1,897	1,122	41	202	31	7	41	124
	Total	13,207	5,654	57	602	394	146	205	404
Rainforest	12.3.1	810	300	63	40	65	10	0.24	13
	12.8.3	879	124	86	2	0.37	32	0.07	45
	12.9-10.16	575	478	17	118	19	9	11	73
	Total	2,264	902	60	160	84	51	11	131

Please note: All extent figures have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.

Appendix G

Pumicestone Passage and Bribie Island catchment vegetation and conservation estate

					Conservation estate				
	Regional ecosystem				Protected areas (Ha) – Pumicestone (Bribie Island)				Voluntary conservation areas
Vegetation community	Classification	Pre-clearing extent (Ha)	Current extent (Ha)	Extent loss (%)	State	Council	Nature Refuge	Covenants	Land for Wildlife
Mangrove and Saltmarsh	12.1.1	198	164	17	117	13	0	0	0
	12.1.2	564	410	27	131	32	0	0	0
	12.1.3	1,065	1,098	3	144	164	0	0	0
	Total	1,827	1,672	8	392	209	0	0	0
Foredune	12.2.5	126	39	69	38	0	0	0	0
	12.2.14	104	70	33	70	0	0	0	0
	Total	230	109	53	108	0	0	0	0
Heath and Wallum	12.2.9	71	8	89	0	0.49	0	0	0
	12.2.12	252	89	65	20	3	0	0	0
	12.2.15	93	89	4	85	0	0	0	0
	12.3.8	50	25	50	2	0	0	0	0
	12.3.13	2,183	544	75	255	59	11	0.23	0
	12.3.14	468	107	77	87	10	0	0	0
	12.8.19	132	132	0	128	0	0	0	0
	12.9-10.22	10	2	80	0.82	1	0	0	0
	Total	3,259	996	69	578	73	11	0.23	0
Melaleuca	12.2.7	2,750	1,315	52	858	42	0	0	0
	12.2.7a	74	30	59	29	0	0	0	0
	12.2.7c	174	154	11	152	0	0	0	0
	12.3.4	5,416	1,260	77	109	70	14	2	8
	12.3.5	3,766	1,065	72	410	49	0	0.12	2
	12.3.5a	56	37	34	4	3	0	0	0
	12.3.6	2,007	649	68	402	41	0	8	0.6
	Total	14,243	4,510	68	1,964	205	14	10.12	11
Eucalypt	12.3.2	1,101	656	40	16	30	5	2	22
	12.3.11	301	161	47	39	6	0	0.15	0
	12.3.14a	572	52	91	36	0	0	0	0
	12.5.3	11,181	1,119	90	527	18	0.71	5	37
	12.5.6	328	102	69	7	0.06	0	0	0.22
	12.8.8	105	24	77	0	0	0	2	4
	12.8.14	60	3	95	0	0	0	0	0.25
	12.8.20	637	584	8	517	2	0	0.05	0.03
	12.9-10.4	4,982	948	81	179	53	11	0	0
	12.9-10.14	2,113	703	67	116	17	22	0.26	30
	12.9-10.14a	1,254	345	72	0	4	15	2	44
	12.9-10.17d	671	417	38	19	6	11	9	65
	12.12.2	43	35	19	0	0	0	0	0
	12.12.15	410	167	59	9	5	18	16	22
	Total	23,758	5,316	78	1,465	141	83	36.46	225
Rainforest	12.3.1	143.4	80	44	0.4	7	3	1	2
	12.8.3	57	23	60	3	0	0	2	3
	12.9-10.16	58	44	24	0	0.5	0	0	7
	Total	258.4	147	43	3.4	7.5	3	3	12

Please note: All extent figures have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.

Appendix H

Upper Stanley River catchment vegetation and conservation estate

					Conservation estate				
	Regional ecosystem				Protected areas (Ha)				Voluntary Conservation Areas (Ha)
Vegetation community	Classification	Pre-clearing Extent (Ha)	Current extent (Ha)	Extent loss %	State	Council	Nature Refuge	Covenants	Land for Wildlife
Heath and wallum	12.3.8	2	2	0	0	0	0	0	1
	12.8.19	9	9	0	9	0	0	0	0
	Total	11	11	0	9	0	0	0	1
Melaleuca	12.3.4	152	27	82	0	0	0	0	0
	Total	152	27	82	0	0	0	0	0
Eucalypt	12.3.2	508	113	78	0	10	0.7	5	9
	12.3.11	145	0.34	100	0	0	0	0	0
	12.5.3	98	30	69	0	0	0	0	0
	12.5.6c	20	0	100	0	0	0	0	0
	12.8.8	306	69	77	0.82	0	0	0.07	21
	12.8.14	137	42	69	0	0.6	0	0.31	3
	12.8.20	11	11	0	11	0	0	0	0
	12.9-10.4	1,464	328	78	31	0	0	0	0
	12.9-10.7a	103	8	92	0	0	0	0	0
	12.9-10.14	2,133	1,019	52	181	84	0	16	70
	12.9-10.14a	1,256	374	70	26	29	0	0	22
	12.9-10.17d	175	103	41	0	5	0	4	13
	12.12.2	984	489	50	0	0	0	30	77
	12.12.15	10	10	0	0	0	0	1	0
	12.12.15a	958	450	53	0	13	1	6	92
	12.12.15b	1	1	0	0	0	0	1	0
	Total	8,309	3,047	63	250	142	2	63	307
Rainforest	12.3.1	758	251	67	0	25	0	0.7	13
	12.8.3	1,230	368	70	112	1	4	3	56
	12.9-10.16	401	264	34	92	44	0	8	22
	12.12.1	296	200	32	0	6	0	14	44
	12.12.16	63	62	2	0	0	0	2	0.04
	Total	2,748	1,145	-58	204	76	4	28	135

Please note: All extent figures have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents.

Appendix I

Noosa River catchment vegetation and conservation estate

					Conservation estate				
	Regional ecosystem				Protected areas (Ha)				Voluntary conservation areas (Ha)
Vegetation community	Classification	Pre-clearing extent (Ha)	Current extent (Ha)	Extent loss (%)	State	Council	Nature Refuge	Covenants	Land for Wildlife
Heath and Wallum	12.2.12	0.33	0	100	0	0	0	0	0
	12.2.15a	0.33	0.33	0	0	0	0	0	0
	12.3.13	88	82	7	74	0	0	0	0
	12.5.9	45	25	45	9	0	0	6	7
	12.5.10	7	7	9	6	0	0	0	0
	Total	140.66	114.33	20	89	0	0	6	7
Melaleuca	12.2.7	126	61	52	12	20	0	0	1
	12.3.4	22	3	88	0	0	0	0	0
	12.3.5	129	99	23	60	0	0	0	2
	12.3.6	1	1	54	0.3	0	0	0	0
	Total	278	164	41	72.3	20	0	0	3
Eucalypt	12.2.6	4	4	0	0	3	0	0	0
	12.3.14a	37	29	22	5	0	0	2	6
	12.5.3	386	84	78	33	0	0	4	18
	12.5.4	31	26	17	19	0	0	0	0
	12.5.6	4	4	10	4	0	0	0	0
	12.8.20	41	41	0	41	0	0	0	0
	Total	503	188	63	102	3	0	6	24

*Gain in extent as a result of regional ecosystems reclassification

Please note: All extent figures have been rounded to whole numbers, except where extent values are less than 10,000m² (1ha). These values are reported to two decimal places to ensure representation of their limited extents

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