Sunshine Coast COUNCIL

Annie Hehir Road Environment Reserve
Management Plan

2019 – 2029

Your Environment Levy in action

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Disclaimer

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Cover photo: Watercourse within Annie Hehir Road Environment Reserve.

Contents

Executive Summary

Towering rainforest trees; ancient Gondwanan plants; shimmering mountain streams; and an abundance of wildlife are just some of the treasures that await visitors in this special place perched on the slopes of the Blackall Range.

Annie Hehir Road Environment Reserve is an exceptional conservation area containing high biodiversity values and pristine waterways, providing a rare glimpse into what parts of the Sunshine Coast hinterland would have looked like prior to European settlement.

The reserve is home to several rare and threatened plants and animals and connects to core habitat areas within the Upper Stanley River catchment and beyond.

Originally purchased by Sunshine Coast Council in May 2011 and later extended in June 2017 under the Environment Levy Land Acquisition Program, the reserve adds 63.25 hectares of land to the region's conservation estate—protecting a rich diversity of significant[1] flora and fauna and several poorly conserved regional ecosystems.

The topography of the site is broadly characterised by ridges, moderate to very steep slopes and gully lines that descend to fertile alluvial flats and terraces. Seasonal and permanent watercourses flow across the property into the Upper Stanley River which flows along the property's western boundary.

Five regional ecosystems, (RE's) have been identified within the site which include dry sclerophyll, wet sclerophyll and rainforest communities; including areas of 'Lowland Rainforest of subtropical Australia'—a 'critically endangered' ecological community that is protected under the *Environment Protection and Biodiversity Conservation Act 1999.*

The property supports at least 298 native plant species, including seven conservation significant plant species listed under State and Commonwealth legislation, and at least 145 native animal species, of which seven are listed as conservation significant species.

Although much of the reserve contains good habitat and connectivity values', 150 years of regular timber harvesting in areas has had a noticeable impact on vegetation structure and condition of the reserve particularly, within eucalypt dominated plant communities (McVerry 2014). Mature, hollow-bearing eucalypts are uncommon in the eucalypt forest communities and gaps in canopy cover have facilitated large incursions of lantana (*Lantana camara*) and other environmental weeds throughout the reserve. Nonetheless, in these areas a high level of resilience has generally been observed and is expected to recover its essential structure and function with good management (Stephen 2012).

The management intent for this reserve is to ensure the significant ecological values are protected and enhanced. Therefore, based on the site's high vegetation cover, limited access opportunities, and ecological sensitivities, this environmental reserve is in the management category of "Nature". Public access is supervised and managed through permits.

This management plan offers a comprehensive assessment of the reserve's ecological, social and economic values and describes management actions that will protect these values into the future. The plan will be reviewed in 5 years and management actions adapted where changes are required. The plan will be re-written after 10 years.

[1]Flora or fauna species listed as Threatened under the EPBC Act; Endangered, Vulnerable or Near Threatened (EVNT) or Special Least Concern under the *Nature Conservation Act 1992.*

1. Introduction

Council's Corporate Plan, (2019-2023) identifies council's vision for the Sunshine Coast to be "Australia's most sustainable region – Healthy. Smart. Creative". In order to achieve this, council has endorsed a range of strategic pathways and priorities for a healthy environment under the Sunshine Coast Environment and Liveability Strategy 2017 (ELS) which includes 'maintaining and expanding our natural assets'.

The ELS sets the strategic direction for the preservation and enhancement of the natural environment and the liveability of the region—ensuring native plants, animals, and habitats are healthy, resilient and valued by the community. A key policy position to delivering on this outcome is that priority habitat areas are protected, enhanced, connected and responsive to changing environmental conditions. This is supported through the Environment Levy Land Acquisition Program.

The strategic acquisition of Annie Hehir Road Environment Reserve helps to protect identified core habitat areas of the Sunshine Coast and significant regional ecosystems.

1.1 Purpose of the Management Plan

The purpose of this Management Plan is to describe the reserve's ecological, cultural, social and economic values and express the associated management actions required to maintain or enhance these values.

This Management Plan provides an adaptive management framework which has been developed under nationally recognised guidelines and principles of protected area management (**Appendix 1**).

The plan is subject to a review schedule underpinned by the framework of actions, relevant monitoring and evaluation strategies, and performance indicators described herein.

1.2 Management Intent

The operational reserve management category for this site in accordance with the ELS environment reserve desired standards of service is "Nature". Under this category the management intent is to ensure the significant ecological values are protected and enhanced (SCC, 2017c).

Nature reserves have significant ecological values and may provide habitat for threatened or locally significant species that contribute significantly to the Sunshine Coast's valued natural environment. They contain areas of remnant vegetation and may also contain areas of degraded habitat (cleared and non-remnant vegetation) that require rehabilitation to consolidate the reserve and build landscape connectivity. The natural and cultural assets of these reserves are typically highly sensitive to external impacts.

Secondary purposes include sustainable recreation, research, and education activities associated with the promotion and knowledge sharing of each site's ecological and cultural values.

Access is supervised and managed through permits.

Giant barred-frog (*Mixophyes iteratus*). Photo courtesy Ed Meyer.

2. Description of the Reserve

2.1 Location and Description

The reserve is located off River Road, Peachester, approximately 5km south southwest of Maleny (**Figure 1 and Appendix 8**).

The reserve is comprised of two Sunshine Coast Council freehold properties registered as Lot 5 on RP840233 and Lot 4 on RP840233—with a combined area of 63.25 hectares.

Entry into the reserve is via an access handle at 504 River Road and at a secondary access point near the junction of River Road and Vanohr Road at Peachester.

The majority of the reserve is covered by remnant vegetation that ranges from dry sclerophyll forest on ridges, to wet sclerophyll on hills and lower slopes, to notophyll vine forest along alluvial flats and within protected gullies.

The reserve is situated at the southern perimeter of the Blackall Range escarpment—in a valley that has been formed by the Upper Stanley River. Elevation at the site peaks at 279 metres above sea level (ASL) at the northeast corner and descends to its lowest point of 167 metres ASL in the southwest.

The site is broadly characterised by moderate to very steep slopes, ridges, crests and gullylines in eastern and northern areas that descend to fertile alluvial flats and terraces along the western boundary (**Appendix 2a**).

Ephemeral creeks originating from ridges and hills at the eastern and northern portion of the site drain into the western branch of the Upper Stanley River that flows in a northwest to southeast direction along the western reserve boundary (**Figure 1 and Appendix 2a**).

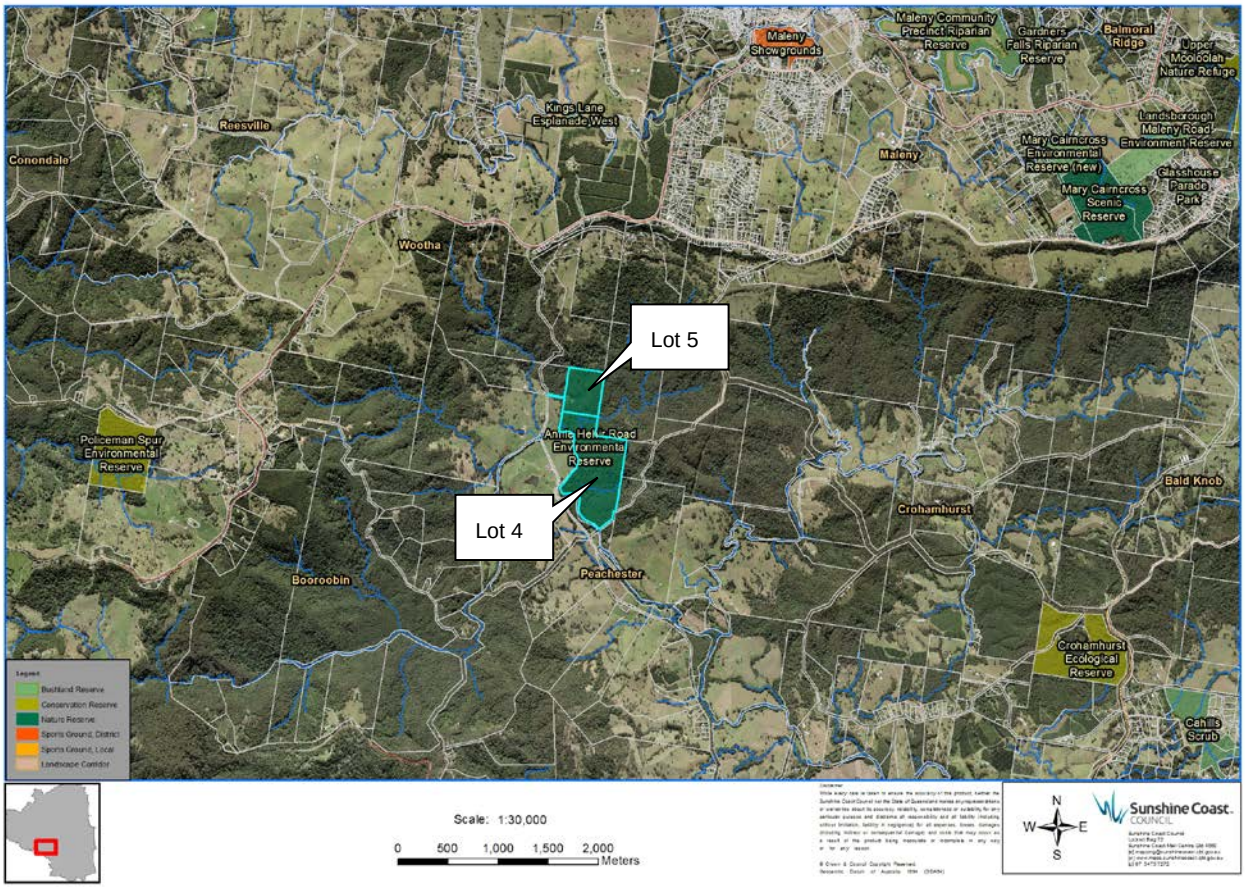


Figure 1: Location of the reserve

Catchment and landscape context

The northern and eastern boundaries of the reserve are connected to, and form a part of, a contiguous corridor of vegetation that runs along the southern perimeter of the Blackall Range escarpment (**Appendix 2b**). The corridor provides semi-contiguous links to a network of council-owned reserves, State-owned parks and forests, including the Bellthorpe and Conondale National Parks to the west and a number of council reserves and Crohamhurst Conservation Park to the east (**Appendix 2c, 2d and 8**).

The southwest and western boundaries are abutted by a narrow (0-50 metre wide) strip of riparian vegetation on the western side of the Upper Stanley River, followed by pasture land. Vegetated riparian corridors provide narrow linkages between the reserve and larger tracts of vegetation occurring further southeast and west of pasture land.

Geology and soils

The site's geology is delineated into 3 Land zones under the Queensland Government's Regional Ecosystems mapping (v10) (**Appendix 2e**). These include Land zone 9-10, which dominates the upper ridges and slopes, Land zone 12, occurring on hills and lower slopes, and Land zone 3, occurring on alluvial flats. Wilson and Taylor (2012) describe the 3 Land zones as follows:

- Land Zone 9-10: Cainozoic and Mesozoic coarse grained quartzose sedimentary rocks associated with outcropping fine grained sedimentary rocks
- Land Zone 12: Mesozoic to Proterozoic igneous rocks, forming ranges, hills and lowlands
- Landzone 3: Alluvial river and creek flats currently under freshwater influence, inland lakes and associated wave built lunettes. Includes a diverse range of soils

Soils in Landzone 3 areas are likely to have been enriched through movement of fertile material from the Blackall Range basaltic plateau.

The reserve photographed from River Road

2.2 Land Use History

Indigenous

Annie Hehir Road Environment Reserve is located in the foothills of the Blackall Range and is part of the traditional country of the Jinibara People. Jini means ‘lawyer vine’ and bara means ‘people’ in traditional Jinibara language. Traditional knowledge and cultural practices in land management prior to European settlement were responsible for shaping and maintaining the high biodiversity values of the region.

Traditional owners today have custodial obligations to maintain land and sea resources for the protection of biodiversity.

Management action

- Consult Jinibara People prior to any works that will cause ground disturbance in a previously undisturbed area.
- Support council‘s Reconciliation Action Plan (2017) commitment to build relationships with the local indigenous community to further reconciliation and include Welcome to Country at reserve events.

Early Settlement and Recent History

In the late 1850s, the ‘Bunya Proclamation’, which reserved the region for aboriginal people, was revoked by the new Queensland Government. The region was opened for European settlement and attracted settlers who were initially drawn by the high quality timber.

Consistent with historical records, there is evidence of multiple generations of logging at the property, including spring board notches, cut tree stumps and a network of logging trails and log loading areas. There is evidence that the reserve was last selectively logged within the past couple of decades (McVerry 2012). Properties to the east continue to be selectively logged.

Springboard notches at the central portion of reserve

Settlement in the ranges commenced in the 1870s—spurred on by the release of leasehold land by the Queensland Government. As part of the leasing agreements, settlers were required to make considerable ‘improvements’ to the land—by clearing and establishing agricultural crops or grass for grazing—before they could be purchased as freehold (McKay 2007).

Consistent with historical records, **Figure 2** shows that clearing to the west and south of the reserve for agriculture occurred prior to 1958. Land to the west and south of the reserve and at the top of the catchment on the Maleny plateau continues to serve as pastures for grazing. However in recent years land at the top of the catchment is being gradually subdivided for rural residential acreages and housing as well as tourism.

The reserve site was registered as a Land for Wildlife (LFW) property in 2007. Preliminary floristic assessments by council’s Community Conservation and Partnerships team (CCP) identified the property as containing exceptional ecological values worthy of protection (Clancy, N 2016 pers. comm., May 10).

The property was later purchased by council in May 2011 and extended in June 2017 under the Environment Levy Land Acquisition Program with the intent to manage the site's biodiversity values for conservation.

Figure 2: Aerial imagery showing land use history (images courtesy of Qld Government 2019)

1958 **1967** **1981**

1991 **2003** **2017**

3. Reserve Planning

3.1 Service Level

Reserve planning and annual management actions are guided by council's Environmental Reserves Service Level Framework (SCCd 2017). The service level is based on scoring matrix criteria which includes reserve size, connectivity, significant species, biodiversity and recreational use.

Under the reserve service level classification this reserve is classified as B1 – Nature. The reserve type is 'district'. There is no recreational service requirement for this reserve and therefore no recreational score.

Service level requirements under this classification are listed in **Table 1** and **Table 2**.

Table 1*:* Planning service level category B1 – "Nature"

Category	MP	BOA	Flora Assessment	Fauna Assessment	FMP	RWP
Nature B1	✓	✓	✓	✓	✓	✓
Frequency	10 yr	10 yr	10 yr	10 yr	10 yr	5 yr
Current Status	Draft	Complete 2011; 2017	Complete 2012; 2018	Complete 2014; 2018	Complete 2015	Complete 2012; 2018

MP = (this) Management Plan, BOA = Bushland Operational Assessment (a resilience-based condition assessment to guide management), FMP = Fire Management Plan; RWP = Restoration Works Plan.

Table 2: Maintenance Service Levels

Category	B1
Inspections	Monthly
Weed management	Monthly
Revegetation	As required
Prescribed burning – if required	as per FMP
Fire trail management drainage / surface maintenance	Annual
Fire trail slashing	1-6/yr
Fuel reduced zones vegetation management	1-6/yr
Tree management	Annual
Urgent & hazardous matter arising	24-48hrs

3.2 Management

The reserve is currently managed by Council's Natural Areas team, guided by this Management Plan and supporting technical documents. In addition to these, the Environmental Reserves Network Management Plan (ERNMP) (2017) provides an overarching management framework to guide priorities and review schedules for management and operational activities

The status and priority for management actions to date are described in **Table 3** below.

Table 3: Status of service level management action at Annie Hehir Road Environment Reserve (B1)

Management Action	Description	Status (priority)
Condition Assessment	Preparation of a resilience-based condition assessment – bushland operational assessment (BOA) to guide management.	BOA completed 2011 and updated in 2017.
Regeneration Works Plan	Preparation of a Regeneration Works Plan (RWP) to guide management.	RWP completed 2012 and updated in 2018.
Weed Management	Weed management is currently being implemented in accordance with the RWP and BOA.	Annual works implemented in line with service level for this reserve.
Trail Maintenance	Maintenance of access and fire trails.	Trails upgraded 2012 and 2015. Mapped on council open space layer for management and maintenance scheduling. Mainentance ongoing.
Sediment and Erosion Control	Monitor and mitigate track erosion. Closure of unused and erosion-prone logging trails to facilitate natural regeneration. Construct rock swale drains where tracks intersect low velocity watercourses / drainage lines to minimise bed disturbance and facilitate fauna movement. Engage neighbouring landowner to encourage fencing that restricts cattle access to river and off-stream watering points. Construct water diversion devices (e.g. whoa boys) at erosion-prone tracks.	Ongoing. 2015, 2017. Complete 2015. Maintenance ongoing. Ongoing. Complete 2015.
Access Gate	Install locked access gate at both entrances off River Road.	Installed 2013 and 2017.
Revegetation	Revegetate non-remnant areas within the reserve where required. Revegetate north west corner of Lot 4 on RP840233. Revegetate clearing along main track Lot 4 on RP840233. Revegetate areas around building on Lot 5 RP840233.	Various projects that have included initial planting and ongoing maintenance. Initial planting 2011. Infill planting and maintenance by contractors 2012 to 2016. Complete 2016. Maintenance ongoing Complete 2018 and 2019. Maintenance ongoing.

	Host periodic annual community planting days at site in collaboration with Bushcare Sunshine Coast.	Community planting days held April 2016; April 2018; and May 2019. 815 trees planted in partnership with community volunteers
Signage and fencing	Install reserve signage at access points. No fencing required.	Signage installed at entrance points in 2013 and 2017.
Tenure Protection	Protective mechanism over reserve such as formal conservation agreement between the State of Queensland and Council.	No current tenure protection. Investigate whether reserve can be protected as a Nature Refuge under a formal conservation agreement between the State of Queensland and Council. **(high)**
Values assessment	Undertake values assessments for: • Flora; • Fauna including birds, mammals, reptiles and amphibians; • Freshwater invertebrates (crustaceans and water insects); • Cultural heritage.	Assessments completed for: Flora survey 2012 and 2018; mammals and reptiles fauna survey and habitat assessment 2014 and 2018; frog habitat survey 2014; cultural heritage database search 2016, and 2017; Commission additional assessments for: **(low)** • Birds; • Freshwater invertebrates.
Hazards removed	Fallen tree limbs on trails	Ongoing

4 Reserve Values

4.1 Ecological Values

Values of the reserve have been documented through various assessment reports including the following resources which have been summarised in this management plan:

- Flora assessments (Thomas 2012; Willis and Vaughan 2018);
- Regional Ecosystem assessment and Property Map of Assessable Vegetation (Thomas 2011);
- Vegetation condition assessment - BOA (BTE 2011; South East Land Repair 2017);
- Regeneration Works Plan (Stephen 2012; Oliver 2018);
- Fauna survey and habitat assessment mammals and reptiles – (McVerry 2014; 2018);
- Frog survey and habitat assessment (Meyer 2014);
- Land for Wildlife property assessment (Lot 5 Plan RP840233 Lot 2 Plan RP134543) (Clancy, Smyrell & Wynn 2007).

Plant and animal data records are entered into a council database made available to the State Wildnet database.

Vegetation communities

A Property Map of Assessable Vegetation (PMAV) was prepared for Lot 4 on RP840233 in November 2011. The PMAV was certified by the Queensland Government Department of Natural Resources and Mines (DNRM) on 16 July 2012—replacing the regulated vegetation management map for this parcel of the reserve.

Observed regional ecosystem mapping delineates five regional ecosystems (RE) within the reserve (**Table 4** and **Figure 3**).

Changes were made to one RE classification, RE12.12.1, identified in Queensland Government RE mapping for the property (**Appendix 2e**). Ground truthing determined that the vegetation community is analogous to RE 12.12.16 rather than RE 12.12.1. Minor changes to RE boundaries were also made.

One ‘threatened ecological community’ (TEC)—'Lowland Rainforest of Subtropical Australia' (LRS)—has been recorded at the reserve. LRS is listed as 'critically endangered' under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). LRS is known to occur in two REs, 12.3.1 and 12.12.16 that are mapped over the property. RE 12.3.1 is also listed as 'endangered' under the Queensland *Vegetation Management Act 1999* (VM Act) (see **Appendix 2e** and **2f**). This RE is poorly conserved in the South East Queensland (SEQ) bioregion.

Management actions

- Map the extent of Lowland Rainforest of Sub-tropical Australia (LRS) at the reserve according to PMAV regional ecosystems, and descriptions, key diagnostic characteristics and condition thresholds in the Commonwealth Listing Advice for LRS.

Table 4: Regional Ecosystems at Annie Hehir Road Environment Reserve

RE	Status VMA*		Description	Distribution in the reserve[1]
	VM** Class	BD** Status		
12.3.1	E	E	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.	Confined to main alluvial creek line (upper reaches of Stanley River), particularly in western and northern portions of Lot 4 on RP840233.
12.9-10.14	LC	NC	*Eucalyptus pilularis* tall open forest on sedimentary rocks	Steep, upper slopes and top of ridge lines in the northeast sections of Lot 4 on RP840233.
12.9-10.14a	LC	NC	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.	On moderate to steep upper slopes which are predominately south-facing, in the northeast section of Lot 4 on RP840233.
12.12.15a	LC	NC	*Eucalyptus grandis* and/or *E. saligna* 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.	One large area in the east to southeast section and one area in the north section of Lot 4 on RP840233.
12.12.16	LC	NC	Notophyll vine forest. Characteristic species include *Araucaria bidwillii, A. cunninghamii, Argyrodendron trifoliolatum, Argyrodendron sp.* (Kin Kin W.D.Francis AQ81198), *Backhousia 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.	Sheltered, lower slopes in the midsection of Lot 4 on RP840233 and mid-southern section of Lot 5 RP840233.

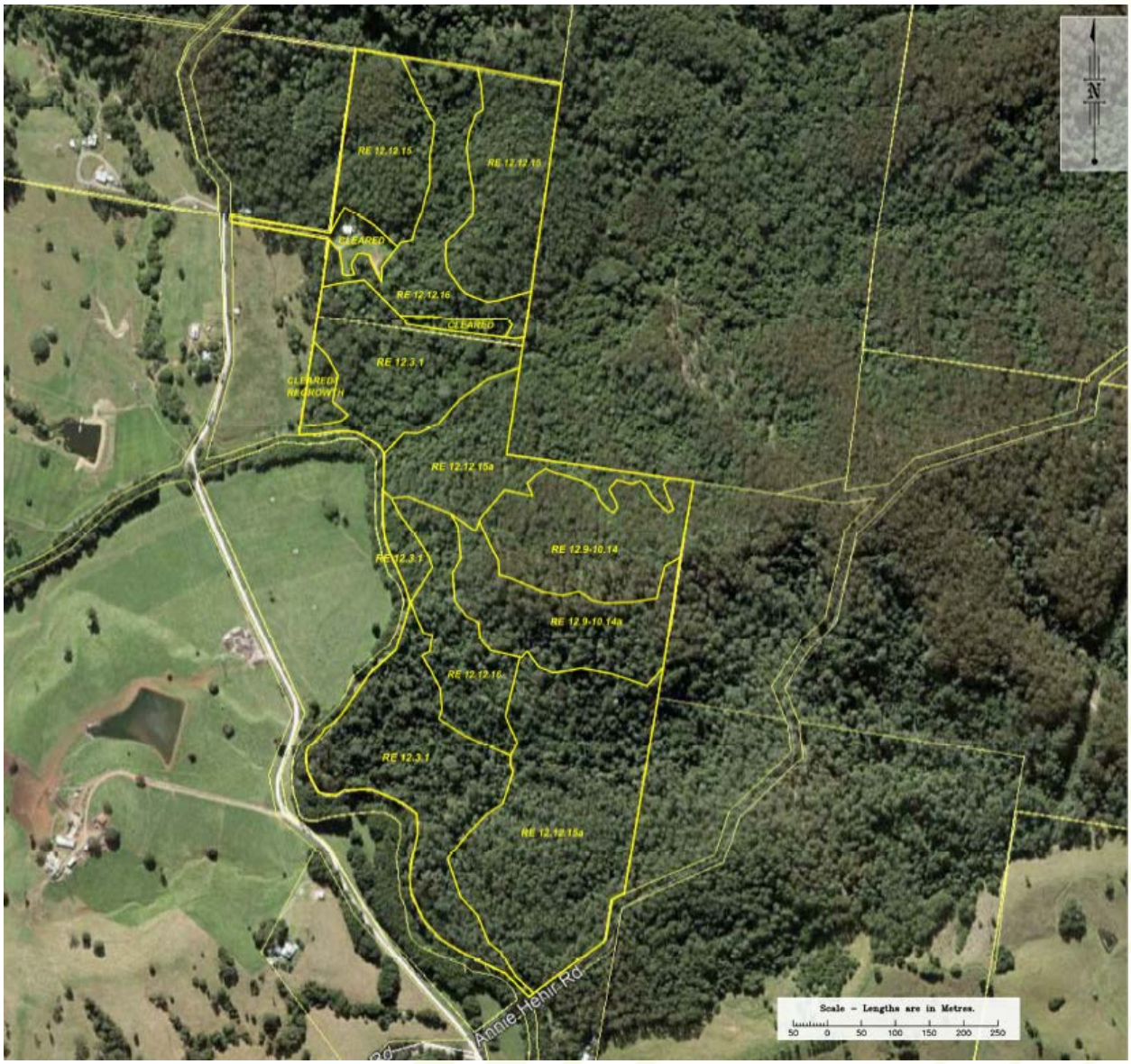
*VMA = Queensland *Vegetation Management Act 1999*,

**VM Class under the VMA = E = Endangered, LC = Least Concern, NC = No Concern, OC = Of Concern.

***BD = Biodiversity status is based on an assessment of the condition of remnant vegetation in addition to the criteria to determine the VM Class; BD status is used for a range of planning and management applications.

Site specific vegetation community descriptions and distributions are described in the Annie Hehir Road Environment Reserve PMAV report (Thomas 2011) and Flora Assessment report (Thomas 2012) Flora Assessment Report (Willis and Vaughan 2018).

Figure 3: Observed regional ecosystems at Annie Hehir Road Environment Reserve from Flora Assessment report (Thomas 2012) and Flora Assessment Report (Willis and Vaughan 2018)



Flora

At least 298 native flora species from 94 families have been recorded at Annie Hehir Road Environment Reserve (**Appendix 4**).

Of the 298 native flora species, seven species are listed as 'threatened' or 'near threatened' under Commonwealth and Queensland legislation.

Three flora species are classified as 'Vulnerable' under the EPBC Act and the Queensland *Nature Conservation Act 1992* (NC ACT), whereas four species are classified as 'near threatened' under the NC Act (see **Table 5**).

Management actions

- Record the location of all significant plants at the reserve using GPS. Provide threatened species mapping to contractors;
- Use EVNT plants in revegetation projects;
- Flag EVNT plants occurring along trails and in restoration areas to alert contractors and council personnel of their locations;
- Subsequent flora surveys to target significant species potentially occurring in the reserve that have not been previously recorded or that were not confirmed within reserve during previous assessments.

Rainforest within the reserve

Table 5: EVNT flora species found at Annie Hehir Road Environment Reserve

Scientific Name	Family	Common Name	Status	
			EPBC Act	NC Act
Gossia inophloia	Myrtaceae	thready-bark myrtle	-	NT
Macadamia ternifolia	Proteaceae	Maroochy nut	V	V
Nothoalsomitra suberosa	Cucurbitaceae	corky cucumber	-	NT
Pararistolochia praevenosa	Aristolochiaceae	birdwing butterfly vine	-	NT
Romnalda strobilacea	Laxmanniaceae	romnalda	V	V
Senna acclinis	Caesalpiniaceae	brush senna	-	NT
Syzygium hodgkinsoniae	Myrtaceae	red lilly pilly	V	V

Notes: V – Vulnerable; NT – Near Threatened

Fauna

Field surveys identified 137 native vertebrate fauna species at Annie Hehir Road Environment Reserve, comprising the following numbers of species in each of the major terrestrial vertebrate fauna groups:

- 9 Amphibian
- 66 bird species (incidental sightings)
- 24 ground dwelling and arboreal mammal species
- 13 microbat species
- 21 reptile species
- 4 fish species

As many as 18 microbat species may be present however five species were not reliably identified during fauna assessments. Two significant invertebrate fauna species were also located at the reserve (see **Table 6**).

A comprehensive fauna inventory is provided in **Appendix 5**.

The reserve supports seven significant fauna species that are listed under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* and / or the Queensland *Nature Conservation Act 1992* (see **Table 6**).

The reserve also contains suitable habitat and/ or previous nearby records of other 'threatened' species including:

- *Dasyurus maculatus maculatus* (spotted-tailed quoll)
- *Pteropus polycephalus* (grey-headed Flying-fox)
- *Coeranoscincus reticulatus* (three-toed Snake-toothed skink)

Management actions

- Subsequent fauna surveys to target species potentially occurring in the reserve that have not been previously recorded or that were not reliably identified during previous fauna assessments;
- Encourage partnerships with a research institution interested in assessing macroinvertebrate populations as a measure of ecosystem health.

Table 6: EVNT and significant fauna species known to occur at Annie Hehir Road Environment Reserve

Scientific Name	Common Name	Status	
		EPBC Act	NC Act
Adelotus brevis	tusked frog	-	V
**Euastacus urospinosus*	Blackall Range spiny crayfish	-	-
Litoria pearsoniana	cascade treefrog	-	V
Mixophyes iteratus	giant barred frog	E	E
Ornithoptera richmondia	Richmond birdwing butterfly	-	V
Phascolarctos cinereus	koala	V	V
Podargus ocellatus plumiferus	plumed frogmouth	-	V
Potorous tridactylus tridactylus	long-nosed potoroo	V	V
Tachyglossus aculeatus	short-beaked echidna	-	SLC

Notes: E = Endangered; V – Vulnerable; * Blackall Range spiny crayfish is Endangered on IUCN Red List; SLC = 'special least concern' under the NC Act.

Habitat and ecosystems

The reserve is contained within a semi-contiguous tract of core habitat that spans from Maleny in the north, Landsborough in the east, Beerburrum in the south and Booroobin in the west (**Appendix 2c**). Patches of connecting habitat surround the core habitat parcel, providing tenuous links to other core habitats in the broader landscape.

The reserve is also situated within a state corridor, which runs from Kenilworth in the west to Bellthorpe in the southwest through to Eudlo in the northeast, and connects with several other state and regional corridors (see **Appendix 2d**).

The diversity of landforms, watercourses and vegetation types at the reserve provide a wide variety of potential habitat for flora and fauna.

The network of watercourses and drainage lines encompass a variety of substrates (silt to boulders), hydrological flow features (riffles, pools and runs) and regimes (permanent and ephemeral). They provide important habitat for numerous amphibian and fish species, including three 'threatened', wet forest, stream-breeding frog species and the 'locally significant' Blackall Range spiny crayfish that inhabitats rainforest with well-oxygenated waters and ample log and rock habitat (for burrowing) (McVerry 2014).

Understorey habitat is considered to be in good ecological condition, as evidenced by the abundance of leaf matter and fallen logs observed, and the diversity and abundance of terrestrial mammals and reptiles (McVerry 2014).

The reserve features suitable breeding habitat for Richmond birdwing butterflies (moist subtropical rainforests containing the larvae's host plant, Birdwing butterfly vine) and native plants that may provide nectar for adult butterflies (Wildlife QLD 2013).

Sclerophyll forests provide important food and habitat trees for koalas inhabiting the reserve. For example, tallowwood is regarded as a 'preferred' koala

food tree whereas pink bloodwood, flooded gum and blackbutt are regarded as 'supplementary' koala food trees in the region (Sunshine Coast Koala Conservation Plan 2015). Non-eucalypts, such as brush box, provide potential food and habitat opportunities.

Potential koala habitat at northeast portion of reserve

Koala habitat has been degraded by historical logging at the reserve, which has increased the distance between trees, forcing koalas to travel on the ground where they are susceptible to wild dog attacks (McVerry 2014).

All arboreal mammals were recorded in lowland rainforest areas that retain adequate tree-hollow habitat (McVerry 2014). Historical logging has substantially reduced the number of mature, hollow-bearing trees in wet and dry sclerophyll forests and may account for the low number of bat calls and lower than expected diversity and abundance of arboreal mammals recorded during fauna assessments (McVerry 2014).

Management actions

- Collaborate with neighbouring landowners to enhance native vegetation corridors through surrounding pastures. Provide materials and advice to landowners through Land for Wildlife and other incentive programs;
- Investigate and promote the use of animal sensitive road design principles and practices on State and local roads to provide safer connectivity between linking habitat patches. Including additional wildlife signage, reduced speed limits and retention of large roadside trees to provide safe passage for arboreal mammals;
- Continue maintenance at riparian revegetation sites to enhance habitat for threatened wet forest frogs;
- Continue to consolidate canopy cover through the removal of weeds, especially large patches of lantana, to promote natural regeneration.
- Continue planting revegetation areas with food and habitat trees for significant fauna occurring at the reserve.
- Consider expansion of protected area in surrounding core and connecting habitat in the local area and along the riparian corridor.

4.2 Cultural and Social Values

Indigenous

Annie Hehir Road Environment Reserve is located within the native title determination area of the Jinibara People.

The Jinibara People made their first native title application in 1998. In November 2012, the Jinibara People were recognised by the Federal Court of Australia as the determined native title holders for their traditional country. Determination is held by the Jinibara People Aboriginal Corporation, the prescribed body corporate for the Jinibara People. Determination recognises a range of rights of the Jinibara People including the maintenance of “sites, objects, places and areas of

significance to the native title holders under their traditional laws and customs and protect by lawful means those sites, objects, places and areas from physical harm or desecration". In addition, under the State's *Aboriginal Cultural Heritage Act 2003*, the Jinibara People are the Aboriginal Parties for their traditional country.

A search of the Cultural Heritage Database and Register for Lots 4 and 5 on plan RP840233 (DATSIP 2016, 2017) advised that at the time of purchase there was no Aboriginal cultural heritage sites or artefacts recorded. The absence of recorded Aboriginal cultural heritage, however, may simply reflect a lack of cultural heritage surveys in this area. Since the majority of the Annie Hehir Road Environment Reserve is undeveloped and undisturbed, there is potential for unrecorded Aboriginal cultural heritage to be present.

All significant Aboriginal cultural heritage in Queensland is protected under the *Aboriginal Cultural Heritage Act 2003*, and penalty provisions apply for any unauthorised harm. Under the legislation a person carrying out an activity must take all reasonable and practical measures to ensure the activity does not harm Aboriginal cultural heritage.

To assist in meeting this duty of care, there are *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines that should be followed. It is a requirement under these guidelines for the relevant Aboriginal party to be consulted prior to any works that will cause ground disturbance in a previously undisturbed area.

Management action

- Consult the Jinibara People prior to any works that will cause ground disturbance in a previously undisturbed area.

Ecological Restoration

The condition of remnant vegetation within the reserve ranges from 'moderate' to 'excellent' with the majority of areas falling within the 'very good' category under Council's Bushland Operation Assessments (BOAs).

As part of establishment and operational works, contractors have been engaged to carry out natural area management which has included weed control and tree planting activites. Contractors have been applying bush regeneration methods in disturbed areas to encourage the natural regeneration of native plant communities.

A number of tree planting projects have occurred within the reserve since 2011, revegetating several areas that have been historically cleared. Most of these projects have involved participation from community volunteers, including school students.

The most recent tree planting events occurred in 2018 and 2019 in the area surrounding a historical house site on Lot 5 on RP840233 with students from Peachester State School.

School planting site April 2019

Council has implemented a nest box program at the reserve to increase the availability of hollow and roost habitat for arboreal mammals and bats respectively. Inspections by council personnel have revealed that nest boxes are effectively emulating natural tree hollows and providing habitat for a range of fauna species. McVerry (2014) estimates that approximately 20 hectares of the reserve requires habitat supplementation (e.g. provision of nest boxes or hollows).

Clearing that is naturally regenerating at the reserve following the removal of *Lantana camara*

Restoration works are also underway in the surrounding landscape on private land through LFW and other landholder incentive programs.

"Due to its exceptional ecological values, high number of threatened species and crucial landscape functionality, the Upper Stanley catchment is considered a key priority area for Community Conservation and Partnerships extension and incentive programs" (Clancy, N 2016 pers. comm., 10 May).

The not-for-profit, non-government organisation, Healthy Land and Water, works in partnerships with numerous stakeholders, including government, landowners and volunteer community groups, to coordinate restoration activities in the Stanley River Catchment. The organisation is involved in determining priority management areas and planning, coordination and monitoring of onground restoration projects. Healthy Land and Water is working with landowners in the Upper Stanley Catchment and council's Community Conservation and Partnerships team who deliver the Land for Wildlife program.

Management actions

- Maintain tree planting sites;
- Inspect and maintain existing nest boxes;
- Install additional nest boxes in areas where tree hollow density is low;
- Monitor and manage areas where highly invasive weeds have been treated previously;
- Continue bush regeneration activities across the reserve;
- Expand revegetation projects into new areas as required;
- Continue partnerships with Healthy Land and Water to facilitate catchment-wide management.

Research and education

McVerry suggests undertaking a controlled nest box study whereby 2 x 10-hectare plots, a treatment and control plot, are established and the pre-and post treatment diversity and abundance of arboreal fauna is measured. The study could also measure the effect of nest box design, placement and other factors on usage. Study results may be used to inform future decision-making regarding habitat supplementation at council reserves.

Meyer (2014) also suggests undertaking a study to measure the influence of revegetation works at the northwest corner of Lot 4 on RP840233 on amphibian populations using data retrieved from the site in 2013 and 2014 as a baseline for subsequent surveys.

Education pertaining to the reserve is provided to landowners during community and annual school events onsite, via the Land for Wildlife program, direct contact with council officers and community letters.

There may be an opportunity to use the existing building on Lot 5 on RP840233 as a research facility (subject to council approval). This building could potentially be made available to research institutions such as universities to carry out scientific research relevant to the reserve.

Management actions

- Undertake a controlled nest box study at the reserve to determine the impact of habitat supplementation on arboreal mammals and bats at the reserve;
- Undertake frog surveys at riparian habitat within the northwest revegetation site on Lot 4 on RP840233 to determine the effectiveness of rehabilitation works in providing habitat for EVNT species. Use baseline data collected by Meyer (2014);
- Promote partnerships with research institutions for monitoring, data collection and scientific research;
- Encourage research at this reserve to reduce pressure on popular research hubs such as Mary Cairncross Scenic Reserve;
- Continue to coordinate public restoration projects to involve the community in reserve management and to provide an opportunity for information sharing pertaining to the reserve's conservation values and management.
- Consider promoting the use of the existing building on Lot 5 on RP840233 as a research facility.

Recreation / eco-recreation

Annie Hehir Road Environment Reserve is primarily being managed for the conservation and protection of threatened flora, fauna and ecological communities.

The reserve has not been assigned a recreational score as there is no existing recreational infrastructure.

There is opportunity for supervised (eco) recreational use at the reserve through guided interpretive walks, rainforest identification and restoration workshops (Morgan, G 2016 pers. comm., 9 May). The reserve is also an ideal location for community environmental groups (e.g. Birdlife Southern Queensland) to conduct passive wildlife surveys.

Some of the open areas around the existing building on Lot 5 on RP840233 could potentially be used for small camping groups (subject to council approval).

Management actions

- Consider supervised recreational use at the reserve through guided interpretive walks, small group camping, rainforest identification and restoration workshops.
- Promote partnerships with community groups such as Birdlife Southern Queensland.

4.3 Economic Values

Conservation of biodiversity values at Annie Hehir Road Environment Reserve may contribute to the local and broader economy by supporting nature-based tourism and through provision of ecosystem services.

The reserve may enhance tourism values at nearby reserves and national parks by helping to maintain healthy, viable populations of flora and fauna, particularly of long-ranging species.

Sustainable land management practices at the reserve also contributes to the health and integrity of waters occurring in the lower catchment. In doing so, the reserve supports aquatic and terrestrial biota and ecosystems that provide for tourism, recreation and commercial operations. Furthermore, the reserve is in the watershed of Somerset and Wivenhoe dams—the main water supply for Brisbane and the greater Ipswich area.

4.4 Condition of Values

The reserve contains relatively intact original vegetation which is representative of the Sunshine Coast hinterland. This is a rare quality that highlights the conservation significance of this site.

A condition assessment of the site has found the majority of the reserve to be predominantly in very good condition and mostly weed free.

Council's Bushland Operational Assessment (BOA) provides a mapping tool to assess the vegetation and habitat condition of a site according to the level of resilience, structural diversity and recruitment. BOAs have been completed at this site in 2012 and again in 2017 (see **Figure 4**).

The BOA is useful as a vegetation condition assessment tool to guide bush restoration activities.

A summary of the more recent 2017 BOA is as follows:

- The condition of most of the reserve was ‘good’ to ‘very good’, with a large riparian area of remnant notophyll forest in the northern section of the reserve in ‘excellent’ condition.
- Areas in 'good' to 'very good' condition are predominantly regrowth sclerophyll and notophyll communities with some remnant vegetation and scattered incursions of weeds.
- Some areas were observed to be in 'poor' condition. These areas had been cleared of vegetation in the past and some sections have since undergone revegetation and assited natural regeneration.

Historical logging is a major factor influencing the condition of vegetation at the reserve—with logging infrastructure and the selective clearing of large trees negatively impacting on the condition and composition of understorey vegetation (McVerry 2014). Gaps in canopy cover have facilitated growth of dense lantana thickets throughout the reserve that have been targeted by contractors since 2011. Logging trails and loading areas also provide ideal conditions for exotic grasses to grow and be transported by vehicles. Many of these tracks have been de-commisioned and allowed to regenerate following Council acquisition.

Bushland to the north and east minimises the potential for weeds and pollutants to be delivered from higher in the catchment.

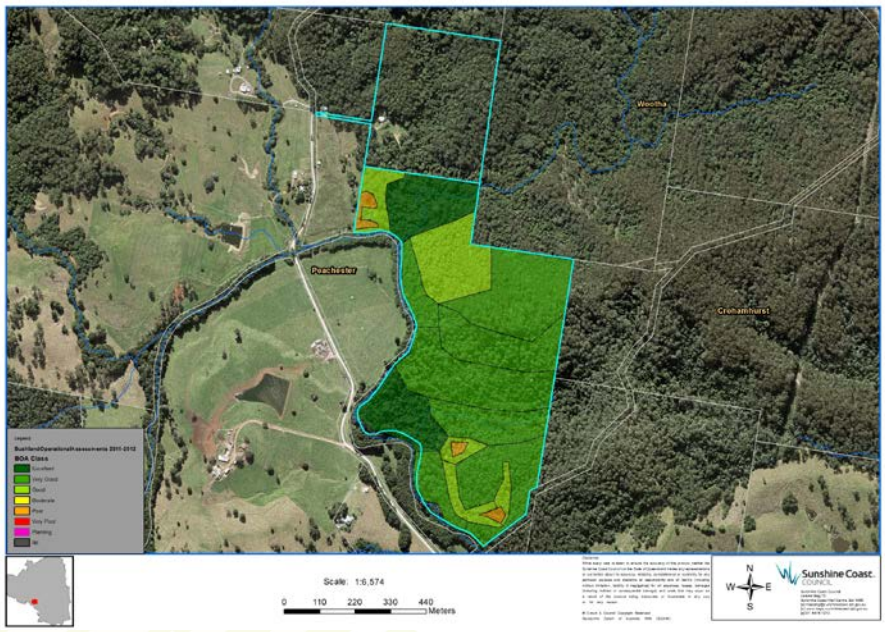
There are no obvious signs of weeds being transported to the reserve via the Upper Stanley River—although poor land management practices occurring along the river and its tributaries remains a threat to biodiversity values at the reserve. For example, past damming at an adjoining property corresponded with a spike in sedimentation at a watercourse that supports ‘threatened’ frog species. Lack of native riparian vegetation and corresponding bank scouring in sections of the Upper Stanley River and its tributaries is also likely to increase sedimentation at the reserve.

None of the EVNT frog species observed during surveys showed obvious signs of disease, such as those associated with chytridiomycosis.

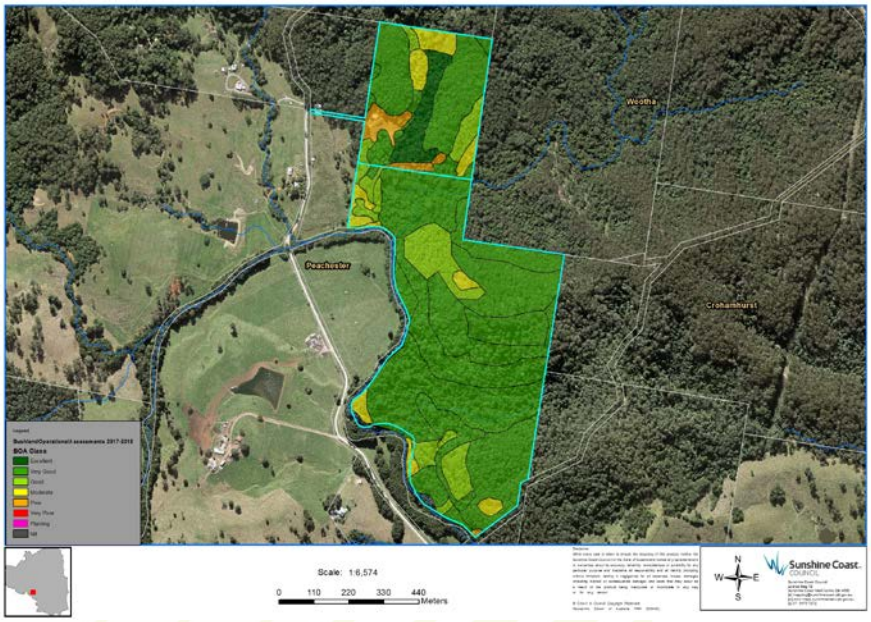
Management actions

- Undertake a BOA every five years to determine changes in vegetation condition and to measure success of restoration works;
- Undertake periodic water quality assessments to determine aquatic ecosystem health at the reserve and sources of pollutants from the upper catchment;
- Monitor and manage exotic grasses on old logging trails;
- Collaborate with neighbouring landowners to manage bank erosion occurring on the Upper Stanley River. Provide materials and advice to landowners through Land for Wildlife and other incentive programs.

Figure 4. Bushland Operational Assessment (BOA)



(a) November 2011



(b) October 2017

5. Bioregional and Landscape Context

The bioregional landscape descriptions which have been included here may be used to support any future recognition of this site as part of a national reserve system (CoA, 2010). Under the Convention of Biological Diversity, Australia's target is to have 17% of the continent protected in the National Reserve System (CoA, 2012).

5.1 IBRA

Interim Biogeographic Regionalisation for Australia (IBRA) is endorsed by all levels of government as a key tool for identifying land for conservation. Australia's landscapes have been classified into 89 large geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. Annie Hehir Road Environment Reserve is within the SEQ bioregion (no.74), which has a total area of 7,804,921 hectares. 13.91% of the SEQ IBRA region is protected in reserves and 20.35% of the Burringbar-Conondale Ranges subregion (SEQ03) that includes this site is protected in reserves (CoA, 2012).

5.2 Catchment

The reserve is located within the Upper Stanley River subcatchment at the northeast corner of the Stanley River catchment (See **Appendix 2b**). The headwaters of the subcatchment are positioned on the southern slope of the Maleny-Stanley River Road and Mountain View road ridgeline—approximately 1.9 kilometres north of the reserve. Waters from the subcatchment flow in a general southwest direction—eventually draining into Somerset Dam and then Wivenhoe Dam (SEQ Catchments n.d).

5.3 Local Planning Context

The area falls within the Sunshine Coast Council Planning Area. Under the Sunshine Coast Planning Scheme 2014 the conservation values of this site have been identified and protected.

5.4 CAR Contribution

Comprehensive: There are five REs occurring within the reserve that are included in the SEQ bioregion and SEQ03- Burringbar-Conondale Ranges IBRA sub-region. Two of these REs, 12.3.1 and 12.12.16 contain characterisics diagnostic of the TEC, LRS (Lowland Rainforest of Subtropical Australia) protected under the EPBC Act. RE 12.3.1 is also listed as 'endangered' under the Queensland VM Act (see **Appendix 2e and 2f**). This RE is poorly conserved in the South East Queensland (SEQ) bioregion.

Adequate: The reserve comprises 63.25 hectares of predominantly remnant vegetation in 'good' to excellent' condition, including 'endangered' vegetation under the VM Act and 'critically endangered' LRS under the EPBC Act. Endangered and potential LRS vegetation comprises 19.76 hectares (40%) of the total reserve area.

The reserve forms part of a semi-contiguous vegetated corridor that spans from Maleny in the north, Conondale Ranges in the west, Landsborough in the east and Beerburrum in the south—providing ecological linkages between numerous protected areas and state forests (See **Appendix 2c**).

Representative: The reserve encompasses a range of vegetation types that vary in composition and structure according to the different topographical and geological features of the property. Vegetation communities are broadly grouped into dry sclerophyll forests occuring on ridges and upper slopes, wet sclerophyll forests on lower slopes and notophyll vine forest on alluvial plains and in gullies.

The range of habitat opportunities, in conjunction with connectivity values, support threatened flora and fauna.

Management action

- Enhance connectivity values through further land acquisition.

6. Management Issues

6.1 Regional Background

The SEQ region is the most densely populated part of Queensland, experiencing rapid growth over the previous two decades (Ambrey and Fleming, 2011).

The SEQ bioregion has been identified as an area which is at a critical threshold, where increased development throughout the urban footprint is likely to lead to increasing loss and degradation of remaining ecosystems and habitat for wildlife (Peterson *et al.* 2007).

To address these challenges and protect the beauty and richness of the natural areas, native plants and animals—will require the protection and restoration of important habitat corridors, catchments, and remnant vegetation. Therefore reserve areas such as Annie Hehir Road Environment Reserve will play an important role in protecting ecological function and associated biodiversity for SEQ.

6.2 Preliminary Risk Analysis

Throughout the establishment phase of works undertaken on this reserve, a range of risks have been identified which may affect council's capacity to protect and restore biodiversity values of this site.

Table 8 below highlights identified risks and corresponding opportunities proposed to address each of the risks. These opportunities are captured in the management actions included in this plan (see **table 9**).

Table 8: Summary of reserve management risks and opportunities

Risks	Opportunities
Decline in EVNT populations	• Encourage neighbouring landholders to register for Land for Wildlife and other incentive programs that provide support to landowners managing threatened species and associated threats on their properties; • Undertake targeted EVNT searches on neighbouring properties. Map and inform landholders of EVNT locations (especially where logging activities persist); • Partnerships with research institutions.
Degradation of threatened regional ecosystems	• Continue to consolidate rainforest by managing weeds and facilitating natural regeneration; • Monitor the condition of vegetation communities to inform future priorities for restoration works.
Invasive animals	• Educate local residents of their responsibilities to managing their domesticated animals and the values of the reserve; • Undertake invasive animal management for wild dogs, cats, pigs, foxes and deer; • Undertake condition assessment of boundary fencing to identify repairs / replacement / new construction requirements, preferably using animal friendly designs; • Establish an on-going invasive animal monitoring program to monitor populations and impacts to the reserve and its values; • Partnerships with neighbouring landowners to prevent livestock entering property.

Prohibited, restricted and invasive plants	• Educate local residents of their responsibilities to manage invasive plants and the values of the reserve; • Coordinate weed management with adjoining landowners; • Ongoing management to monitor, control and progressively remove all invasive environmental weeds from the reserve.
Vegetation canopy decline	• Facilitate natural regeneration of canopy species by continuing weed management in accordance with RWP and BOA; • Consider revegetation works where canopy highly degraded.
Patch isolation	• Enhance connectivity of native vegetation by revegetating and restoring areas degraded by weeds and previous land management practices; • Enhance connectivity values in broader landscape by providing support to landowners through Land for Wildlife and other incentives programs, and through further land acquisition.
Costs associated with maintaining trail networks	• Recreational partnerships; • Maintain environment levy establishment investment to build long term resilience and reduce future maintenance costs.
Fire	• Controlled burns to serve dual purpose for weed management; • Opportunity to test innovative methods such as responses of 'threatened' flora species to fire and mechanical disturbance.
Pathogens	• Partnerships with research institutions;

Land for Wildlife and other incentive programs may provide assistance to landholders to revegetate riparian areas and manage bank erosion on western bank of Upper Stanley River

6.3 Invasive plants and animals

There are at least 41 invasive plant species recorded for the reserve. Of these, six are declared under the *Biosecurity Act 2014* as 'Restricted Invasive'. The remaining 35 species are either unclassified or identified in the Sunshine Coast Council Biosecurity Plan (2017e) as locally significant invasive plants.

Broad-leaved paspalum (*Paspalum mandiocanum*) and lantana (*Lantana camara*) are commonly encountered in disturbed areas within the reserve. Both species have the potential to suppress the natural regeneration of native species of plant.

All invasive plant species recorded from the plant surveys are listed in **Appendix 6**.

Nine invasive animal species have been recorded within the reserve, including foxes and feral varieties of dog, cat and pig. Five of the invasive species recorded are listed under the *Biosecurity Act 2014* as 'Restricted Invasive' (see **Appendix 7**).

Domestic cows and goats have been observed within the reserve on occasion. Cows and goats have the potential to degrade biodiversity values and revegetation areas by trampling and grazing on the tips of juvenile plants and by facilitating soil erosion and compaction. Cattle grazing on the western side of the upper Stanley River have already degraded understorey vegetation in the riparian area. They are also likely to be impacting fauna habitat, such as water rat (*Hydromys chrysogaster*) and platypus (*Ornithorhynchus anatinus*) burrows (McVerry 2014), and have the potential to destroy threatened plant species occuring in the riparian area.

Diggings consistent with feral pigs have been observed in the north of the reserve. Feral pigs may negatively impact biodiversity values by feeding and digging up native plants, causing soil erosion, eating native amphibians, reptiles and small mammals and by spreading weeds (DEC 2005). Of particular concern is the threat they pose to a giant barred frog population occuring in the northern portion of the reserve (Meyer 2014).

Wild dogs and feral cats are generalist predators that hunt a wide range of native fauna, including koalas (*Phascolarctos cinereus*) and long-nosed potoroos (*Potorous tridactylus*). The European fox is also a known predator of the long-nosed potoroo.

Council manages invasive animal populations through its Healthy Places – Feral Animal Education and Control Team and in accordance with the Sunshine Coast Council Local Government Area Biosecurity Plan 2017. Invasive animal monitoring and control by this team has been ongoing in this reserve.

Management action

- Implement invasive plant and animal management activities in line with RWP and Sunshine Coast Council Local Government Area Biosecurity Plan 2017.
- Continue to engage with the neighbouring landowner regarding exclusion of cattle and goats from the reserve. Further investigate grants available to fund construction of a fence along the Upper Stanley River and off-stream watering points
- Avoid using pesticides and wetting agents in close proximity to riparian frog breeding habitat, and other important habitat areas (Meyer 2014);
- Develop ongoing community education aimed at preventing threats to biodiversity values by invasive plants and animals from neighbouring properties;
- Involve the community in monitoring of conspicuous invasive species such as fox and wild dogs on their properties or at reserve boundaries;
- Implement an active monitoring and control program targeting wild dog, fox, pig and cat.

6.4 Pathogens

Myrtle rust is a plant disease caused by the exotic fungus *Puccinia psidii*. Myrtle rust has been found throughout the Sunshine Coast on trees and shrubs in the Myrtaceae family of which numerous species can be found within this reserve.

Symptoms include defoliation, leaf deformity, reduced fertility, stunted growth and plant death.

Infected plants left untreated will continue to produce spores and increase the chances of other myrtaceous plants nearby becoming infected.

Brown root rot is a plant disease caused by *Phellinus noxius*, which is a naturally occurring rainforest fungus that can negatively impact some native species of plant. It is anticipated that the risk of introducing this disease into the reserve is low because of the reserve category nature—access is restricted and managed through research permits and supervision.

The Department of Agriculture and Fisheries (Qld Government, 2018) website provides information on the identification and management of this Brown Root Rot fungus and myrtle rust.

Management actions

- Surveillance for myrtle rust within the reserve;
- Surveillance for brown root rot with the reserve;
- Promote partnerships with Queensland Government and researchers for monitoring, data collection and research pertaining to pathogens occurring at reserve;
- Maintain reserve category to reduce pathogen impacts.

6.5 Fire

There is limited knowledge of the reserve's fire regime prior to council acquisition. Stephen (2012) observed '...evidence of recent positive disturbance through fire' in dry sclerophyll forest.

A detailed Fire Management Plan (FMP) was prepared by council in May 2015. The FMP aims to '...address community safety and the maintenance of ecological values' at the reserve in accordance with the relevant state and local laws (Reif 2015).

The FMP considers the increased potential for fire at the reserve given the surrounding vegetated landscape and steep terrain. The plan also considers findings and recommendations from flora and fauna assessments, including:

- recommendations by Meyer (2014) to manage fuel loads in adjoining dry forest to reduce the risk of wildfire entering riparian rainforest, particularly at important threatened frog habitat in the north and far west.
- recommendation by McVerry (2014) to undertake patch burning to maintain a range of successional stages
- requirements to maintain a range of habitat types for the diversity of fauna and flora occuring at the reserve.

The FMP highlights the need for cooperation with neighbouring landowners to facilitate controlled burns in the northeast and eastern portions of the reserve.

A low-intensity controlled burn was conducted in May 2016 at an area of dry sclerophyll forest in the central and eastern portion of the property. The primary objective of this burn was to encourage germination of open sclerophyll forest species (Reif, M 2016 pers. comm., 20 May).

The existing maintained fire trail network provided authorised vehicle access for management purposes.

Management action

- Continue to coordinate fire management with the Bushfire Management team in accordance with the FMP for this reserve.

6.6 Erosion

A number of trails at the reserve are susceptible to erosion where they occur on steep terrain or where they are intersected by a watercourse or drainage feature.

Erosion on trails can create unsafe driving conditions and degrade aquatic ecosystems by raising sedimentation levels.

Boggy area on trail adjacent watercourse crossing

Primary trails have been upgraded to include water diversion devices (e.g. whoa boys) and rock swale drains in erosion-prone areas. Unused and erosion-prone logging trails have been closed to minimise erosion caused by vehicles and to facilitate natural regeneration.

Bank scouring is evident in sections on the western bank of the Upper Stanley River immediately outside of the reserve where riparian vegetation is scarce or absent. Erosion impacts caused by cattle to the river banks was also observed in these areas.

Sedimentation in a watercourse upstream of the reserve indicates that erosional processes are occuring in the upper catchment.

Management actions

- Regularly monitor and where necessary mitigate trail erosion;
- Continue to engage neighbouring landowners to encourage good land management practices that minimise soil erosion. This includes fencing to restrict cattle access to watercourses and off-stream watering points.
- Look for opportunities to protect and revegetate unformed-gazetted road reserves and unallocated state land containing Stanley River riparian habitat.

6.7 Historical Land Use

Vegetation Clearing

Broad-scale clearing for agriculture has occurred to the west and south of the reserve. Within the reserve, a 0.907 hectare area of land at the northwest corner of Lot 4 on RP840233 was historically cleared and used as a horse paddock (see **Figure 1 and 2**). Clearing has also occurred on Lot 5 on RP840233 around a historical house and shed site (shed removed in 2017).

Clearing for old logging trails has occurred on both parcels within the reserve.

Stock Grazing

Properties to the west and south of the reserve are under grazing by livestock goats and cattle. Western reserve boundaries are fenced to exclude livestock except in the south, where livestock can enter the reserve when water levels in the Upper Stanley River are low.

Management actions

- Engage with neighbouring landholders to remove stock from the watercourse and restore riparian habitat;
- Undertake condition assessment of fencing, where present, to identify repairs/replacement new construction requirements, preferably using animal-friendly designs.

Timber Extraction

The reserve site was historically logged for timber over a period of 150 years, with the most recent harvest occurring within the past 20 years (McVerry 2012).

Vegetated properties to the east and northeast of the reserve have also been historically logged. A sawmill company currently owns several properties to the east / northeast of the reserve and may harvest timber there in the future.

Management actions

- Collaborate with neighbouring sawmill company to ensure logging activities do not negatively impact ecological values at the reserve;
- Consider erecting council signage at northern and eastern reserve boundaries to clearly display property boundaries to logging personnel.

Visitor Use and Impact

The impact from visitor use is negligible, as access is supervised and managed through permits.

6.8 Climate Change

Research to date indicates that climate change will threaten ecosystems through loss of plant and animal species, loss of habitat, proliferation of weed species, and increased bush fire risks. Stream processes may also be impacted by increased flood events.

The ELS recognises that climate change is a significant long-term threat to the area's biodiversity. Strategies such as protecting habitat, rehabilitating areas, enhancing wildlife corridors and reducing invasive species are suggested to help wildlife adapt to changing conditions and also provide the potential to sequester carbon.

Management actions

- Through the conservation partnerships program, work with adjacent landholders to build resilience in stream ecosystems by restoring riparian vegetation and controlling bed and bank erosion that has potential to impact on the reserve;
- Consider expansion of protected area in surrounding core and connecting habitat in the local area;
- Build resilience to change through habitat connectivity.

7. Implementation Plan

7.1 Purpose of the protected area

To protect and restore the biodiversity values associated with the reserve; to create, consolidate and protect future connectivity values to link the existing surrounding conservation estate; and to facilitate nature based recreation and education.

7.2 Management objectives

Council has ascribed the following management objectives to achieve the purpose:

- Manage the area in order to perpetuate, in as natural a state as possible, representative examples of regional ecosystems, biotic communities, genetic resources and unimpaired natural processes;
- Maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term;
- Contribute to conservation of wide-ranging species, regional ecological processes and migration routes;
- Manage visitor use for inspirational, educational, cultural, and recreational purposes, at a level which will not cause significant biological or ecological degradation to the natural resources;
- Take into account the non-exclusive native title rights of the Jinibara People;
- Contribute to local economies through ecological knowledge, habitat restoration and nature-based tourism.

7.3 Protection Mechanism

Annie Hehir Road Environment Reserve is owned by Sunshine Coast Council under freehold title.

Under the SCC Planning Scheme 2014 the whole reserve area is protected for the purpose of environmental management and conservation.

The intent of this management plan is therefore to ensure the conservation values of the

reserve are maintained so that the current protection mechanisms are not compromised.

7.4 Restoration Goals

Restoration activities at Annie Hehir Road Environment Reserve aim to maintain and enhance existing biodiversity values and improve overall resilience of vegetation.

The Annie Hehir Road Environment Reserve Regeneration Works Plan (RWP) describes priorities for restoration based on the reserve's BOA mapping. The RWP partitions the reserve into management zones that govern the types of activities required to improve each zone's BOA classification.

Vegetation management activities undertaken at the reserve are informed by the RWP. The BOA and RWP will be reviewed every five years.

Management actions

- Consider obtaining perpetual protection of values through a legally binding mechanism such as a Nature Refuge under the *Nature Conservation Act 1992*;
- Discuss with adjoining landholders options to progress perpetual protection of target Regional Ecosystems on their properties;
- Review the BOA and RWP every five years.

Significant Fauna and Flora

One TEC and a number of Commonwealth, state and locally significant flora and fauna have been found at Annie Hehir Road Environment Reserve (see **Table 5** and **6**).

Recovery plans for Commonwealth listed TECs and threatened species may have been developed under the EPBC Act. Once a recovery plan is in place, responsible government agencies should act in accordance with that plan.

The following recovery plans are available relevant to the reserve:

- Southern Macadamia Species Recovery Plan (Costello *et al.* 2009)
- Conservation and Recovery of the Richmond Birdwing Butterfly, *Ornithoptera richmondia* and its Lowland Food Plant, *Pararistolochia praevenosa* (Sands & Scott 1998)
- National recovery plan for Stream Frogs of South-east Queensland 2001-2005 (Hines 2002) - for management of giant barred frog.

Where a recovery plan has not been implemented, a conservation advice is provided based on best available information. The advice includes species threats, research priorities and priority actions to guide management activities.

The 'Back on Track Species Prioritisation Framework' is a Queensland Government initiative that uses multiple criteria to prioritise native species and guide conservation management and recovery. The framework encompasses the Species Recovery Information Gateway (SPRING)—an online application that provides information pertaining to conservation and recovery of threatened species in Queensland.

Under the framework, the birdwing butterfly vine and Richmond birdwing butterfly occurring at the reserve are classified as 'Priority species of the SEQ NRM region'—based on their ranking of 'critical' or 'high'.

Threats and recovery actions for these species are listed in the document, **'**Back on track actions for biodiversity: taking action to achieve species conservation in the SEQ NRM Region**'** (DERM 2010) and will be implemented as part of reserve management activities.

Sunshine Coast Council implements plans to facilitate management of high priority issues, such as koala conservation, and to address obligations and actions identified in Commonwealth, state and local planning instruments. Plans that are relevant to Annie Hehir Road Environment Reserve include the Sunshine Coast Koala Conservation Plan (Ecosure 2015).

Management recommendations are also provided in flora and fauna assessment reports for the reserve and are reported throughout this management plan. Further recommendations by McVerry (2014) include:

- managing threats to cryptic species that may occur at the reserve. For example, the long-nosed potoroo which has been recorded in the reserve. The species and its habitat is threatened by clearing, unplanned fires, grazing and predation by wild cats, European foxes and dogs (McVerry 2014).
- managing for the spotted-tailed quoll (*Dasyurus maculatus maculatus*) which is threatened by predation from: dogs and foxes; clearing of rainforest and dense woodland that contains trees, hollow logs, caves and rock crevices for nesting; roads; and poisoning through ingesting cane toads.
- Preservation of disused yellow-throated scrubwren (*Sericornis citreogularis*) and brown gerygone (*Gerygone mouki*) nests that serve as important roosting habitat for golden-tipped bats *(Phoniscus papuensis).*

Long-nosed potoroo captured in 2018 on a motion sensor camera. Photo courtesy Jesse Wojtala.

- Consolidation of canopy cover and preservation of understorey vegetation and features i.e. logs and leaf matter that provide habitat for elf skink (*Eroticoscincus graciloides*) and Rose's shadeskink (*Saproscincus rosei*) occurring in rainforest and wet sclerophyll forest areas.

Management actions

- Ensure management actions are in accordance with recovery plans available for threatened species under the EPBC Act;
- Adopt relevant SPRING guidelines for Priority Species listed under Queensland's 'Back on Track Species Prioritisation Framework';
- Ensure management actions consider flora and fauna survey recommendations.

7.5 Management Actions

All of the management actions noted throughout this plan are compiled below in Table 9. This provides a separable consolidated management implementation plan for the reserve.

Technical reports and plans have guided these management actions.

Table 9: Management Implementation Plan for Annie Hehir Road Environment Reserve.

MANAGEMENT ACTIONS	RELEVANT DOCUMENTATION	STATUS	PRIORITY
Vegetation Communities			
• Map the extent of Lowland Rainforest of Sub-tropical Australia (LRS) at the reserve according to PMAV regional ecosystems, and descriptions, key diagnostic characteristics and condition thresholds in the Commonwealth Listing Advice for LRS.	Section 4.1, Lowland Rainforest of Subtropical Australia listing advice (Threatened Species Scientific Committee 2011).	Not started	Low
• Consider obtaining perpetual protection of values through a legally binding mechanism such as a Nature Refuge under the *Nature Conservation Act 1992.*	Section 7.4, NC Act	Not started	Medium
• Discuss with adjoining landholders options to progress perpetual protection of 'target regional ecosystems' on their properties.	Section 7.4.	Underway	Ongoing
Native flora and fauna			
• Record the location of all significant plants at the reserve using GPS. Provide threatened species mapping to contractors.	Section 4.1	Commenced 2011	Ongoing
• Use EVNT plants in revegetation projects.	Section 4.1	Ongoing	Ongoing
• Flag EVNT plants occurring along trails and in restoration areas to alert contractors and council personnel of their location.	Section 4.1	As required. Some specimens flagged.	Ongoing
• Subsequent flora surveys to target significant species potentially occurring in the reserve that have not been previously recorded or that were not confirmed within reserve during previous assessments.	Section 4.1; Thomas (2012); Clancy, Smyrell & Wynn 2007	Not started	Medium
• Subsequent fauna surveys to target species potentially occurring in the reserve that have not been previously recorded or that were not reliably identified during previous fauna assessments.	Section 4.1; McVerry 2014	Any camera trap surveys for Potoroo etc?	Medium
• Encourage partnerships with a research institution interested in assessing macroinvertebrate populations as a measure of ecosystem health.	Section 4.1	Not started	Low
Habitat and ecosystems			
• Collaborate with neighbouring landowner to enhance native vegetation corridors through surrounding pastures. Provide	Section 4.1	Underway	Ongoing

MANAGEMENT ACTIONS	RELEVANT DOCUMENTATION	STATUS	PRIORITY
materials and advice to landowners through Land for Wildlife and other incentive programs.			
• Investigate and promote the use of animal sensitive road design principles and practices on State and local roads to provide safer connectivity between linking habitat patches. Including additional wildlife signage, reduced speed limits and retention of large roadside trees to provide safe passage for arboreal mammals.	Section 4.1; McVerry 2014	Not started	Medium
• Continue maintenance at riparian revegetation sites to enhance habitat for threatened wet forest frogs.	Section 4.1; Meyer 2014	Underway	Ongoing
• Continue to consolidate canopy cover through the removal of weeds, especially large patches of lantana, to promote natural regeneration.	Section 4.1	Underway	Ongoing
• Continue planting revegetation areas with food and habitat trees for significant fauna occurring at the reserve.	Section 4.1	Underway	Ongoing
• Consider expansion of protected area in surrounding core and connecting habitat in the local area and along the riparian corridor.	Section 4.1	Underway	Medium
Cultural values			
• Consult the Jinibara People prior to any works that will cause ground disturbance in a previously undisturbed area	Section 2.2 and 4.2; *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines;	As required	Ongoing
• Support council's Reconciliation Action Plan (2017) commitment to build relationships with the local indigenous community to further reconciliation and include Welcome to Country at reserve events.	Section 2.2	As required	Ongoing
Ecological Restoration			
• Maintain tree planting sites.	Section 4.2	Underway	Ongoing
• Inspect and maintain existing nest boxes.		Ongoing	Ongoing
• Install additional nest boxes in areas where tree hollow density is low.		Not started	Medium
• Monitor and manage areas where highly invasive weeds have been treated previously.		Ongoing	Ongoing

MANAGEMENT ACTIONS	RELEVANT DOCUMENTATION	STATUS	PRIORITY
• Continue bush regeneration activities across the reserve.		Underway	Ongoing
• Expand revegetation projects into new areas as required.		Ongoing through annual school event with Peachester State School	Ongoing
• Continue partnerships with Healthy Land and Water to facilitate catchment-wide management.	Section 4.2	Ongoing	Ongoing
Research and education			
• Undertake a controlled nest box study at the reserve to determine the impact of habitat supplementation on arboreal mammals and bats at the reserve.	Section 4.2	Not started	Low
• Undertake frog surveys at riparian habitat within the northwest revegetation site on Lot 4 on RP840233 to determine the effectiveness of rehabilitation works in providing habitat for EVNT species. Use baseline data collected by Meyer (2014).		Baseline data collected 2013/2014	Low
• Promote partnerships with research institutions for monitoring, data collection and scientific research.		Ongoing through Natural Areas Research Permits	Ongoing
• Encourage research at this reserve to reduce pressure on popular research hubs such as Mary Cairncross Scenic Reserve		Ongoing through Natural Areas Research Permits	Ongoing
• Continue to coordinate public restoration projects to involve the community in reserve management, and to provide different opportunities for information sharing pertaining to the reserve's conservation values and management		Ongoing	Ongoing
• Consider promoting the use of the existing building on Lot 5 on RP840233 as a research facility.	Section 4.2	Repairs to the building is required	Medium
Recreation / eco-recreation			
• Consider supervised recreational use at the reserve through guided interpretive walks, rainforest identification and restoration workshops.	Section 4.2	Ongoing. Community spotlighting event in May 2019	Ongoing

MANAGEMENT ACTIONS	RELEVANT DOCUMENTATION	STATUS	PRIORITY
• Promote partnerships with community groups such as Birdlife Southern Queensland.		Underway at other council reserves	Medium
Condition of Values			
• Undertake a BOA every five years to determine changes in vegetation condition and to measure success of restoration works.	Section 4.4	Most recent BOA completed October 2017	High
• Undertake periodic water quality assessments to determine aquatic ecosystem health at the reserve and sources of pollutants from the upper catchment.		Not started	Low
• Monitor and manage exotic grasses on closed logging trails		Monitored by council personnel and contractors	Ongoing
• Collaborate with neighbouring landowner to manage bank erosion occurring on the Upper Stanley River. Provide materials and advice to landowners through Land for Wildlife and other incentive programs.		Ongoing	Medium
Environmental weeds, invasive plants and animals			
• Implement invasive plant and animal management activities in line with RWP and Sunshine Coast Council Local Government Area Biosecurity Plan 2017.	Section 6.3	Underway	Ongoing
• Continue to engage with the neighbouring landowner regarding exclusion of cattle and goats from the reserve. Further investigate grants available to fund construction of a fence along the Upper Stanley River and off-stream watering points.		Requires action	High
• Avoid using pesticides and wetting agents in close proximity to riparian frog breeding habitat, and other important habitat areas.	Section 6.3, Meyer (2014)	Ongoing	Ongoing
• Develop ongoing community education aimed at preventing threats to biodiversity values by invasive plants and animals from neighbouring properties.	Section 6.3	Underway	Ongoing
• Involve the community in monitoring of conspicuous invasive species such as Fox and Wild Dogs on their properties or at reserve boundaries.		Requires action	Ongoing

MANAGEMENT ACTIONS	RELEVANT DOCUMENTATION	STATUS	PRIORITY
• Implement an active monitoring and control program targeting wild dog, fox pig and cat.	Section 6.3	Ongoing	High
Fire			
• Continue to coordinate fire management with the Bushfire Management team in accordance with the FMP for this reserve.	Section 6.5; Annie Hehir Road Environment Reserve FMP (2015)	Underway	Ongoing
Pathogens			
• Surveillance for myrtle rust within the reserve.	Section 6.4	Underway	Ongoing
• Surveillance for brown root rot with the reserve.		Underway	Ongoing
• Promote partnerships with Queensland Government and researchers for monitoring, data collection and research pertaining to pathogens occurring at reserve.		Underway	Ongoing
• Maintain reserve category to reduce pathogen impacts.		Underway	Ongoing
Erosion			
• Regularly monitor and where necessary mitigate trail erosion.	Section 6.6	Underway	Ongoing
• Continue to engage neighbouring landowners to encourage good land management practices that minimise soil erosion. This includes fencing to restrict cattle access to watercourses and off-stream watering points.		Requires action	High
• Look for opportunities to protect and revegetate unformed-gazetted road reserves and unallocated state land containing Stanley River riparian habitat.	Section 6.6	Requires action	Medium
Neighbouring land use activities			
• Engage with neighbouring landholders to remove stock from the watercourse and restore riparian habitat.	Section 6.7	Requires action	High
• Undertake condition assessment of fencing, where present, to identify repairs/replacement new construction requirements, preferably using animal-friendly designs.	Section 6.7	Requires action	High

MANAGEMENT ACTIONS	RELEVANT DOCUMENTATION	STATUS	PRIORITY
• Collaborate with neighbouring sawmill company to ensure logging activities do not negatively impact ecological values at the reserve.	Section 6.7	Neighbour letter sent 2017. Further engagement recommended.	High
• Consider erecting council signage at northern and eastern reserve boundaries to clearly display property boundaries to logging personnel.		Undertake prior to next scheduled timber harvest	Medium
Climate Change			
• Through the conservation partnerships program, work with adjacent landholders to build resilience in stream ecosystems by restoring riparian vegetation and controlling bed and bank erosion that has potential to impact on the reserve.	Section 6.9	Not started	High
• Consider expansion of protected area in surrounding core and connecting habitat in the local area.	Section 6.9	Underway	Medium
• Build resilience to change through habitat connectivity.	Section 6.9	Underway	Ongoing
Restoration Goals			
• Review the BOA and RWP every five years.	Section 7.4	Ongoing	Ongoing
• Ensure management actions are in accordance with recovery plans available for threatened species under the EPBC Act.	Section 7.4	Underway	Ongoing
• Adopt relevant SPRING guidelines for Priority Species listed under Queensland's 'Back on Track Species Prioritisation Framework'.	Section 7.4	Relevant guidelines underway	Ongoing
• Ensure management actions consider flora and fauna survey recommendations	Section 7.4	Underway	Ongoing

7.6 Finance and Resourcing

The Natural Area operational management program delivers the restoration, maintenance and development of council's environmental reserve network.

An annual operational budget is determined by the service level classification for each reserve which is based on several factors including:

- biodiversity values and risk;
- reserve condition, function and size;
- recreation and educational opportunities;
- minimum community expectations.

Establishment

Establishment activities are funded under council's Environment Levy Establishment Program which applies to each new reserve for a period of approximately three to five years when all major planning reports and establishment works are implemented.

Community Conservation Partnerships

The Community Nature Conservation Program supports council's reserve management and maintenance—engaging and supporting community volunteers in actively protecting and rehabilitating the region's environmental assets on public lands and includes over 1,000 volunteers. This unit has helped coordinate tree planting and environmental education activities in the reserve involving a local school.

Healthy Places Unit

In conjunction with the Natural Areas team, the Healthy Places - Animal Education and Control team fulfils and delivers council's statutory responsibility to manage impacts of plants and animals within council reserves.

7.7 Monitoring

The SEQ Natural Resource Management Plan uses the Monitoring, Evaluation, Reporting and Improvement (MERI) framework. **Figure 5** shows the MERI program logic which provides time-frames and outcomes linked to the management plan objectives which can be assessed during monitoring and evaluation.

The MERI framework provides for:

1. Evaluating the contribution of the reserve to the overall Sunshine Coast reserve network;
2. evaluating the effectiveness of the methodology and approach used;
3. Incorporating lessons learned into future work in land purchased for inclusion in Council's reserve estate.

Cascade treefrog (*Litoria personiana*). Photo courtesy Ed Meyer.

Figure 5: MERI Program Logic – based on the National Reserve System and SEQ NRM Plan

Outcomes	Council owned/managed Environmental Reserve
Long-term outcomes (20 years)	This site will contribute to a well-managed, comprehensive reserve network protecting in perpetuity examples of at least 80% of the extant native ecosystems present in the Sunshine Coast Region .
Environment outcomes (5 years)	Reduced threat from invasive species Thematic Links GERI; Improved ecological connectivity Increased representativeness of regional ecosystems Increased protection of under-represented RE's Enhanced resilience of the protected areas to disturbance Protected native habitat Address Matters of National Environmental Significance
Protection and management outcomes (5 years)	Managers are effectively implementing management actions of the Management Plan
Engagement and capacity outcomes (5 years)	Managers have the capacity for effective management planning
Immediate outcomes (biophysical and non-biophysical outcomes)	High value areas (including those within under-represented bioregions) are prioritised for acquisition and managed for nature conservation
Proponent influence activities	Partnership purchases (Discretionary grants)

7.8 Communications Plan

Preliminary consultation for this management plan has been based on input from stakeholders within council. This includes recreational, conservation and community partnerships.

Public and external stakeholder groups were then invited to comment on the first draft through the council web site and specific targeted notifications.

Council will continue to provide information to the public via reports, publications, newsletters, and webpages and through media outlets as and when suitable opportunities present.

7.9 Management Plan Review Schedule

The Management Plan will be reviewed after five years in line with the MERI guidelines, supported by the five year review of the Restoration Works Plan.

This management plan will be comprehensively evaluated after 10 years of implementation (SCC Guidelines for Strategies and Plans 2018) underpinned by the framework of actions described in this plan.

A number of fungi species have been observed at the reserve

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Appendices

Appendix 1: National Reserve System Principles of Protected Area Management

Interconnectedness of values and places

Protected area management aims to incorporate and integrate biodiversity values, Indigenous cultural values and broader community and historic heritage values.

Protected areas are also part of broader bioregional, social, cultural and economic landscape and they should be managed in this context.

Good neighbour

Protected area managers are economically and socially part of local and regional communities and recognise the need to be valued, responsible, and active local and regional community participants and members.

Community participation and collaboration

Protected areas are conserved for the benefit of and with the support of the community and this is best achieved through awareness, understanding and involvement.

Environmental stewardship

Responsibility for protecting and conserving protected area values extends beyond the management body to include lessees, licensees, relevant public and private authorities, visitors, neighbours and the wider community.

Transparent decision making

The framework and processes for decision-making should be open and transparent. The reasons for making decisions should be publicly available, except to the extent that information, including information that is culturally sensitive or commercial-in-confidence, needs to be treated as confidential.

Effective and adaptive management

Protected area management should apply an adaptive management approach to support continuous improvement in management. This includes monitoring the outcomes of management and taking account of the findings of monitoring and other research to improve management effectiveness. Management decisions should have a firm scientific basis or be supported by relevant experience. Management bodies need to maintain and improve their capacity to learn from experience, to value and build staff expertise and draw on input from other stakeholders.

Appropriate use

Access to and use of protected areas must be consistent with the long term protection of their values, the maintenance of physical and ecological processes and agreed management objectives.

Indigenous people's knowledge and role

Protected areas are part of landscapes that have supported and continue to give identity to Indigenous people who have traditional and historical connections to and knowledge of the land. Indigenous people are recognised and respected as the original custodians of the lands, waters,

animals and plants within protected areas. Their living and spiritual connections with the land through traditional laws, customs and beliefs passed on from their ancestors are also recognised. The role of Indigenous organisations in the protection and management of country is acknowledged.

Applying the “precautionary principle”

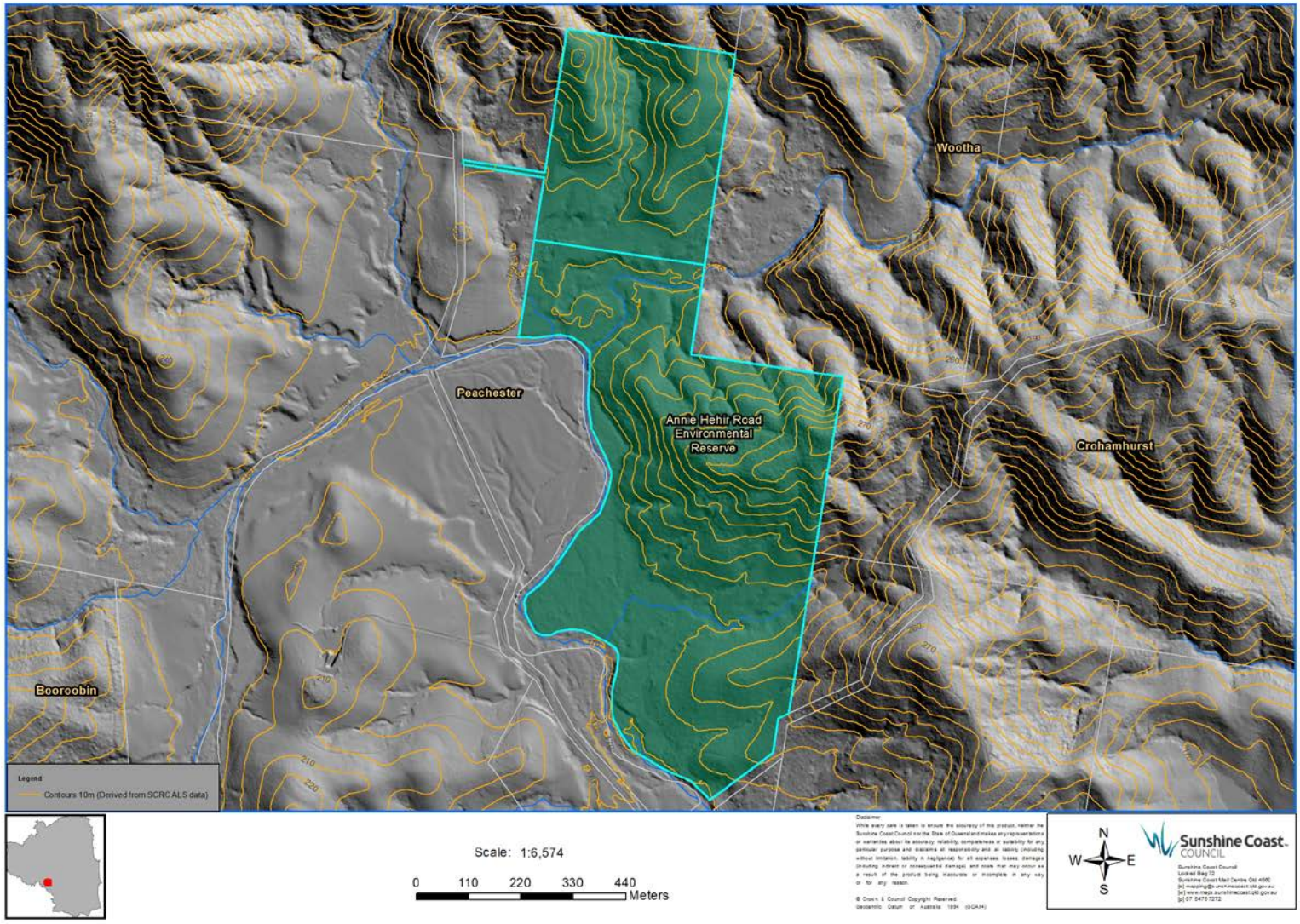
Protection of the natural and cultural heritage of the NRS should include identifying and taking appropriate actions to avert and actively manage emerging threats and risks. Effective management must be based on the best available information. However, where there are threats or potential threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation or harmful disturbance to natural and cultural places.

Inter-generational and intra-generational equity

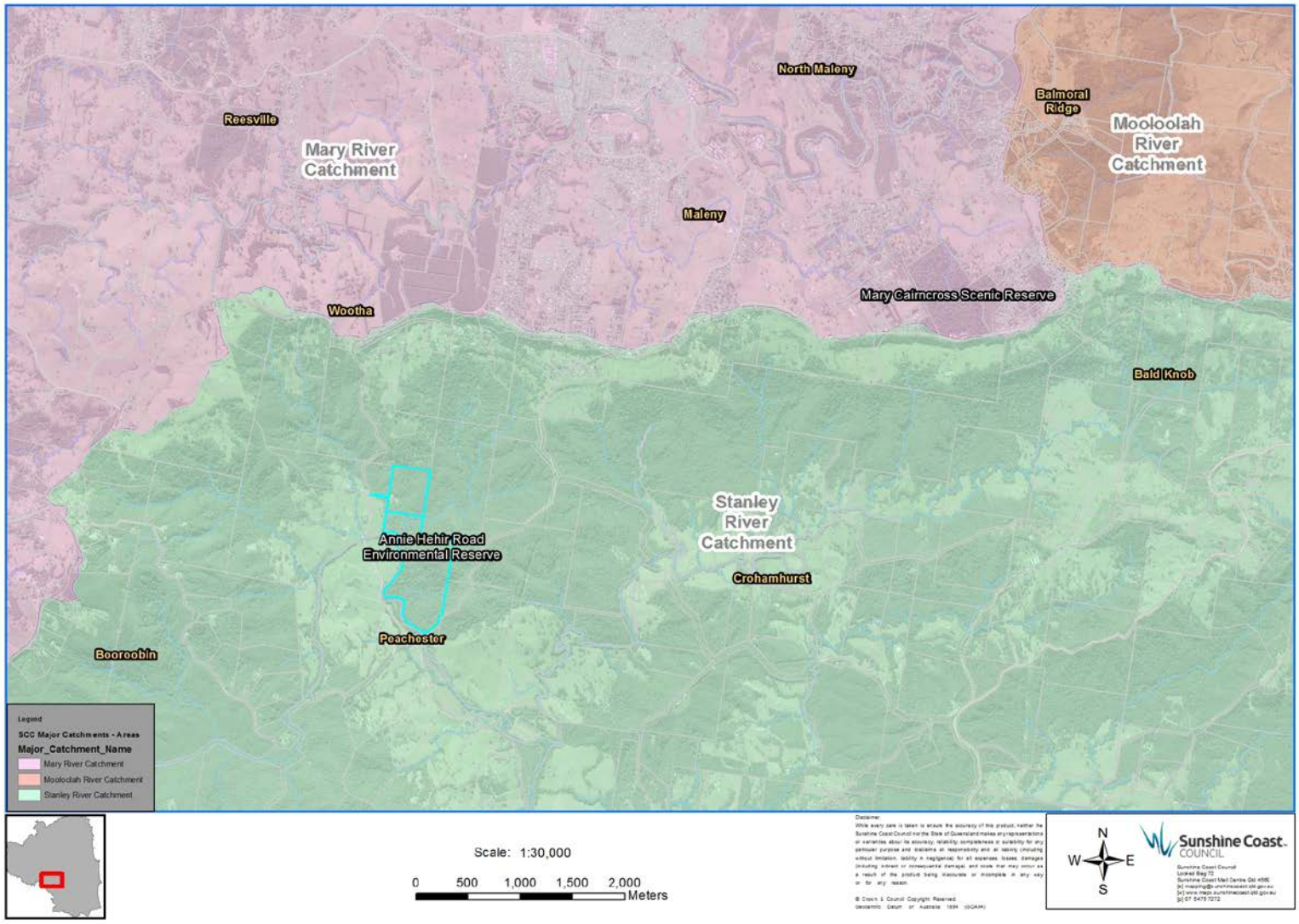
Management seeks to ensure that the health, diversity and productivity of the environment and the integrity and significance of cultural places are maintained or enhanced for the benefit of future generations and that decisions affecting current generations are socially equitable.

Appendix 2: Terrain, Catchment, Vegetation and Habitat Connectivity Mapping

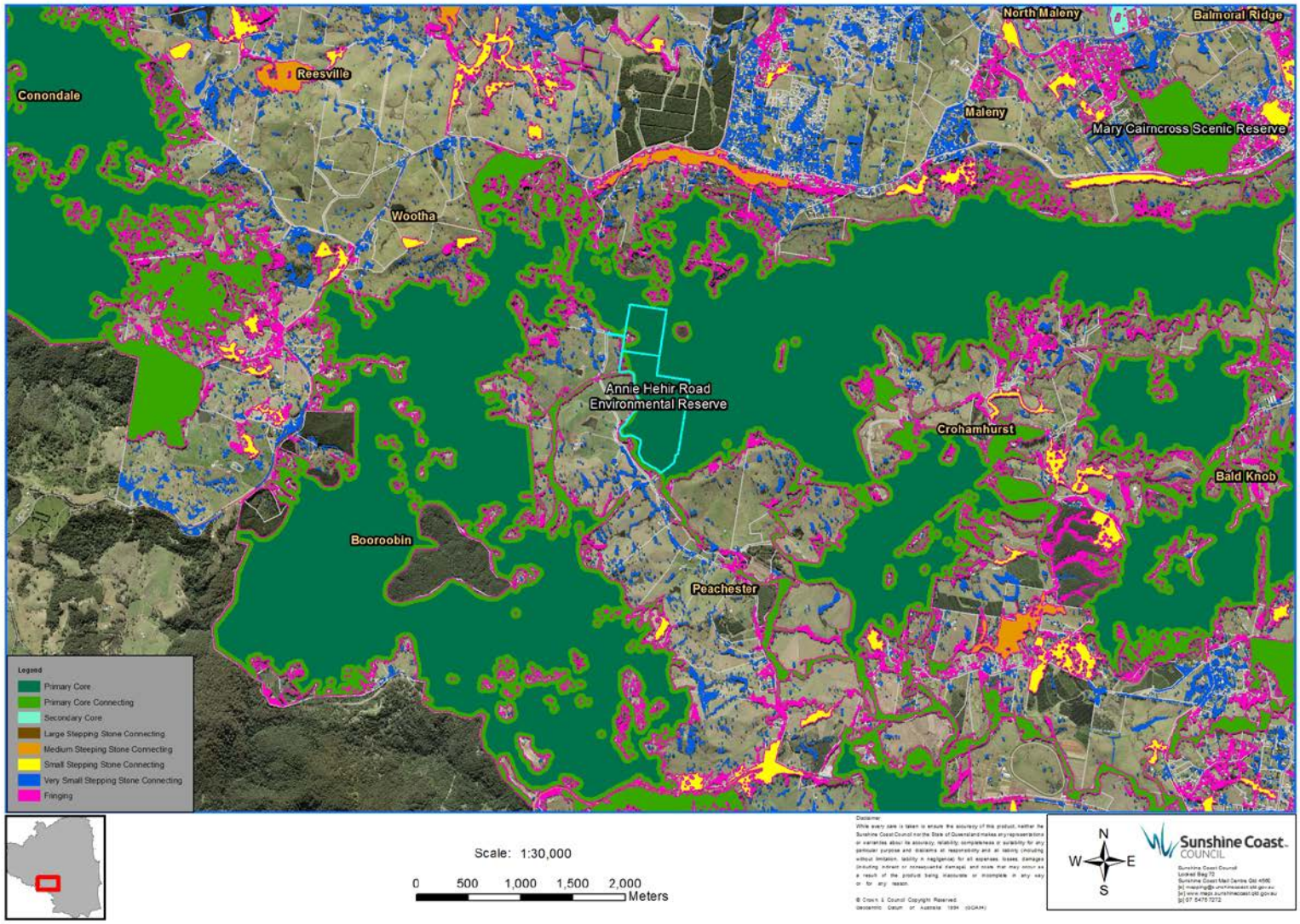
2a. Terrain



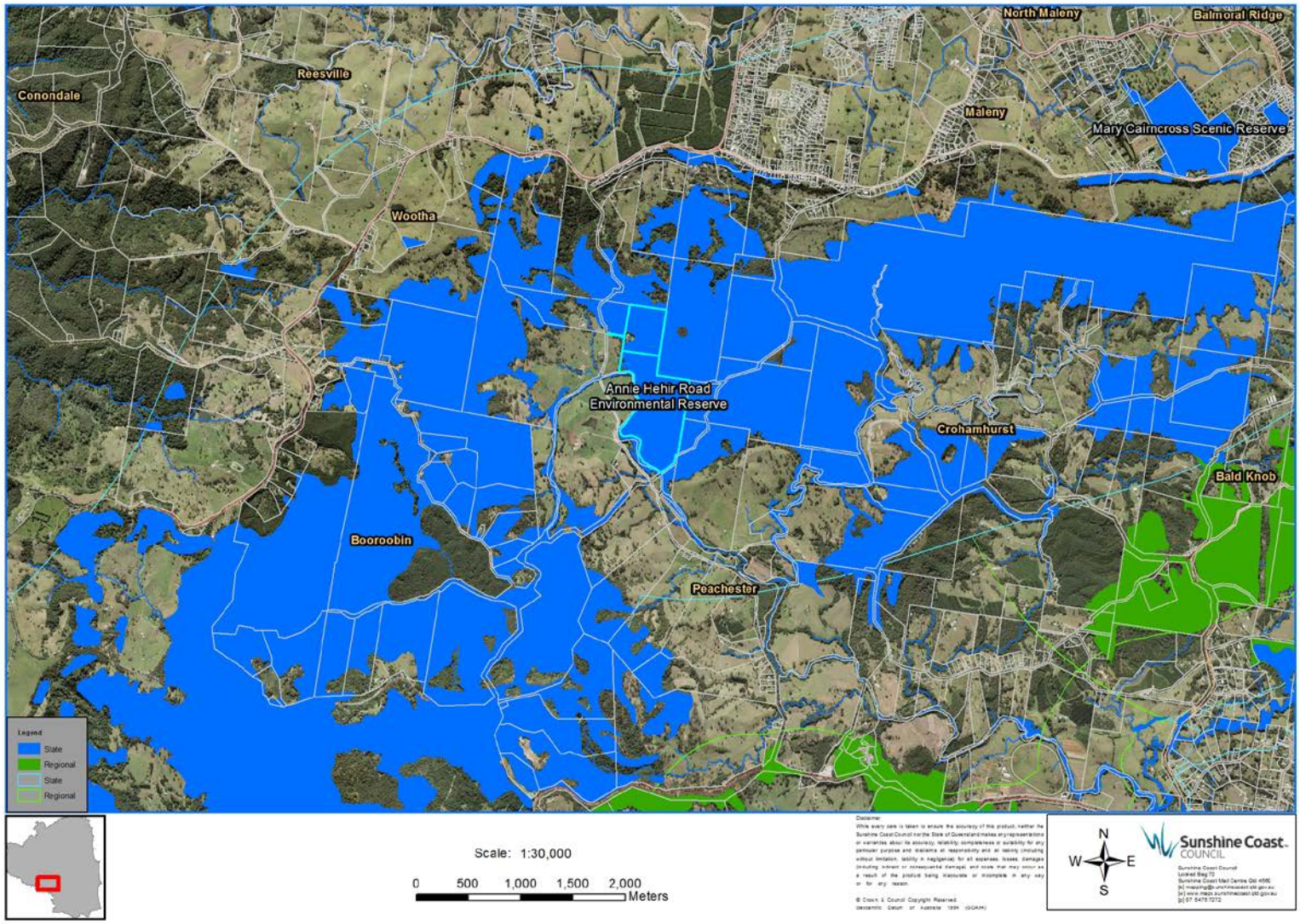
2b. Catchment boundaries



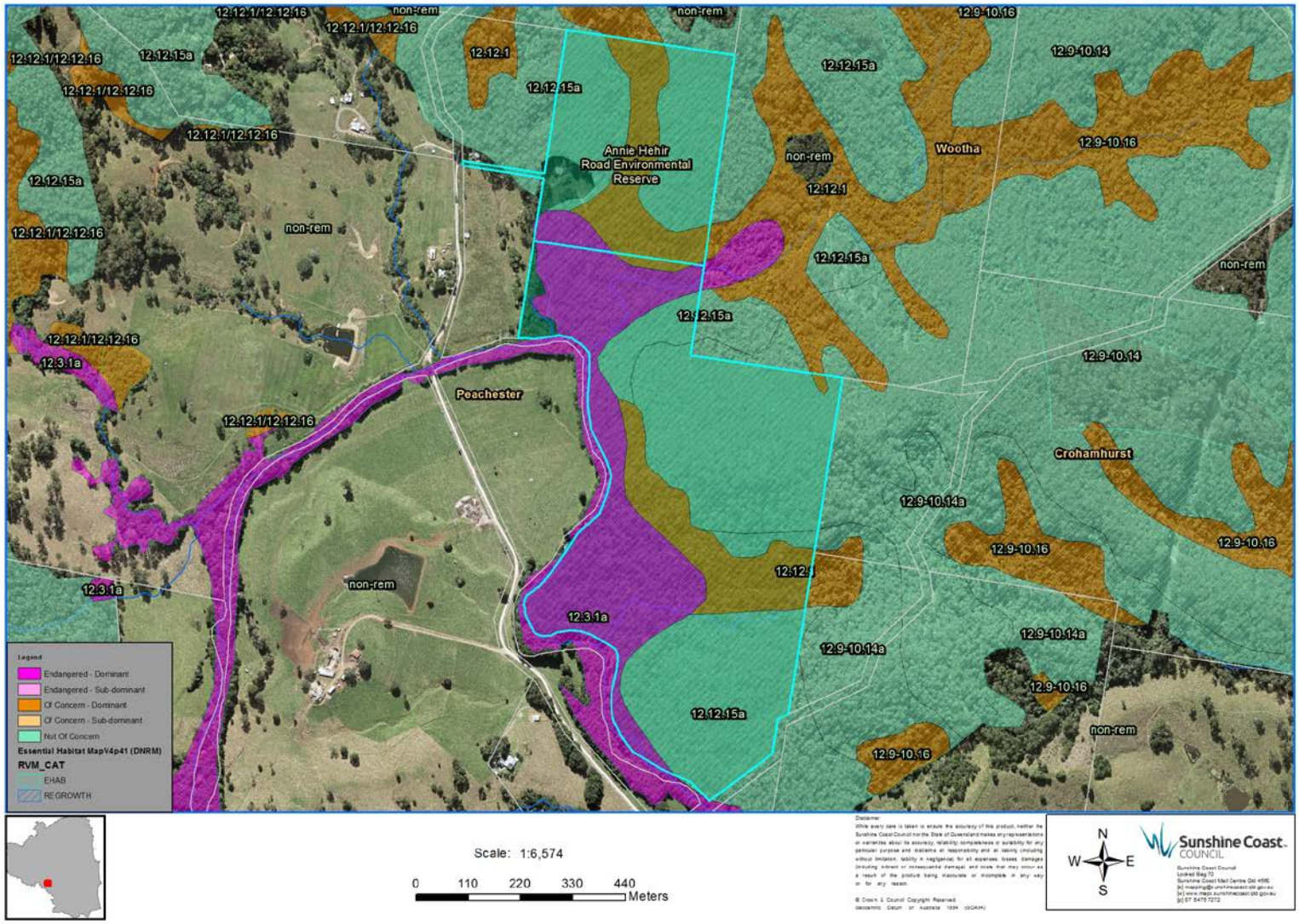
2c. Core and connecting habitat areas (source SCC)



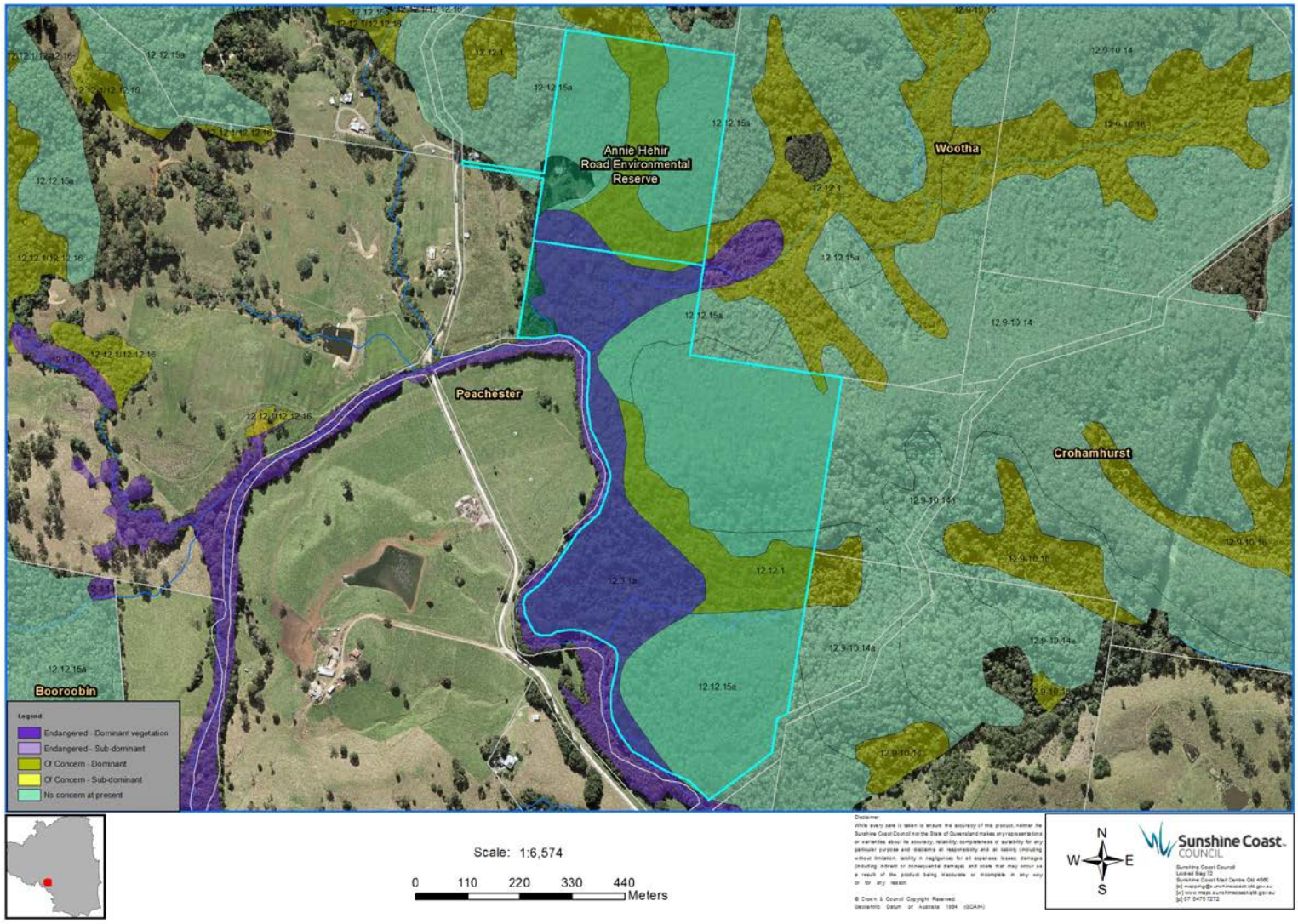
2d. State and regional corridors



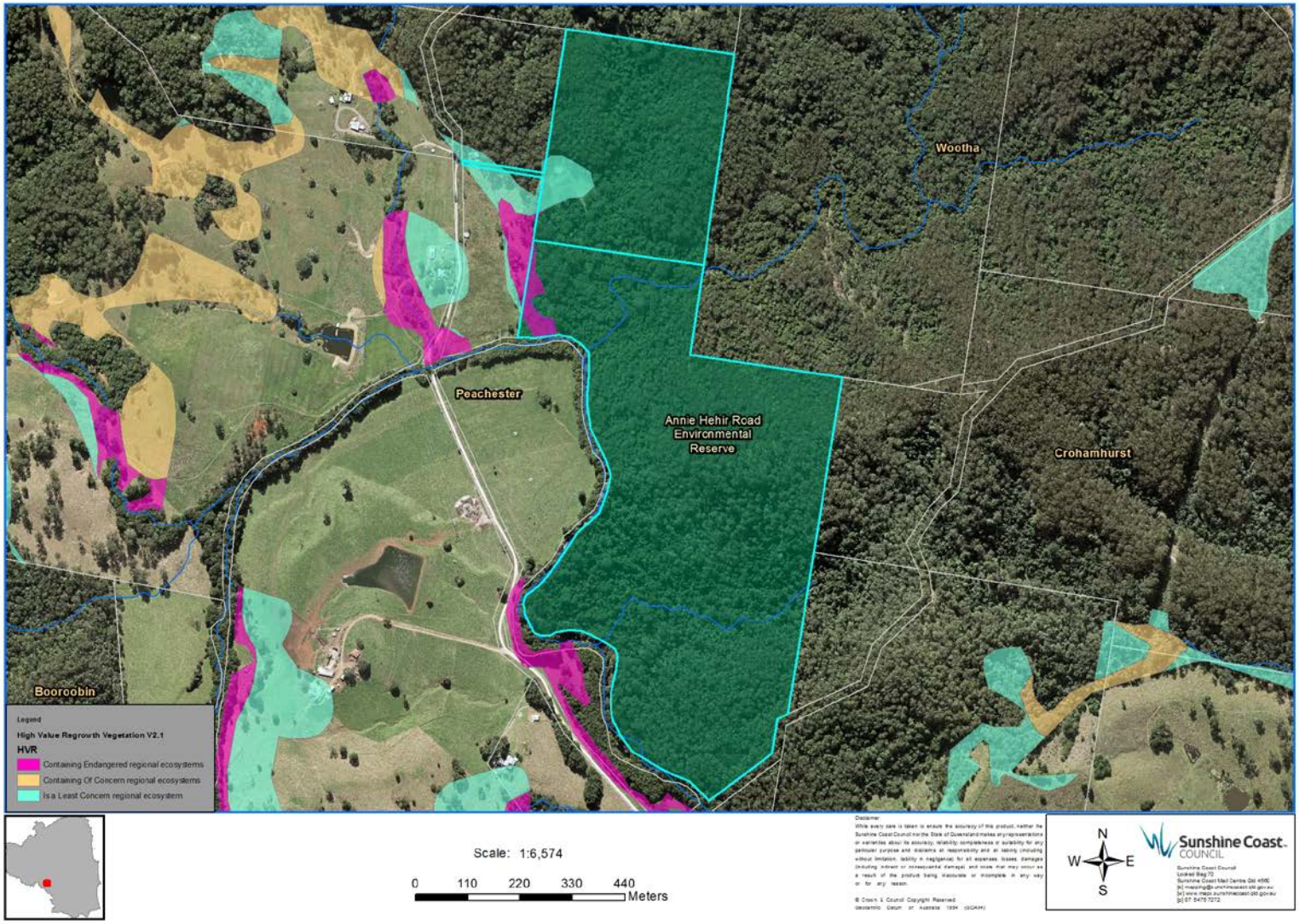
2e. Regional ecosystems (vegetation management class) and essential habitat



2f. Regional ecosystems (biodiversity status)



2g. High value regrowth



Appendix 3: Sunshine Coast Priority regional ecosystems

Status of vegetation communities on the Sunshine Coast

RE	SCC LGA Pre-clearing extent (Ha)	SCC LGA Current extent RE mapping ver 11 (Ha)	SCC loss >69%	Conservation status (VMA)	SCC Poorly conserved (10% of preclear representation)	Commonwealth listed threatened ecological communities
12.9-10.14	17,235	7,179	-	Least Concern	**8**	-
12.9-10.14a	3,819	1,414	-	Least Concern	**5**	-
12.12.15a	5,692	2,950	-	Least Concern	-	-
12.3.1a (12.3.1)	4,627	1,750	-	Endangered	**7**	✓
12.12.16	3,878	1,547	-	Least Concern	-	✓

A regional ecosystem is considered to be a 'target' based on one or more of the following factors: 1) VMA *endangered* conservation status; 2) Vulnerable at a SCC LGA scale having lost more than 70% of its Sunshine Coast pre-clearing extent; 3) Poorly conserved at a SCC LGA scale (<10% of SC pre-clearing extent protected); 4) Commonwealth EPBC listed critically endangered ecosystems (Lowland sub-tropical rainforest)

Appendix 4. Flora Species List

EPBC Act = Commonwealth *Environment Protection and Biodiversity Conservation Act 1999;* NC Act = *Qld Nature Conservation Act 1992*

E = Endangered; V = Vulnerable; NT = Near Threatened

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Mimosaceae	*Acacia disparrima subsp. disparrima*	hickory wattle		
Mimosaceae	*Acacia maidenii*	Maiden's wattle		
Mimosaceae	*Acacia melanoxylon*	blackwood		
Euphorbiaceae	*Acalypha nemorum*	hairy acalypha		
Cunoniaceae	*Ackama paniculosa*	soft corkwood		
Myrtaceae	*Acmena ingens*	southern satinash		
Myrtaceae	*Acmena smithii*	lilly pilly satinash		
Rutaceae	*Acronychia laevis*	glossy acronychia		
Rutaceae	*Acronychia octandra*	doughwood		
Rutaceae	*Acronychia oblongifolia*	common acronychia		
Rutaceae	*Acronychia pubescens*	hairy acronychia		
Rutaceae	*Acronychia suberosa*	corky acronychia		
Phyllanthaceae	*Actephila lindleyi*	actephila		
Adiantaceae	*Adiantum diaphanum*	filmy maidenhair		
Adiantaceae	*Adiantum formosum*	black stem maidenhair		
Adiantaceae	*Adiantum hispidulum var. hispidulum*	rough maidenhair		
Violaceae	*Afrohybanthus stellarioides*	spade flower		
Akaniaceae	*Akania bidwillii*	turnip wood		
Cornaceae	*Alangium villosum subsp. polyosmoides*	musk wood		
Sapindaceae	*Alectryon subcinereus*	native quince		
Araceae	*Alocasia brisbanensis*	cunjevoi		
Rhamnaceae	*Alphitonia excelsa*	soap tree		
Rhamnaceae	*Alphitonia petriei*	pink ash		
Zingiberaceae	*Alpinia arundelliana*	small native ginger		
Zingiberaceae	*Alpinia caerulea*	wild ginger		
Loranthaceae	*Amylotheca dictyophleba*	mistletoe		
Commelinaceae	*Aneilema acuminatum*	slug herb		
Meliaceae	*Anthocarapa nitidula*	incense cedar		
Ulmaceae	*Aphananthe philippinensis*	rough leaved elm		
Dryopteridaceae	*Arachniodes aristata*	prickly shield fern		
Araucariaceae	*Araucaria bidwillii*	bunya pine		
Araucariaceae	*Araucaria cunninghamii*	hoop pine		
Mimosaceae	*Archidendron grandiflorum*	laceflower tree		
Arecaceae	*Archontophoenix cunninghamiana*	piccabeen palm		
Sterculiaceae	*Argyrodendron trifoliolatum*	booyong		
Nephrolepidaceae	*Arthropteris tenella*	climbing fern		
Sapindaceae	*Arytera distylis*	twin-leaved coogera		
Sapindaceae	*Arytera divaricata*	coogera		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Aspleniaceae	*Asplenium australasicum*	crow's nest fern		
Rubiaceae	*Atractocarpus chartaceus*	narrow-leaved gardenia		
Fabaceae	*Austrosteenisia blackii*	blood vine		
Fabaceae	*Austrosteenisia glabristyla*	giant blood vine		
Myrtaceae	*Backhousia myrtifolia*	carrol myrtle		
Euphorbiaceae	*Baloghia inophylla*	scrub bloodwood		
Lauraceae	*Beilschmiedia elliptica*	grey walnut		
Lauraceae	*Beilschmiedia obtusifolia*	hard bolly gum		
Blechnaceae	*Blechnum cartilagineum*	gristle fern		
Sterculiaceae	*Brachychiton acerifolius*	flame tree		
Phyllanthaceae	*Breynia oblongifolia*	coffee bush		
Acanthaceae	*Brunoniella spiciflora*	white brunoniella		
Caesalpiniaceae	*Caesalpinia scortechinii*	wait-a-while		
Caesalpiniaceae	*Caesalpinia subtropica*	corky prickle vine		
Arecaceae	*Calamus muelleri*	lawyer vine		
Orchidaceae	*Calanthe triplicata*	Christmas orchid		
Fabaceae	*Callerya megasperma*	native wisteria		
Lamiaceae	*Callicarpa pedunculata*	velvet leaf		
Cunoniaceae	*Callicoma serratifolia*	Callicoma		
Dicksoniaceae	*Calochlaena dubia*	soft bracken fern		
Burseraceae	*Canarium australasicum*	mango bark		
Capparaceae	*Capparis arborea*	brush caper berry		
Cyperaceae	*Carex horsfieldii*			
Cyperaceae	*Carex maculata*			
Menispermaceae	*Carronia multisepalea*	carronia		
Sapindaceae	*Castanosperma alphandii*	brown tamarind		
Fabaceae	*Castanospermum australe*	black bean		
Vitaceae	*Cayratia clematidea*	soft water vine		
Celastraceae	*Celastrus subspicata*	large-leaved staff vine		
Araliaceae	*Cephalaralia cephalobotrys*	climbing panax		
Thelypteridaceae	*Christella dentata*	creek fern		
Lauraceae	*Cinnamomum oliveri*	Oliver's sassafras		
Vitaceae	*Cissus antarctica*	water vine		
Vitaceae	*Cissus hypoglauca*	five-leaf water vine		
Vitaceae	*Cissus sterculiifolia*	long-leaf water vine		
Euphorbiaceae	*Claoxylon australe*	brittlewood		
Phyllanthaceae	*Cleistanthus cunninghamii*	omega		
Ranunculaceae	*Clematis glycinoides*	headache vine		
Lamiaceae	*Clerodendrum floribundum*	lolly bush		
Rubiaceae	*Coelospermum paniculatum*	Coelospermum		
Byttneriaceae	*Commersonia bartramia*	brown kurrajong		
Laxmanniaceae	*Cordyline petiolaris*	large-leaved palm lily		
Laxmanniaceae	*Cordyline rubra*	red-fruited palm lily		
Myrtaceae	*Corymbia intermedia*	pink bloodwood		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Euphorbiaceae	*Croton verreauxii*	green cascarilla		
Lauraceae	*Cryptocarya glaucescens*	jackwood		
Lauraceae	*Cryptocarya laevigata*	glossy laurel		
Lauraceae	*Cryptocarya macdonaldii*	McDonald's laurel		
Lauraceae	*Cryptocarya microneura*	murrogun		
Lauraceae	*Cryptocarya obovata*	pepperberry		
Lauraceae	*Cryptocarya sclerophylla*	hard laurel		
Lauraceae	*Cryptocarya triplinervis var. pubens*	three veined laurel		
Sapindaceae	*Cupaniopsis serrata*	smooth tuckeroo		
Cyatheaceae	*Cyathea cooperi*	scaly tree fern		
Cyatheaceae	*Cyathea leichhardtiana*	prickly tree fern		
Rubiaceae	*Cyclophyllum coprosmoides*	coast canthium		
Orchidaceae	*Cymbidium madidum*	native cymbidium		
Cyperaceae	*Cyperus laevigatus*	makaloa		
Cyperaceae	*Cyperus tetraphyllus*			
Davalliaceae	*Davallia pyxidata*	hair's foot fern		
Fabaceae	*Daviesia ulicifolia*	spiny-leaf bitter pea		
Myrtaceae	*Decaspermum humile*	silky myrtle		
Orchidaceae	*Dendrobium aemulum*	ironbark orchid		
Orchidaceae	*Dendrobium gracilicaule*	slender orchid		
Orchidaceae	*Dendrobium monophyllum*			
Urticaceae	*Dendrocnide moroides*	Gympie stinger		
Urticaceae	*Dendrocnide photinophylla*	shiny-leaved stinging tree		
Celastraceae	*Denhamia celastroides*	broad-leaved boxwood		
Hemerocallidaceae	*Dianella caerulea*			
Poaceae	*Digitaria parviflora*	small flower finger grass		
Rutaceae	*Dinosperma melanophloia*	black barked dough wood		
Dioscoreaceae	*Dioscorea transversa*	native yam		
Ebenaceae	*Diospyros australis*	black plum		
Ebenaceae	*Diospyros pentamera*	myrtle ebony		
Sapindaceae	*Diploglottis australis*	native tamarind		
Orchidaceae	*Dipodium punctatum*	blotched hyacinth orchid		
Picrodendraceae	*Dissiliaria baloghioides*	lancewood		
Sapindaceae	*Dodonaea triquetra*	hop bush		
Blechnaceae	*Doodia aspera*	prickly rasp fern		
Caryophyllaceae	*Drymaria cordata*	tropical chickweed		
Putranjivaceae	*Drypetes deplanchei*	grey boxwood		
Solanaceae	*Duboisia myoporoides*	blinds-your-eye		
Meliaceae	*Dysoxylum rufum*	hairy rosewood		
Boraginaceae	*Ehretia acuminata*	koda		
Elaeocarpaceae	*Elaeocarpus eumundi*	Eumundi quandong		
Elaeocarpaceae	*Elaeocarpus grandis*	blue quandong		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Elaeocarpaceae	*Elaeocarpus reticulatus*	blueberry ash		
Celastraceae	*Elaeodendron australe var. australe*	red olive plum		
Sapindaceae	*Elattostachys nervosa*	green tamarind		
Myrsinaceae	*Embelia australiana*	embelia		
Lauraceae	*Endiandra discolor*	rose walnut		
Lauraceae	*Endiandra muelleri*	green-leaved rose walnut		
Lauraceae	*Endiandra pubens*	hairy walnut		
Lauraceae	*Endiandra sieberi*	corkwood		
Lauraceae	*Endiandra virens*	white apple		
Poaceae	*Entolasia stricta*	wiry panic		
Myrtaceae	*Eucalyptus grandis*	flooded gum		
Myrtaceae	*Eucalyptus microcorys*	tallow wood		
Myrtaceae	*Eucalyptus pilularis*	black butt		
Eupomatiaceae	*Eupomatia laurina*	bolwarra		
Anacardiaceae	*Euroschinus falcatus var. falcatus*	ribbon wood		
Laxmanniaceae	*Eustrephus latifolius*	wombat berry		
Cyperaceae	*Exocarya scleroides*			
Moraceae	*Ficus coronata*	creek sandpaper fig		
Moraceae	*Ficus obliqua*	small-leaved fig		
Moraceae	*Ficus watkinsiana*	strangler fig		
Flagellariaceae	*Flagellaria indica*	whip vine		
Rutaceae	*Flindersia australis*	crow's ash		
Rutaceae	*Flindersia bennettii*	Bennet's ash		
Rutaceae	*Flindersia schottiana*	bumpy ash		
Pandanaceae	*Freycinetia excelsa*	narrow-leaved climbing pandanus		
Cyperaceae	*Gahnia aspera*	saw sedge		
Hemerocallidaceae	*Geitonoplesium cymosum*	scrambling lily		
Phyllanthaceae	*Glochidion ferdinandi*	cheese tree		
Phyllanthaceae	*Glochidion sumatranum*	umbrella cheese tree		
Fabaceae	*Glycine tabacina*			
Fabaceae	*Glycine tomentella*	woolly glycine		
Lamiaceae	*Gmelina leichhardtii*	white beech		
Myrtaceae	*Gossia acmenoides*	scrub ironwood		
Myrtaceae	*Gossia bidwillii*	python tree		
Myrtaceae	*Gossia hillii*	scaly myrtle		
Myrtaceae	*Gossia inophloia*	thready-bark myrtle		NT
Simaroubaceae	*Guilfoylia monostylis*	native plum		
Sapindaceae	*Guioa semiglauca*	guioa		
Araceae	*Gymnostachys anceps*	settler's flax		
Rubiaceae	*Gynochthodes jasminoides*	native jasmine		
Rutaceae	*Halfordia kendack*	saffron heart		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Fabaceae	*Hardenbergia violacea*	native sarsaparilla		
Celastraceae	*Hedraianthera porphyropetala*	hedraianthera		
Proteaceae	*Helicia glabriflora*	pale oak		
Dilleniaceae	*Hibbertia scandens*	twinging Guinea flower		
Malvaceae	*Hibiscus heterophyllus*	native hibiscus		
Celastraceae	*Hippocratea barbata*	knot vine		
Rubiaceae	*Hodgkinsonia ovatiflora*	golden ash		
Euphorbiaceae	*Homalanthus populifolius*	bleeding heart		
Fabaceae	*Hovea acutifolia*	point-leaved hovea		
Araliaceae	*Hydrocotyle pedicellosa*	large pennywort		
Araliaceae	*Hydrocotyle tripartita*	pennywort		
Dennstaedtiaceae	*Hypolepis muelleri*	harsh ground fern		
Poaceae	*Imperata cylindrica*	blady grass		
Fabaceae	*Indigofera australis*	Australian indigo		
Rubiaceae	*Ixora beckleri*	Ixora		
Sapindaceae	*Jagera pseudorhus var. pseudorhus*	foambark		
Juncaceae	*Juncus continuus*	pithy rush		
Juncaceae	*Juncus prismatocarpus*	branching rush		
Fabaceae	*Kennedia rubicunda*	running postman		
Dryopteridaceae	*Lastreopsis marginans*	glossy shield fern		
Dryopteridaceae	*Lastreopsis microsora subsp. microsora*	creeping shield fern		
Menispermaceae	*Legnephora moorei*	round leaf vine		
Lamiaceae	*Limnophila aromatica*	rau om		
Arecaceae	*Linospadix monostachyos*	walking stick palm		
Lauraceae	*Litsea australis*	southern bolly gum		
Lauraceae	*Litsea leefeana*	brown bolly gum		
Lauraceae	*Litsea reticulata*	bolly gum		
Arecaceae	*Livistona australis*	cabbage palm		
Campanulaceae	*Lobelia purpurascens*	white root		
Campanulaceae	*Lobelia trigonocaulis*	forest lobelia		
Laxmanniaceae	*Lomandra hystrix*	creek mat rush		
Laxmanniaceae	*Lomandra longifolia*	mat rush		
Laxmanniaceae	*Lomandra multiflora*	many-flowered mat rush		
Laxmanniaceae	*Lomandra spicata*	jungle mat rush		
Myrtaceae	*Lophostemon confertus*	brush box		
Proteaceae	*Macadamia ternifolia*	Maroochy nut	V	V
Euphorbiaceae	*Macaranga tanarius*	macaranga		
Moraceae	*Maclura cochinchinensis*	cockspur thorn		
Zamiaceae	*Macrozamia lucida*	pineapple zamia		
Euphorbiaceae	*Mallotus philippensis*	red kamala		
Rutaceae	*Medicosma cunninghamii*	pink heart		
Myrtaceae	*Melaleuca salicina*	willow bottlebrush		
Meliaceae	*Melia azedarach*	white cedar		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Apocynaceae	*Melodinus australis*	bell vine		
Sapindaceae	*Mischocarpus australis*	red pear fruit		
Myrsinaceae	*Myrsine subsessilis*	red mutton wood		
Myrsinaceae	*Myrsine variabilis*	mutton wood		
Apocynaceae	*Neisosperma poweri*	milk bush		
Lauraceae	*Neolitsea dealbata*	white bolly gum		
Cucurbitaceae	*Nothoalsomitra suberosa*	corky cucumber		NT
Oleaceae	*Olea paniculata*	native olive		
Poaceae	*Oplismenus aemulus*	creeping shade grass		
Poaceae	*Oplismenus hirtellus*	slender panic grass		
Poaceae	*Ottochloa gracillima*	pademelon grass		
Asteraceae	*Ozothamnus diosmifolius*	white dogwood		
Bignoniaceae	*Pandorea jasminoides*	pink trumpet flower		
Bignoniaceae	*Pandorea pandorana*	wonga vine		
Aristolochiaceae	*Pararistolochia praevenosa*	birdwing butterfly vine		NT
Apocynaceae	*Parsonsia straminea*	monkey rope		
Apocynaceae	*Parsonsia velutina*	hairy silkpod		
Adiantaceae	*Pellaea nana*	small sickle fern		
Rutaceae	*Pentaceras australe*	bastard crow's ash		
Phyllanthaceae	*Phyllanthus subcrenulatus*	phyllanthus		
Myrtaceae	*Pilidiostigma glabrum*	large-leaved plum myrtle		
Thymelaeaceae	*Pimelea latifolia*	forest rice flower		
Pittosporaceae	*Pittosporum multiflorum*	orange thorn		
Pittosporaceae	*Pittosporum revolutum*	yellow pittosporum		
Pittosporaceae	*Pittosporum undulatum*	sweet pittosporum		
Sapotaceae	*Planchonella australis*	black plum		
Sapotaceae	*Planchonella myrsinifolia*	blunt-leaved coondoo		
Polypodiaceae	*Platycerium bifurcatum*	elkhorn fern		
Polypodiaceae	*Platycerium superbum*	staghorn fern		
Lamiaceae	*Plectranthus parviflorus*			
Podocarpaceae	*Podocarpus elatus*	brown pine		
Commelinaceae	*Pollia macrophylla*	large-leaved pollia		
Grossulariaceae	*Polyosma cunninghamii*	feather wood		
Araliaceae	*Polyscias elegans*	celery wood		
Araceae	*Pothos longipes*	candle vine		
Acanthaceae	*Pseuderanthemum variabile*	pastel flower		
Cunoniaceae	*Pseudoweinmannia lachnocarpa*	rose marara		
Rubiaceae	*Psychotria daphnoides*	smooth psychotria		
Rubiaceae	*Psychotria loniceroides*	hairy psychotria		
Rubiaceae	*Psychotria simmondsiana*	small psychotria		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Dennstaedtiaceae	*Pteridium esculentum*	common bracken		
Pteridaceae	*Pteris tremula*	tender bracken		
Pteridaceae	*Pteris umbrosa*	jungle bracken		
Polypodiaceae	*Pyrrosia rupestris*	rock felt fern		
Grossulariaceae	*Quintinia verdonii*	grey possum wood		
Myrtaceae	*Rhodamnia argentea*	silver malletwood		
Myrtaceae	*Rhodamnia rubescens*	scrub turpentine		
Myrtaceae	*Rhodomyrtus psidioides*	native guava		
Fabaceae	*Rhynchosia minima*	least snout bean		
Ripogonaceae	*Ripogonum elseyanum*	hairy supplejack		
Laxmanniaceae	*Romnalda strobilacea*	romnalda	V	V
Rosaceae	*Rubus moluccanus var. moluccanus*	Molucca bramble		
Rosaceae	*Rubus rosifolius*	native raspberry		
Adoxaceae	*Sambucus australasica*	native elderberry		
Rutaceae	*Sarcomelicope simplicifolia subsp. simplicifolia*	yellow aspen		
Sapindaceae	*Sarcopteryx stipata*	steelwood		
Araliaceae	*Schefflera actinophylla#*	umbrella tree		
Cunoniaceae	*Schizomeria ovata*	crab apple		
Cyperaceae	*Scleria mackaviensis*	Mackavien's nut rush		
Cyperaceae	*Scleria sphacelata*	nut rush		
Flacourtiaceae	*Scolopia braunii*	flintwood		
Caesalpiniaceae	*Senna acclinis*	Senna		NT
Asteraceae	*Sigesbeckia orientalis*	Indian weed		
Elaeocarpaceae	*Sloanea australis*	maiden's blush		
Elaeocarpaceae	*Sloanea woollsii*	yellow carrabeen		
Smilacaceae	*Smilax australis*	barbed-wire vine		
Solanaceae	*Solanum stelligerum*	devil's needles		
Poaceae	*Sarga leiocladum*	wild sorghum		
Proteaceae	*Stenocarpus sinuatus*	wheel of fire		
Menispermaceae	*Stephania japonica var. discolor*	snake vine		
Sterculiaceae	*Sterculia quadrifida*	peanut tree		
Symplocaceae	*Symplocos thwaitesii*	buff hazelwood		
Meliaceae	*Synoum glandulosum*	scentless rosewood		
Myrtaceae	*Syzygium francisii*	giant watergum		
Myrtaceae	*Syzygium hodgkinsoniae*	red lily pily	V	V
Myrtaceae	*Syzygium luehmannii*	riberry		
Myrtaceae	*Syzygium oleosum*	blue lily pily		
Apocynaceae	*Tabernaemontana pandacaqui*	banana bush		
Winteraceae	*Tasmannia insipida*	brush pepperbush		
Meliaceae	*Toona ciliata*	red cedar		

Family	Scientific Name	Common Name	Status	
			EPBC Act	NC Act
Ulmaceae	*Trema tomentosa*	native peach		
Cucurbitaceae	*Trichosanthes subvelutina*	silky cucumber		
Ericaceae	*Trochocarpa laurina*	tree heath		
Moraceae	*Trophis scandens*	burny vine		
Violaceae	*Viola hederacea*	native violet		
Campanulaceae	*Wahlenbergia gracilis*	Australian blue bells		
Myrtaceae	*Waterhousea floribunda*	weeping lily pily		
Monimiaceae	*Wilkiea macrophylla*	large-leaved wilkiea		
Xanthorrhoeaceae	*Xanthorrhoea macronema*	bottle-brush grass tree		
Rutaceae	*Zieria smithii*	sandfly zieria		

Appendix 5. Animal Species List

EPBC Act = Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*; NC Act = Qld *Nature Conservation Act 1992*

Scientific Name	Common Name	Status	
		EPBC Act	NC Act
Amphibians			
Adelotus brevis	tusked frog		V
Limnodynastes peronii	striped marshfrog		
Litoria chloris	southern orange eyed treefrog		
Litoria fallax	eastern sedgefrog		
Litoria gracilenta	graceful treefrog		
Litoria pearsoniana	cascade treefrog		V
Litoria wilcoxii	stony creek frog		
Mixophyes fasciolatus	great barred frog		
Mixophyes iteratus	giant barred frog	E	E
Birds			
Acanthiza pusilla	brown thornbill		
Accipiter novaehollandiae	grey goshawk		
Aegotheles cristatus	Australian owlet nightjar		
Ailuroedus crassirostris	green catbird		
Alectura lathami	Australian brush turkey		
Alisterus scapularis	Australian king parrot		
Aquila audax	wedge-tailed eagle		
Ardea novaehollandiae	white-faced heron		
Cacatua galerita	sulphur-crested cockatoo		
Cacomantis flabelliformis	fan-tailed cuckoo		
Calyptorhynchus funereus	yellow-tailed black-cockatoo		
Carterornis leucotis	white-eared monarch		
Centropus phasianinus	pheasant coucal		
Ceyx azureus	azure kingfisher		
Chalcites lucidus	shining bronze-cuckoo		
Chalcophaps indica	emerald dove		
Colluricincla harmonica	grey shrike-thrush		
Colluricincla megarhyncha	little shrike-thrush		
Coracina tenuirostris	cicadabird		
Corvus orru	torresian crow		
Coturnix ypsilophora	brown quail		
Dacelo novaeguineae	laughing kookaburra		
Dicrurus bracteatus	spangled drongo		
Eopseltria australis	eastern yellow robin		
Eudynamys scolopacea	common koel		
Eurystomus orientalis	dollarbird		
Geopelia humeralis	bar-shouldered dove		
Gerygone mouki	brown gerygone		
Lalage leucomela	varied triller		
Macropygia amboinensis	brown cuckoo-dove		
Malurus lamberti	variegated fairy-wren		

Scientific Name	Common Name	Status	
		EPBC Act	NC Act
Malurus melanocephalus	red-backed fairy-wren		
Meliphaga lewinii	Lewin's honeyeater		
Monarcha melanopsis	black-faced monarch		
Myiagra rubecula	leaden flycatcher		
Myzomela sanguinolenta	scarlet honeyeater		
Neochmia temporalis	red-browed finch		
Ninox novaeseelandiae	southern boobook owl		
Oriolus sagittatus	olive-backed oriole		
Orthonyx temminckii	Australian Logrunner		
Pachycephala pectoralis	golden whistler		
Pachycephala rufiventris	rufous whistler		
Pitta versicolor	noisy pitta		
Platycercus adscitus	pale-headed rosella		
Podargus ocellatus plumiferus	plumed frogmouth		V
Podargus strigoides	tawny frogmouth		
Psophodes olivaceus	eastern whipbird		
Ptilinopus magnificus	wompoo fruit-dove		
Ptilinopus regina	rose-crowned fruit dove		
Ptilonorhynchus violaceus	satin bowerbird		
Ptiloris paradiseus	paradise riflebird		
Rhipidura albiscapa	grey fantail		
Rhipidura rufifrons	rufous fantail		
Scythrops novaehollandiae	channel-billed cuckoo		
Sericornis citreogularis	yellow-throated scrubwren		
Sericornis frontalis	white-browed scrubwren		
Sericornis magnirostra	large-billed scrubwren		
Sericulus chrysocephalus	regent bowerbird		
Strepera graculina	pied currawong		
Symposiarchus trivirgatus	spectacled monarch		
Threskiornis molucca	sacred ibis		
Todiramphus macleayii	forest kingfisher		
Trichoglossus chlorolepidotus	scaly-breasted lorikeet		
Trichoglossus haemotodus	rainbow lorikeet		
Tyto novaehollandiae	masked owl		
Zoothera heinei	russet-tailed thrush		
Ground-dwelling and arboreal mammals			
Antechinus flavipes	yellow-footed antechinus		
Antechinus mysticus	buff-footed antechinus		
Antechinus subtropicus	subtropical antechinus		
Hydromys chrysogaster	water rat		
Isoodon macrourus	northern brown bandicoot		
Macropus giganteus	eastern grey kangaroo		
Macropus rufogriseus	red-necked wallaby		
Melomys cervinipes	fawn-footed melomys		

Scientific Name	Common Name	Status	
		EPBC Act	NC Act
Nyctimene robinsoni	eastern tube-nosed bat		
Perameles nasuta	long-nosed bandicoot		
Petaurus breviceps	sugar glider		
Phascolarctos cinereus	koala	V	V
Potorous tridactylus tridactylus	long-nosed potoroo	V	V
Pseudocheirus peregrinus	common ringtail possum		
Pteropus alecto	black flying-fox		
Pteropus sp.	unidentified flying-fox		
Rattus fuscipes	bush rat		
Rattus lutreolus	swamp rat		
Rattus tunneyi	pale field rat		
Tachyglossus aculeatus	short-beaked echidna		SLC
Thylogale stigmatica	red-legged pademelon		
Thylogale thetis	red-necked pademelon		
Trichosurus caninus	short-eared brushtail possum		
Trichosurus vulpecula	common brushtail possum		
Wallabia bicolor	swamp wallaby		
Microbats			
Austronomys australis	white-striped free-tailed bat		
Chalinolobus gouldii	Gould's wattled bat		
Chalinolobus morio	chocolate wattled bat		
*Falsistrellus tasmaniensis***	eastern false pipistrelle		
Miniopterus australis	little bent-wing bat		
Miniopterus orianae oceanensis	eastern bent-wing bat		
*Mormopterus beccarii***	Beccari's free-tailed Bat		
*Mormopterus norfolkensis***	east coast free-tailed bat		
*Mormopterus ridei***	eastern little free-tailed bat		
Myotis macropus	large-footed myotis		
Nyctophilus bifax	eastern long-eared bat		
Nyctophilus gouldi	Gould's long-eared bat		
*Kerivoula papuensis*** (Syn. *Phoniscus)*	golden tipped bat		
Rhinolophus megaphyllus	eastern horseshoe bat		
*Saccolaimus flaviventris***	yellow-bellied sheathtail bat		
Scotorepens orion	eastern broad-nosed bat		
Vespadelus pumilus	eastern forest bat		
*Vespadelus troughtoni***	eastern cave bat		
Reptiles			
Bellatorias frerei	major skink		
Cacophis krefftii	dwarf crowned snake		
Cryptophis nigrescens	small-eyed snake		
Cyclodomorphus gerrardii	pink-tongued skink		
Demansia psammophis	yellow-faced whip snake		
Dendrelaphis punctulata	common green tree snake		
Eroticoscincus graciloides	elf skink		

Scientific Name	Common Name	Status	
		EPBC Act	NC Act
Eulamprus murrayi (Syn. *Concinnia*)	Murray's skink		
Eulamprus tenuis (Syn. *Concinnia*)	barred-sided skink		
Hemiaspis signata	marsh snake		
Itellagama lesueurii	Australian water dragon		
Lampropholis adonis	diamond shielded sunskink		
Lampropholis amicula	friendly sunskink		
Lampropholis couperi	Couper's sunskink		
Lampropholis delicata	copper skink		
Morelia spilota	carpet python		
Pseudechis porphyriacus	red-bellied black snake		
Ramphotyphlops nigrescens	blackish blind snake		
Saproscincus rosei	Rose's shadeskink		
Tropidechis carinatus	rough scaled snake		
Varanus varius	lace monitor		
Crustaceans			
**Euastacus urospinosus*	Blackall Range spiny crayfish		
Insects			
Ornithoptera richmondia	Richmond birdwing butterfly		V
Fish			
Melanotaenia duboulayi	crimson-spot rainbowfish		
Mogurnda adspersa	purple-spotted gudgeon		
Notesthes robusta	bullrout		
Retropinna semoni	Australian smelt		

Notes: E = Endangered; V – Vulnerable; * Blackall Range spiny crayfish is Endangered on IUCN Red List; SLC = 'special least concern' under the NC Act; ** Species possibly present but not reliably identified from recorded calls.

Appendix 6. Invasive Plant Species Inventory

Scientific Name	Common Name	Family	Form	Status under *Biosecurity Act 2014* and SCC Local Government Biosecurity Plan 2017
Ageratina adenophora	crofton weed	Asteraceae		Locally Significant Invasive
Ageratina riparia	mist flower	Asteraceae	H	Locally Significant Invasive
Ageratum houstonianum	blue top	Asteraceae	H	Locally Significant Invasive
Asclepias curassavica	redhead cottonbush	Apocynaceae	H	
Axonopus compressus	broad-leaved carpet grass	Poaceae	H	Locally Significant Invasive
Axonopus fissifolius	narrow-leaved carpet grass	Poaceae	H	
Baccharis halimifolia	groundsel	Asteraceae	ST	Restricted Invasive - C3
Bidens pilosa	Cobbler's Pegs	Asteraceae	H	Locally Significant Invasive
Celtis sinensis	Chinese elm		T	Restricted Invasive – C3
Cerastium glomeratum	mouse-eared chickweed	Caryophyllaceae	H	
Chloris gayana	Rhodes grass	Poaceae	G	Locally Significant Invasive
Cinnamomum camphora	camphor laurel	Lauraceae	T	Restricted Invasive – C3
Conyza canadensis	Canadian fleabane	Asteraceae	H	
Crassocephalum crepidioides	thickhead	Asteraceae	H	
Desmodium uncinatum	silver-leaved desmodium		V	Locally Significant Invasive
Drymaria cordata	tropical chickweed	Caryophyllaceae	H	
Gomphocarpus physocarpus	balloon cotton bush	Apocynaceae	H	
*Lantana camara**	lantana	Verbenaceae	SH	Restricted Invasive – C3
Ligustrum lucidum	broad-leaved privet		ST	Restricted Invasive - C3
Ligustrum sinense	small-leaved privet	Oleaceae	ST	Restricted Invasive – C3
Megathyrsus maximus var. pubiglumis	green panic			Locally Significant Invasive
Oxalis corniculata	oxalis	Oxalidaceae	H	
Paspalum conjugatum	sour grass	Poaceae	G	Locally Significant Invasive
Paspalum mandiocanum	broad leaf paspalum	Poaceae	G	Locally Significant Invasive
Paspalum urvillei	vasey grass			
Passiflora edulis	black passionfruit			Locally Significant Invasive
Passiflora suberosa	small passion flower	Passifloraceae	V	Locally Significant Invasive
Passiflora subpeltata	white passionflower			Locally Significant Invasive
Physalis peruviana	cape gooseberry	Solanaceae	H	
Rumex sp.	dock species		H	
Scoparia dulcis	scoparia	Scrophulariaceae	H	
Senna septemtrionalis	smooth senna	Caesalpiniaceae	SH	Locally Significant Invasive
Setaria sphacelata	south African pigeon grass	Poaceae	G	Locally Significant Invasive
Sida rhombifolia	sida	Malvaceae	H	Locally Significant Invasive
Solanum americanum	glossy nightshade	Solanaceae	SH	
Solanum capsicoides	soda apple	Solanaceae	SH	Locally Significant Invasive
Solanum chrysotrichum	giant devil's fig	Solanaceae	ST	Locally Significant Invasive
Solanum mauritianum	wild tobacco	Solanaceae	ST	Locally Significant Invasive
Solanum torvum	devil's fig	Solanaceae	SH	Locally Significant Invasive
Tradescantia fluminensis	green wandering Jew	Commelinaceae	H	Locally Significant Invasive
Urochloa decumbens	signal grass	Poaceae	G	Locally Significant Invasive

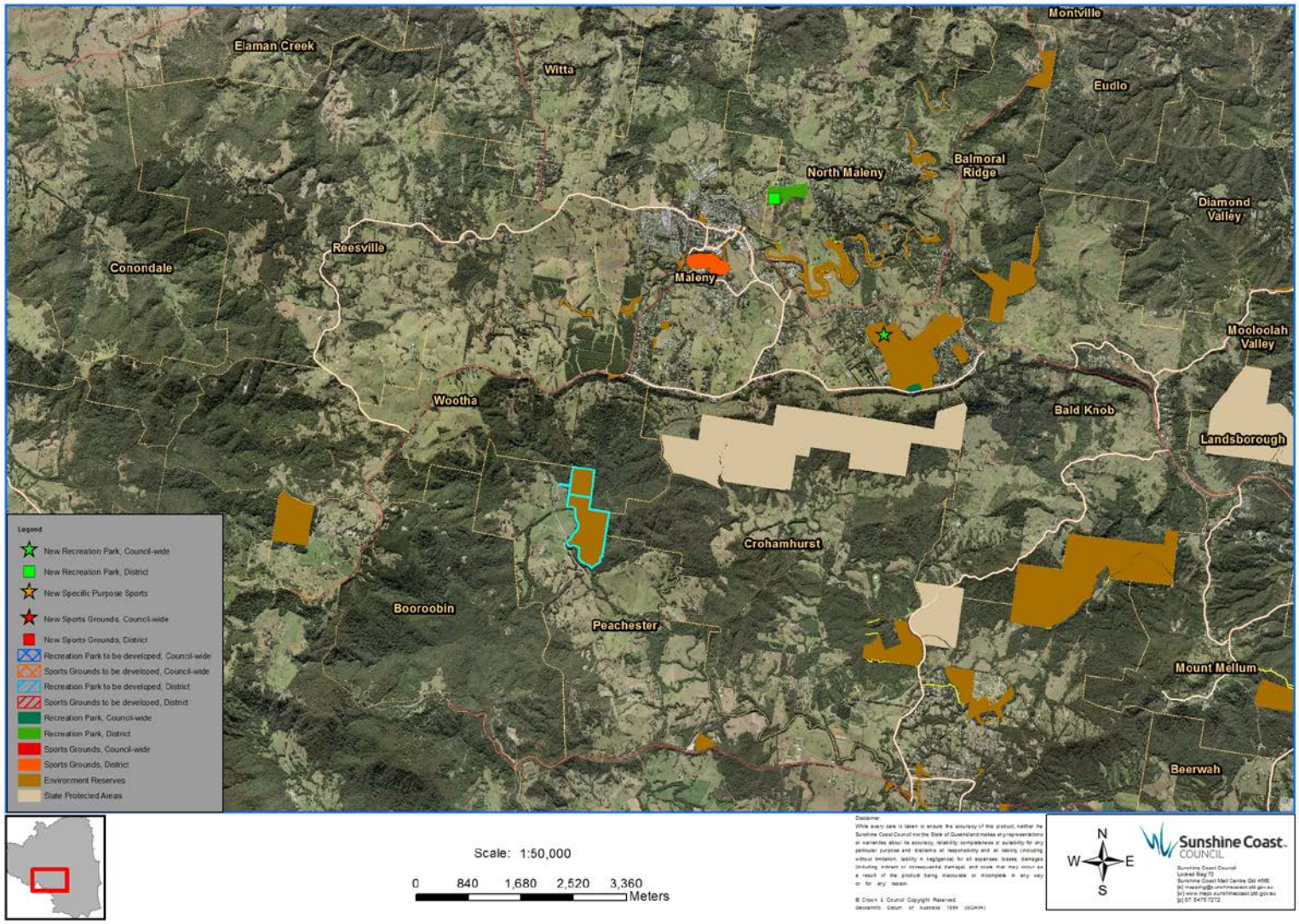
* WoNS = Weeds of National Significance agreed by Australian Governments; *Biosecurity Act 2014* categories: C3 = Restricted Matter (Category 3) invasive plant.

Appendix 7. Invasive Animal Species Inventory

Scientific Name	Common Name	Family	Status under *Biosecurity Act 2014*
Amphibians			
Rhinella marina	cane toad	Bufonidae	Invasive
Mammals			
Bos spp.	cattle	Bovidae	Invasive
Canis familiaris/sp	wild dog	Canidae	Restricted invasive
Capra hircus	goat	Bovidae	Invasive
Cervus elaphus	feral red deer	Cervidae	Restricted invasive
Felis catus	feral cat	Felidae	Restricted invasive
Mus musculus	house mouse	Muridae	Invasive
Sus scrofa#	feral pig	Suidae	Restricted invasive
*Vulpes vulpes**	European fox	Canidae	Restricted invasive

* Fox scent noted 2012; #feral pig diggings

Appendix 8: Environment and Liveability Strategy 2017– open space mapping



Glossary and Abbreviations

AHD
Australian Height Datum

Biosecurity Act / BA
Biosecurity Act 2014

BOA
Bushland Operational Assessment

CAR system

Comprehensive: examples of all types of regional-scale ecosystems in each IBRA region should be included in the National reserve System.

Adequate: sufficient levels of each ecosystem should be included within the protected area network to provide ecological viability and to maintain the integrity of populations, species and communities.

***Representative*:** the inclusion of areas at a finer scale, to encompass the variability of habitat within ecosystems.

CCP
Council's Environmental Operations: Community Conservation Partnerships team

Council
Sunshine Coast Council

E
Endangered

EPBC Act
Environment Protection and Biodiversity Conservation Act 1999

FMP
Fire Management Plan

IBRA
Interim biogeographical Regionalisation of Australia

IUCN
International Union for the Conservation of Nature

LC
Least Concern

LGA
Local Government Area

LRS
Lowland Rainforest of Subtropical Australia – A threatened ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*

MERI
Monitoring, Evaluation, Reporting, and Improvement

MP
Management Plan

NCA
Nature Conservation Act 1992

NRM
Natural Resource Management

NRS
National Reserve System

OC
Of Concern

RE
Regional Ecosystem

RWP
Regeneration Works Plan

SCC
Sunshine Coast Council

SCLGA
Sunshine Coast Local Government Area

SEQ
Southeast Queensland

Significant flora and fauna

Flora or fauna species listed as threatened under the EPBC Act; Endangered, Vulnerable or Near Threatened (EVNT) or Special Least Concern under the *Nature Conservation Act 1992*.

SMI

Statement of Management Intent

TEC

Threatened Ecological Community listed under the EPBC Act

VMA

Vegetation Management Act 1999

Weeds of National Significance (WoNS)

Weeds identified by Commonwealth governments based on their invasiveness, potential for spread and environmental, social and economic impacts.

Sunshine Coast COUNCIL

Your Environment Levy in action

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