Sunshine Coast Council

Coolum Creek Environmental Reserve

Plan of Management

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Council also wishes to thank the Coolum Creek Community Working Group for their contribution to the Statement of Management Intent and Plan of Management. The working group represents a broad spectrum of community interests and has comprised the following people and stakeholder groups: Mick Cubis (Department of Environment and Heritage Protection); Jamie Seeleither (Department of Environment andHeritage Protection); Gary Jorgenson (Department of Environment and Heritage Protection); Nat Smith (Department of Environment and Heritage Protection); Nicole McKirdy (Department of Primary Industries and Fisheries); Narelle McCarthy (Sunshine Coast Environment Council); Cerran Fawns (Maroochy Waterwatch); Vaughn Nash (Maroochy Waterwatch); Eve Fesl (Gubbi Gubbi); Bridgette Davis (Gubbi Gubbi); Mark Planck (Swan Boat Hire); Howard Prentis (Local landholder); Scott Trevor (Local landholder); Gary Petersen (Local landholder); Stuart McLeod (Local landholder).

1. Background

The Sunshine Coast Regional Council (SCRC) manages almost 7,600 hectares of natural areas. These natural assets are fundamental to the quality of life that residents and visitors enjoy and they also help conserve our local biodiversity. Today they form a network of reserves across the region providing a range of social, economic and environmental benefits. Reserve acquisitions are supported by council's Environmental Levy program which also seeks funding partnerships with state and commonwealth agencies.

The northern portion of Coolum Creek Environmental Reserve was purchased in 2004 in partnership with the Queensland Government and the adjoining Lots which form "the confluence" with the Maroochy River were purchased in 2009 in partnership with the Australian Governments National Reserve System Caring for our Country grants. This adds to the existing protected area of the Coolum Creek Conservation Park, with the combined area now comprising a total of 440ha of diverse remnant coastal floodplain ecosystems, (see fig 1). SCRC has negotiated a range of joint management agreements over this area which includes Queensland Parks and Wildlife; the Australian Government National Reserve System (NRS), and local community involvement.

This Plan of Management (PoM) has been developed under the requirements of the funding arrangements for the NRS Caring for Our Country grant and is an extension of the Statement of Management Intent which was developed in close consultation with the Coolum Creek Community Working Group. The PoM highlights the reserve's values and the proposed management actions for protecting those values as well as setting management objectives within the framework of the IUCN category—Category II, National Park—which has been assigned to this reserve. The PoM will therefore guide planning and management of the reserve and provides measurable actions and baseline data which can be monitored and evaluated to inform adaptive management decisions and future plan review.

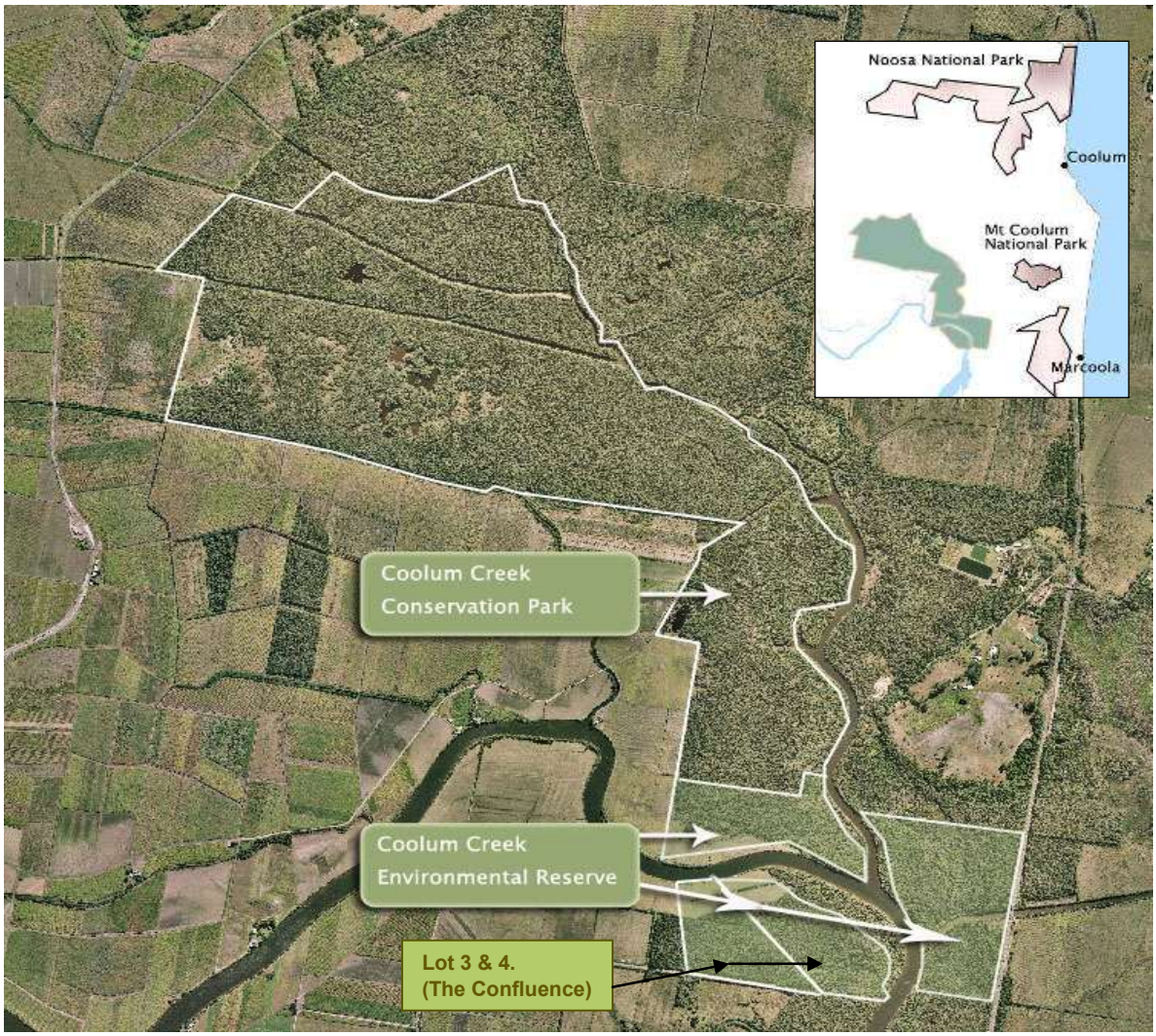
Council appreciates the level of community input that has been provided and is committed to working with the local community in managing its natural assets into the future.

2. Description of the Coolum Creek Environmental Reserve.

Within the Coolum Creek Environmental Reserve "the confluence" comprises two parcels of land adjacent to the Maroochy River at Lot 3 (16.18ha) & 4 RP27017 (20.23ha) Burtons Rd. This strategic acquisition extends the protected area across both sides of the Maroochy River, thus providing a more comprehensive coverage of remnant coastal floodplain ecosystems.

The Coolum Creek Environmental Reserve is situated on the Maroochy River floodplain, at the junction of Maroochy River and Coolum Creek, 2km West of Mt Coolum National Park. Together with the adjoining Coolum Creek Conservation Park, The Coolum creek Environmental Reserve adds a large protected area of 440ha to the National Estate listed Noosa-Maroochy Wallum Area. This also provides significant connectivity between the Noosa National Park (Marcoola section) and adjacent forests. Figure 1 shows the location of the two main reserve management areas, highlighting lots 3 & 4, "the confluence" and proximity to other nearby protected areas.

Figure 1: Location of Coolum Creek Environmental Reserve



The Coolum Creek Environmental Reserve provides a valuable reminder of the rich diversity of ecosystems that once covered the coastal plains of the Sunshine Coast.

The reserve supports a high diversity of plant and animal communities. At least seven different vegetation types occur within the reserve, ranging from freshwater and estuarine wetlands to spectacular mangrove forests. This rich mosaic of vegetation supports approximately 79 plant species and 137 fauna species, representing a significant remnant of the historical floodplain vegetation and habitat areas.

The reserve has important aboriginal cultural heritage value due to the cultural resources associated with floodplain wetlands and also its connectivity to the Maroochy River which forms part of the traditional dreaming story of this region.

European cultural heritage is also present in the landscape, serving as reminders of past land use practices. These include the drainage channels constructed in the early twentieth century and the rail line used by the old cane trains. Today adjoining fallow cane land provides an insight into the influence agriculture has had across much of Maroochy's fertile floodplain.

2.1 Values

Natural Values

- Protects critical coastal floodplain habitat and therefore provides flood mitigation for climate change scenarios.
- Coastal floodplain dominated by quarternary estuarine and lagoonal deposits.
- Protects a significant area of swamp oak (*casuarina glauca*) open forest which is an "of concern" and "endangered" regional ecosystem (Vegetation Management and biodiversity status).
- Protects a range of regionally significant Ecosystems, including *Casuarina glauca* tall open forest (RE12.1.1); *Lophostemon confertus* open forest (RE 12.9-10.1); and mangrove closed woodland (RE 12.1.3)
- Protects important fish habitat areas.
- Provides important habitat for several rare and significant fauna found within the reserve including the black-necked stork (rare NCA 1992); grey-headed flying-fox (vulnerable EPBC Act 1999); wallum froglet (vulnerable, NCA 1992) and the pale field rat (lower risk-near threatened, IUCN). (See appendix IV fauna list).
- Protects habitat suitable for the following significant species which occur in the region: the glossy black cockatoo (vulnerable EPBC Act 1999); Australian painted snipe (vulnerable EPBC Act 1999); grey goshawk (rare NCA 1992); red goshawk (vulnerable EPBC Act 1999); wallum sedgefrog (vulnerable EPBC Act 1999); the water mouse (vulnerable EPBC Act 1999); and the EPBC listed Lesser Swamp Orchid, (see appendix V).

Environmental Values

- Carbon sequestration in wetlands and revegetation areas.
- Provides a critical link between adjacent forest fragments and represents an important section of the nationally significant Noosa-Maroochy Wallum Corridor.
- The site offers the potential to provide a range of nature based recreational and educational opportunities for the growing population in the local region.

Cultural Values

- Traditional owners have a long association with the Maroochy River floodplain and a midden site has been identified within the reserve area.
- Previous use of the adjoining areas for cane growing and remnants of the cane line that supported this activity transects the reserve and are still evident.

2.2 Integrity of the Values

Condition

Specific history of the land covered by this reserve is not documented; however there are aerial images indicating previous widespread clearing and creation of drainage channels for the development of agriculture and grazing throughout the floodplain area. Significant vegetation re-growth has occurred in the time since areas of the land was cleared approximately 50-60 years ago.

A preliminary assessment of the site reports high biodiversity in plant and animal species. The reserve has good representation of mature phase mangrove forest fringing Coolum Creek. Beyond the fringing mangroves and wetlands much of the vegetation is in a regrowth phase. The fertile alluvium on which these paperbark (*Melaleuca quinquenervia)* and swamp oak (*Casuarina glauca*) forests occur was favoured by early settlers for pastoral pursuits, resulting in considerable reduction of native forest. There has been little clearing since the 1950's, allowing important ecological recovery processes to continue. Today the paperbark and swamp oak forests within the Environmental Reserve are well defined and contain a complement of species typical of the pre clearing vegetation. However approximately 8ha of land along the Maroochy River boundary was maintained as cleared land prior to the acquisition of this site, as indicated in Figure 1. This area is currently subject to riparian rehabilitation and revegetation offsets.

Within the scope of the management planning for this site a condition assessment (Bushland Operational Assessment) has been undertaken to determine specific details of site condition in relation to future vegetation management. This will record extent of weeds, significant native species and proposed treatment zones for rehabilitation.

Bioregional and landscape context

IBRA:

The Interim Biogeographic Regionalisation of Australia (IBRIA), (Aus Gov. Dep. SEWPC, 2012) is the National Reserve System's planning framework, the fundamental tool for identifying land for conservation. IBRA is a more refined and detailed subset of the global ecoregions. Australia has 89 bioregions described within the IBRA.

Coolum Creek Environmental Reserve is located wholly within the SEQ bioregion, and the SEQ9-Great Sandy sub-region of IBRA. Therefore this reserve provides a valuable riparian corridor extension and adds a larger area of protected remnant habitat, (440ha) within the SEQ bioregion and SEQ9-Great Sandy sub-region.

Catchment:

Coolum Ck Environmental Reserve is located within the Maroochy River Catchment and SEQ Catchments' Maroochy-Mooloolah Catchment Management Area. The Coolum Creek Environmental reserve also provides an extension of the riparian corridor linking other riparian reserves in the Maroochy catchment, including the Maroochy Wetlands Sanctuary downstream, and Arcoona Rd Bushland Conservation reserve; Doonan Ck Bushland Conservation Reserve and Noosa National Park in the upper reaches of the Maroochy catchment. See Figure 2 below.

Figure 2. Landscape context of Coolum Creek Environmental reserve.

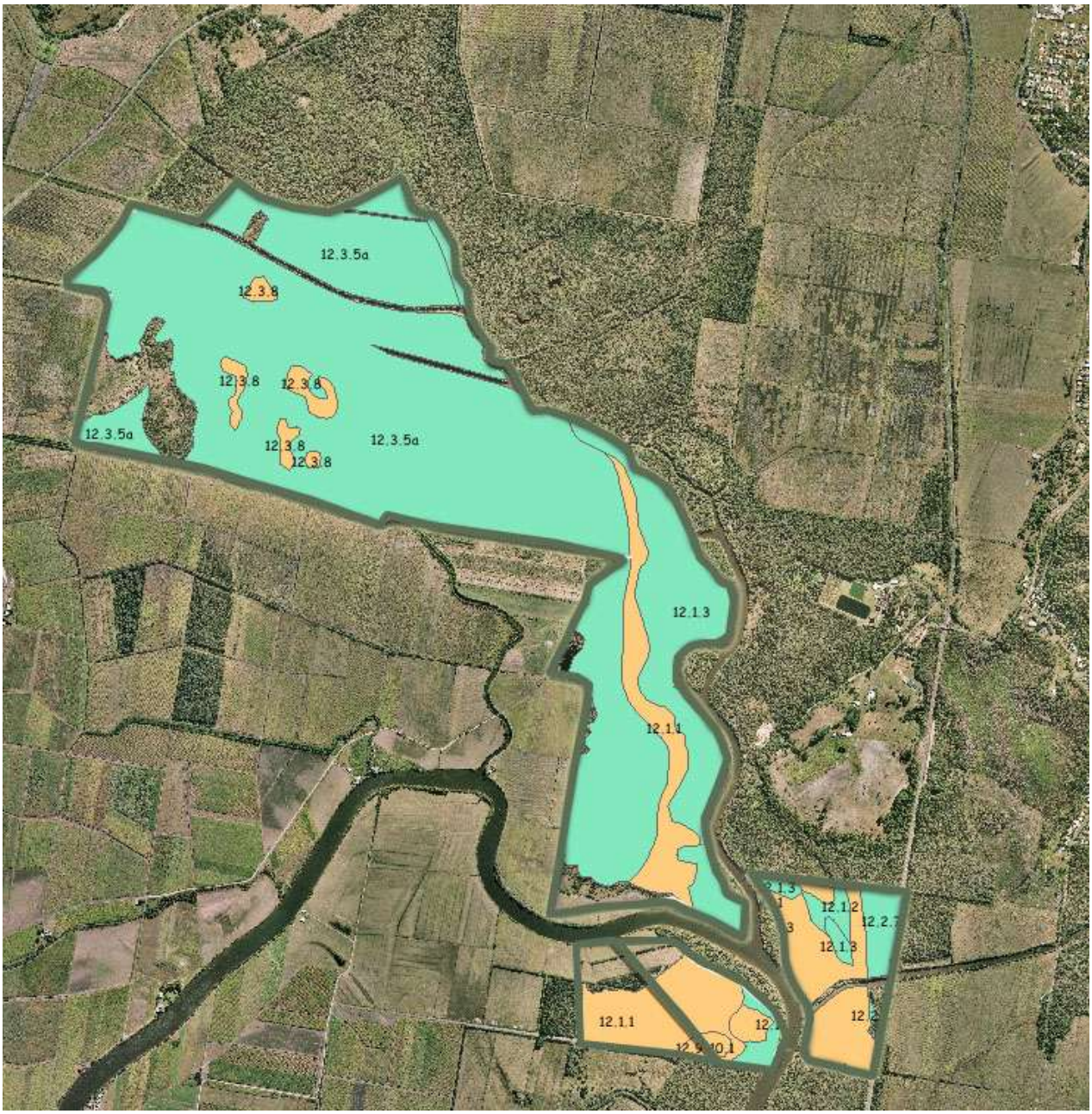
CAR contribution

- *Comprehensive:* There are seven Regional Ecosystems occurring within the Coolum Ck Environmental Reserve which are included in the SEQ bioregion and SEQ9-Great Sandy sub-region of IBRA. These are listed in Table 1 below with distributions shown in Figure 3.
- *Adequate:* With an area of 440ha the protected area comprising both the Coolum Ck Environmental Reserve and the adjoining Coolum Ck Conservation Park constitutes adequate protection which is further enhanced by riparian and the surrounding network of protected reserves and larger National Parks (see Figure 2).
- *Representative:* At a finer scale the seven RE's found within the Coolum Ck Environmental Reserve provides representation of the pre-clearing landscape that once existed across the Maroochy and Mooloolah river floodplains. This shows a typical mosaic of habitat ranging from riverine to estuarine including mangrove, saltpan, sedge swamps as well as mixed Melaleuca woodlands and Eucalypt open forests.

Table 1: Regional Ecosystems of Coolum Creek Environmental Reserve

RE	VMA status	Description
12.1.1	Of concern	*Casuarina glauca* ± *Melaleuca quinquenervia* ± mangroves open-forest. Occurs on margins of Quaternary estuarine deposits.
12.1.2	Not of concern	Saltpan vegetation comprising *Sporobolus virginicu*s grassland and samphire herbland. Occurs on Quaternary estuarine deposits. Marine plains/tidal flats.
12.1.3	Not of concern	Mangrove shrubland to low closed forest. Occurs on Quaternary estuarine deposits.
12.2.7	Not of concern	*Melaleuca quinquenervia* open-forest to woodland. Occurs on Quaternary coastal dunes and seasonally waterlogged sand plains.
12.3.5a	Of concern	*Melaleuca quinquenervia* open-forest to woodland. Occurs on Quaternary alluvial plains in coastal areas.
12.3.8	Of concern	Characteristic species include *Cyperus spp., Schoenoplectus spp., Philydrum lanuginosum, Eleocharis spp., Leersia hexandra*. Occurs in freshwater swamps associated with floodplains.
12.9-10.1	Of concern	Shrubby open-forest. Canopy species include *Eucalyptus resinifera, E. grandis, E. robusta, Corymbia intermedia* ± *E. microcorys*. Occurs on Cainozoic to Proterozoic sediments.

Figure 3: Regional Ecosystem Map of Coolum Creek Environmental Reserve



Note: The esplanade adjoining Coolum Creek Environmental Reserve will be managed in accordance with the principles of this Statement of Management Intent.

Threats and threatening processes – The following threats and threatening processes identified for Coolum Creek Environmental Reserve are also included below in the management framework, where a range of specific management actions are listed in relation to each of these threats.

Environmental Weeds, Pest Animals and Myrtle Rust

Three declared weed species under the Land protection (Pest and Stock Route management) Act 2002, are known to occur within the reserve—lantana (*Lantana camara*) and broad leaved pepper tree (*Schinus terebinthifolia*) are class 3 species which may require removal from environmentally significant areas*;* and groundsel bush (*Baccharis halimifolia),* a class 2 species where control is required by landholders. Aggressive vines and grasses also occur in some of the primary regrowth vegetation.

Groundsel bush is regarded as the more serious weed in the Environmental Reserve and is typically abundant across the wider Maroochy floodplain. A Bushland Operational Assessment (BOA) will address this and other weed issues to assess vegetation condition and develop annual Work Plans for weed management and ecological restoration of the reserve.

Pest animals in the surrounding area, such as roaming cats, dogs and foxes have been reported to SCRC by local residents, (J Childs, SCRC Pest Management Unit, pers. comm. 17 July, 2012). Although pest animals have not been found in the reserve this is a noted potential threat which is monitored by on-ground operational staff who report to the north region Natural Areas operational co-ordinator.

Mealeuca which occurs throughout the Coolum Ck Environmental Reserve is known to be susceptible to Myrtle Rust. Although Myrtle Rust has been recorded in areas across the floodplain there have been no sightings within this reserve. Council works in partnership with Biosecurity Queensland to monitor and record occurrences of Myrtle Rust throughout the region and Natural Areas Operational Management teams are trained in the identification of Myrtle Rust on council reserves.

Fire

Previous agricultural land practices involving sugar cane fires once posed a significant threat to the reserve. However with subsequent changes to the surrounding land use there is currently no immediate risk of fire and the development of a detailed fire management plan will provide guidance for protecting assets and maintaining ecological processes. A Fire Management Plan for the Coolum Creek Environmental Reserve will be prioritized for the 2012-2013 budget and work plan review.

Hydrology

Surrounding historical land use resulted in draining wetlands by cutting open drains into the shallow alluvial aquifer, thereby drawing down the water table. Impacts on wetland hydrology such as loss of perennial lagoons have been recorded in the adjoining Coolum Ck Conservation Park[1]. There are no perennial lagoons within the Coolum Ck Environmental Reserve section.

Erosion

Bank erosion has been identified in the past as a threatening process along cleared sections of the Maroochy River boundary. SEQ catchments and Sunshine Coast Council has undertaken bank stabilization and revegetation works in this area. Future recreational plans for the river will consider the effects of boats on bank stability and must comply with the reserves management objectives.

Salinity/Acidity

The site does not exhibit impacts relating to salinity or acidity

[1] **Maroochy Shire Council , 2003. Plan of Management Coolum Creek Conservation Park. Prepared for Maroochy Shire Council by Rob Friend and Associates Pty Ltd in association with Indigo C Pty Ltd, Maroochydore.**

Climate Change

Sunshine Coast Council Biodiversity Strategy 2010 -2020 recognizes that climate change is a significant long-term threat to the areas biodiversity values. Research to date indicates that climate change will accelerate a decline in biodiversity through loss of plant and animal species, loss of habitat, proliferation of weed species, saltwater intrusions (sea level rise) and increased bush fire risks.

Swampy habitat within Coolum Ck Environmental Reserve which is dependent on groundwater may be vulnerable to prolonged drought conditions associated with climate change. Groundwater protection is therefore essential to maintaining habitat resilience as this will help prevent salt water intrusion and plant desiccation, thus enabling the site to provide habitat refuge to the surrounding landscape during prolonged dry seasons.

3. Management Framework

The management framework identifies issues relating to the maintenance of the significant natural and cultural values of the protected area. The framework is developed and delivered as a joint initiative between the Sunshine Coast Council, Coolum Creek Environmental Reserve Community working group and the Australian Governments Caring for our Country National Reserve System funding program.

It is a requirement of the National Reserve System (NRS) program that each NRS property must be managed in accordance with one or more IUCN protected area categories. Therefore the management framework for Coolum Creek Nature Reserve includes the IUCN management objective for category II National Park which is supported by the Community Vision.

3.1 Management Objective

Primary management objective under IUCN category II – National Park:

- To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.

> Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provides a foundation for environmentally and culturally compatible spiritual, scientific, educational, and visitor opportunities.

Other objectives

- To manage the area in order to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources and unimpaired natural processes;
- To maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term;
- To contribute in particular to conservation of wide-ranging species, regional ecological processes and migration routes;
- To 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;
- To take into account the needs of indigenous people and local communities, including subsistence resource use, in so far as these will not adversely affect the primary management objective;
- To contribute to local economies through tourism

3.2 Coolum Creek Environmental Reserve in 2028 – A Community Vision

A twenty year vision formulated for the reserve by the working group will inform management actions and community participation into the future. The Community Vision for the reserve recognises the importance of:

- preserving the values of this unique land
- protecting its natural biodiversity and
- promoting community ownership of the reserve.

In 2028…

The reserve provides valuable scenic amenity and offers the opportunity to connect with nature and learn about the local flora and fauna. An expanded network of reserves across the coastal floodplain is protected in perpetuity, providing important buffers between urban and natural areas.

Recreation is largely passive, with kayaks and canoes a common sight on the waterway. Paddlers are enjoying the peace and tranquillity of spectacular mangrove forests and wildlife. Landing stages offer access to formal walking trails which provide an opportunity to explore the natural features of the reserve. Interpretive signage tells a story of the history and explains some of the natural and cultural values of the reserve.

The waterway has a pristine appearance with vegetated riparian zones and management of erosion areas. Local landholders have continued to work with Council to expand the riparian rehabilitation program.

In collaboration with special interest groups, education programs are offered to local schools, tertiary institutions and the public. Similarly, collaboration underpins the research and monitoring program, an essential component of the land management program. Genuine stakeholder engagement and a transparent consultation framework are crucial in achieving this community vision. Long term protection of the reserve continues to encompass a whole of community involvement.

3.3 Achieving the Management Objectives and Community Vision –

Management actions have been grouped into four broad categories based on key community concerns, and aim to provide a realistic and practical strategy for achieving the Management Objectives and Community Vision outlined above. These are:

- Protecting Biodiversity
- Preserving our Cultural Heritage
- Opportunities for Recreation and Education
- Research and Monitoring

3.4 Protecting Biodiversity

The Sunshine Coast is recognised as one of the most biodiverse regions of Australia. The combination of subtropical climate and complex geological history has given rise to a rich diversity of ecosystems. The region is also experiencing rapid population growth. Urban development and its associated loss of habitat are recognised as the primary threat to biodiversity. The introduction of invasive species adds another level of threat and there is also growing concern in relation to climate change and associated extreme weather events. Management strategies for the reserve will focus on amelioration of current and emerging threatening processes.

Native Plants

Vegetation within the Environmental Reserve reflects the history of land use across the Maroochy River floodplain. Much of this fertile alluvial floodplain was cleared in the early twentieth century for pastoral purposes and consequently, there is a mix of mature phase and regrowth vegetation. The reserve has good representation of mature phase mangrove forest fringing Coolum Creek. These forests contain superb examples of the grey mangrove (*Avicennia marina*) and orange mangrove (*Bruguiera gymnorhiza*). A total of five mangrove species have been recorded in the reserve. The estuarine sediments and marine clays that help support these mangrove forests also sustain saltpan vegetation dominated by native grasses and sedges including sand couch (*Sporobolus virginicus*) and bare twigrush (*Baumea juncea*).

Regular tidal inundation gives this reserve the appearance of an estuarine wetland and provides ideal conditions for the impressive mangrove fern (*Acrostichum speciosum*). Beyond the fringing mangroves and wetlands much of the vegetation is in a regrowth phase. The fertile alluvium on which these paperbark (*Melaleuca quinquenervia)* and swamp oak (*Casuarina glauca*) forests occur was favoured by early settlers for pastoral pursuits, resulting in considerable reduction of native forest. Fortunately there has been little clearing since the 1950's and this has allowed important ecological recovery processes to continue.

Today the paperbark and swamp oak forests within the Environmental Reserve are well defined and contain a complement of species typical of the pre clearing vegetation. Despite these floristic similarities, it should be expected that regrowth vegetation will lack at least some of the structural attributes of equivalent mature phase forest. However, even in this phase; this vegetation contributes to the overall ecological viability of the landscape. For example, in Coolum Creek Environmental Reserve there is a lack of large woody debris on the ground within the regrowth areas. This is simply a function of age and is likely to improve over time if other threatening processes such as fire are managed appropriately. In contrast, the mature phase mangrove forests are much older and support a wider spectrum of natural forest processes whereby the optimum structural diversity for this particular forest type is maintained. A recent flora survey of the reserve concluded "…exceptional representative areas of mangrove vegetation on the Sunshine Coast".

There are a number of freshwater swamps within the reserve where the Chinese water chestnut (*Eleocharis dulcis*) is notably conspicuous. It has been suggested that these swamps are the result of fires in the early part of the twentieth century when dense deposits of humus were burnt, creating depressions that are now clearly defined, permanent water bodies.

According to the Department of Environment and Heritage Protection, the Coolum Creek Environmental Reserve contains seven Regional Ecosystems or distinct vegetation types. Three of these are listed as Of Concern including the swamp oak forest, freshwater swamps and tall shrubby open forest dominated by brush box (*Lophostemon confertus*). In 2007 a total of 79 native species were recorded. There are currently no records of any endangered, vulnerable or rare plant species. However, it has been noted that the EPBC listed Lesser Swamp Orchid may be found at this site, (see appendix III, b). This is due to the habitat requirements and known occurrences of this species in the nearby Noosa and Eenie Ck region. Records of plant species lists for the Coolum Ck Environmental Reserve are provided in Appendix I, II and III.

Native Plants
Management actions will focus on*:*

- ✓ Reserve Condition Mapping to identify ecosystem health.
- ✓ Rehabilitating cleared areas with appropriate native vegetation and/or regeneration practices
- ✓ Seeking opportunities to collaborate with special interest groups in flora surveys/ monitoring programs.
- ✓ Liaising with key stakeholders on flora management programs.
- ✓ Developing ongoing community education/awareness programs

Native Wildlife

The Coolum Creek Environmental Reserve provides important habitat for native wildlife. Extensive clearing across the Maroochy floodplain has increased the significance of this reserve for both resident and migratory species. The reserve also provides a critical link between adjacent forest fragments and represents an important section of the nationally significant Noosa-Maroochy Wallum Corridor. Such corridors provide contiguous habitat in an otherwise increasingly fragmented landscape, which are critical to wildlife movement. For certain species these corridors represent the only opportunity to traverse the landscape in response to feeding and breeding behaviour. They are in effect the ecological highways which sustain our local biodiversity.

A preliminary fauna assessment of the site identified 116 bird, 12 mammal, 3 bat and 6 frog species. See appendix IV for the complete fauna list. Table 2 below lists endangered, vulnerable and rare fauna species which were found in the preliminary survey and also lists additional significant species which are likely to occur here due to habitat availability and nearby records.

Table 2. Significant Fauna Species Associated with Coolum Creek Environmental Reserve.

Scientific name	Common Name	EPBC Act 2000*	Qld NC Act 1992*	Presence recorded
Litoria olongburensis	Wallum Sedgefrog	V	V	
Litoria freycineti	Wallum Rocketfrog		V	
Crinia tinnula	Wallum Froglet		V	yes
Calyptorhynchus lathami halmanturinus	Glossy Black Cockatoo	E		
Rostratula australis	Australian Painted Snipe	V	V	
Rallus pectoralis	Lewins Rail		R	
Numenius madagascariensis	Eastern Curlew		R	
Accipiter novaehollandiae	Grey Goshawk		R	
Erythrotriorchis radiatus	Red Goshawk	V	E	
Lophoictinia isura	Square-tailed Kite		R	
Phascolarctos cinereus	Koala	V		
Xeromys myoides	False Water Rat	V		
Argyreus hyperbius inconstans	Australian Fritillary Butterfly	V		
Pteropus poliuocephalus	Grey-headed Flying Fox	V		yes

* E -endangered; V-vulnerable; R – rare;

The Environmental Reserve contains important fish habitat areas including mangroves, mangrove ferns and saltmarsh communities. The adjacent estuaries fall within the declared Maroochy Fish Habitat Area as set out in the *Fisheries Act 1994*.

Native Wildlife
Management actions will focus on:

- ✓ Maintaining, and where appropriate enhancing the quality and extent of native vegetation and associated habitats.
- ✓ Compiling a comprehensive fauna list for the reserve.
- ✓ Seeking opportunities to collaborate with special interest groups in fauna surveys / monitoring programs.
- ✓ Liaising with key stakeholders in regard to fauna management programs.
- ✓ Developing ongoing community education/awareness programs.

Invasive Species (Weeds and Feral Animals)

Invasive species present a serious threat to biodiversity. Extensive clearing of vegetation and previous land use across the Maroochy floodplain has resulted in the introduction of many non native plant species. The fertile alluvial plains within the reserve harbour 3 declared environmental weeds listed under the Land protection (Pest and Stock Route management) Act 2002 such as lantana (*Lantana camara)* and the pepper tree (*Schinus terebinthifolia*). Aggressive vines and grasses also occur particularly in association with the reserve's regrowth vegetation. Groundsel bush (*Baccharis halimifolia*) is perhaps the most serious weed in the Environmental Reserve as this is a class 3 declared weed which required removal by landholders and is typically abundant across the wider Maroochy floodplain. Characteristics of this species, including a preference for moist habitats, prolific seed production, wind dispersal and few natural predators or control agents have allowed groundsel to establish a significant population in and adjacent to the reserve.

Pest animals such as roaming cats, dogs and foxes are known to occur in the surrounding area (J Childs, 2102, pers. comm. 17 July). (Appendix IV). Although there were no pest animals reported in the fauna survey—see Appendix IV—the potential threat of pest animals is noted as these animals are typically highly mobile and their presence/absence may vary according to their specific resource requirements. Therefore ongoing monitoring is the only effective means of understanding the extent of invasive species and allocating resources to mitigate their impacts.

Invasive Species
Management actions will focus on:

- ✓ Reserve Condition Mapping to identify ecosystem health, pest animals and weed distribution.
- ✓ Operational action plans that provide strategic resource allocation.
- ✓ Liaison with key stakeholders, particularly neighbours to expand and enhance pest Management outcomes.
- ✓ Developing ongoing community education/awareness programs.
- ✓ Seeking opportunities to collaborate with special interest groups in relation to invasive species surveys/monitoring programs.
- ✓ Compliance with relevant legislation
- ✓ Reporting and controlling pest animals through the operational management and maintenance teams liaising with councils Pest Management Unit.
- ✓Integrated management with councils Pest management Plan[2]

Fire Management

Fire has been and will continue to be a feature of the landscape. Burning, natural wildfire and burning of sugar cane have occurred in the past. It is likely that the historical practice of burning sugar cane prior to harvest has intermittently encroached on the boundary of what is today the Coolum Creek Environmental Reserve.

Fire is an important natural process and many native plants and animals have evolved specific adaptations. Fire can also result in negative impacts particularly when it occurs in fire sensitive forest types or regrowth vegetation.

Fire management is a critical element of the Environmental Reserve management program. Fire management needs to address the ecological requirements of the reserve and the protection of public infrastructure, private property and most importantly human life. Fire management in the reserve will aim

[2] **Sunshine Coast Council, 2011. Sunshine Coast Local Government Area Pest management Plan, 2011-2015. Sunshine Coast Council, Nambour, Qld.**

to as far as practicable replicate the burning regimes required by native flora and fauna including the exclusion of fire in fire sensitive areas.

Fire Management
Management actions will focus on:

- ✓ Preparing a Fire Management Plan in consultation with key stakeholders
- ✓ Working with Queensland Fire and Rescue Service and other relevant agencies to develop a Fire Response Plan.
- ✓ Maintaining natural species diversity through the exclusion of fire from fire-sensitive vegetation types.
- ✓ Ensuring all fire management infrastructure is properly maintained.
- ✓ Developing ongoing community education/awareness programs.

Waterways

The Maroochy River and Coolum Creek provide considerable recreational and economic opportunities for the Sunshine Coast region. The Maroochy River Recovery Program is focused on improving the health of the river and tributaries to enhance the many social, economic and environmental values it provides to the region. Important waterway health issues requiring the development of management responses include fragmented riparian vegetation and accelerated river bank erosion.

Bank stabilisation issues have resulted from a history of land use practices that have removed riparian vegetation. Bank instability problems have escalated as a result of increased recreational boat activity, particularly wakeboarding. Planning is underway to address areas of significant bank erosion in the Coolum Creek Environmental Reserve and works have already been undertaken in partnership with Maroochy Waterwatch and SEQ Catchments, including re-vegetation projects; bank stabilisation and fish habitat restoration using woody debris.

Scenic amenity attracts many recreational users. In the medium term, the development of appropriate plans in accordance with the IUCN management objectives for the Coolum Creek Environmental Reserve, will be required to manage recreational boating activities . This is imperative for sustainable and compatible use of these waterways.

Waterways
Management actions will focus on:

- ✓ Reinstating riparian vegetation.
- ✓ Working with key stakeholders in developing a range of measures to combat anthropogenic erosion issues.
- ✓ Monitoring of bank erosion to identify causes and inform planning and management of issues.
- ✓ Seeking opportunities to collaborate with special interest groups in relation to water quality monitoring.
- ✓ Participate in the development and implementation of a broader Maroochy River Management Plan.

Hydrology

The Coolum Ck Environmental Reserve is located on an alluvial floodplain. These areas typically have

shallow aquifers which maintain perennial wetlands, prevent saltwater intrusion at the intertidal zone and facilitate nutrient cycling processes through ground and surface water interactions. Although the Coolum Creek Environmental Reserve does not contain any perennial lagoons the natural hydrological conditions are critical to the maintenance of vegetation communities located at this site, such as RE 12.1.1 (*Casuarina glauca* ± *Melaleuca quinquenervia* ± mangroves open-forest); and RE 12.9-10.1 (*Eucalyptus resinifera, E. grandis, E. robusta, Corymbia intermedia* ± *E. microcorys*).

Future threats to hydrological conditions are associated with climate change and associated drought and sea level rise causing salt water intrusion from nearby intertidal areas.

Hydrology
Management actions will focus on:

- ✓ Integrated planning with SCRC climate change strategy to ensure alluvial aquifers are protected and maintained.

3.5 Governance and Legal Protection

The desire to see the Coolum Creek Environmental Reserve protected for future generations has been a central theme during the community consultation process. The reserve comprises several land parcels which have differing tenure and legal protection. The larger northern portion is gazetted as Conservation Park under the Queensland Nature Conservation Act 1992 which affords protection in perpetuity. The adjoining parcels are freehold tenure under Council ownership. Legal protection for these parcels is currently being sought through a Nature Refuge Agreement with the Queensland Government. It is anticipated that the reserve will be added to the network of protected areas under the Commonwealth Governments National Reserve System in the near future and will be managed in accordance with IUCN Management Category II.

Governance and Legal Protection
Management actions will focus on:

- ✓Gazettal of SCRC parcels of Coolum Creek Environmental Reserve to Nature Refuge status.
- ✓Compliance with IUCN management objectives for Category II National Park.

3.6 Preserving our Cultural Heritage

The importance of the Maroochy River floodplain for Australians has been well documented, with dreamtime stories and aboriginal law interwoven with the features of the landscape. Mount Coolum, Mount Ninderry, Mudjimba Island and the Maroochy River feature prominently in aboriginal living heritage. The name of the river is derived from the word “Murukutchi”, meaning “red-beak” in reference to the black swans which were once prolific on the river.

A historically significant event for people was the bunya pine gatherings held on the Blackall Range. Timed at three yearly intervals to coincide with the fruiting of the pine, the gatherings brought groups together from as far a field as Coffs Harbour to feast on the pine, settle disputes and make matches for marriage. Once the bunya pine harvest was complete, people moved down to the Maroochy River floodplain to spend several months enjoying the variation in diet provided by oysters and fish. As a result many camp sites, middens, scar trees and sacred sites exist in the reserve, although their identification is not yet complete.

A midden site has been identified within the reserve, with further cultural heritage surveys to be undertaken within the reserve. The information gleaned will be used to assist the development of cultural heritage management strategies.

In addition to values, the areas are of significance for European heritage, being surrounded by cane land with the route of the old cane train passing across the reserve. European cultural values will be taken into account in the employment of management strategies and development of interpretive materials.

Cultural Heritage
Management actions will focus on:

- ✓ Integrated planning with consideration of council's cultural heritage strategy
- ✓ Completion of cultural heritage survey
- ✓ Where specific sites have been identified - compliance with relevant legislation
- ✓ Seeking opportunities to collaborate with special interest groups in relation to cultural heritage sites and knowledge and where appropriate educational and interpretative material.

3.7 Opportunities for Recreation and Education

The IUCN management objectives for this reserve support educational and recreational opportunities which protect natural biodiversity, ecological structure and environmental processes. The Coolum Creek Environmental Reserve offers the potential for a range of recreational and educational opportunities. However, these options will need to be developed based on needs analysis to ensure they complement existing recreational opportunities across the region. Any decision to develop public use infrastructure would require careful consideration and consultation with key stakeholders. If determined to be appropriate, access would be limited to designated areas to ensure sensitive areas are preserved in a natural state. The waterways within the reserve may provide the most appropriate access to any recreational facilities. A range of signage would provide educational material, highlighting the environmental and cultural values of the reserve as well as safety and regulatory functions.

The development of the Maroochy River Trail and an expected increase in the number of non-motorised craft accessing the Coolum Creek Environmental Reserve provides the opportunity to support visitor use compatible with the management objectives for this reserve which is an IUCN Category II – National Park.

Tourism, educational and commercial opportunities need to be explored through partnerships with local schools, colleges, universities and community groups. This may also encourage an extension of the environmental education program in the area.

In general, management aims will focus on incorporating the provision of ecologically sustainable recreation opportunities, along with promoting increased community awareness and participation in the management of the reserve.

Recreation and Education
Management intent will focus on*:*

- ✓ Investigating the feasibility of passive recreational facilities
- ✓ Promotion of sustainable use principles
- ✓ Signage that outlines key natural and cultural values, safety considerations and regulatory functions
- ✓ Fostering a consultative approach to the planning and management of any recreation/education activities

3.8 Research and Monitoring

Research and monitoring are important elements of an adaptive management framework. Under this approach the information gleaned from structured monitoring will act like a feedback loop allowing

appraisal of specific management strategies. Regular monitoring also helps to identify emerging issues and appropriate response strategies.

Collaborative research partnerships with tertiary institutions and special interest groups are underway as part of council's research partnership program. SCRC has the opportunity to submit research proposals for council managed reserves and similarly tertiary institutions are encouraged to conduct peer reviewed research within council reserves. SCRC also oversees all permit applications, ensuring best practice and compliance with relevant legislation in relation to applications which may interfere with native fauna and flora.

There are currently no research programs being undertaken within the Coolum Creek Environmental Reserve; however a range of projects are occurring in the surrounding area. For example, genetic research exploring the impacts of habitat fragmentation on the endangered Swamp Orchid, *(Phaius tancarvillae)* is currently underway at nearby downstream sites. Results of such work will improve management outcomes and inform the wider community of the reserve's significance.

Currently, council managed reserves do not have a structured monitoring program, however this is being addressed under the development of a Natural Areas Master Management Plan which is due to be in final draft by Dec 2012. Baseline data and planning reports which exist for most of councils reserves, including the Coolum Creek Environmental Reserve are already available to form the basis of the monitoring program. A Bushland Operational Assessment[3] , (BOA) which is required to be undertaken on all council managed reserves has also been prepared for this site, (in press). This provides a baseline vegetation condition assessment for the site and is a tool which can be used to monitor recovery as condition is assessed and recorded annually as part of the restoration Work Plan for the site.

The Natural Areas Master Management Plan will also include monitoring and review schedules to assess the status of actions outlined in the SMI/PoM, including updates on environmental and cultural assessments.

Research and Monitoring
Management intent will focus on:
- ✓ Building collaborative partnerships with tertiary institutions and special interest groups
- ✓ Limiting the disturbance caused by these activities.
- ✓ Establishing a protocol for conducting research and monitoring
- ✓ Developing a communication process for reporting results

3.9 Annual Work Plan

Sunshine Coast Council Environmental Operations is developing a "Natural Areas Master Management Plan" which provides a strategic operational planning guide for Natural Areas management. Other strategic documents developed by Sunshine Coast Council which also guide the implementation of management actions are listed in Appendix VI.

The Master Management Plan will include the existing Service Level Classification of council managed natural areas. The service level classification provides a score for each reserve—based on a range of values including size, condition, and landscape context. Reserve scores determine requirements for the preparation of planning documents and annual maintenance schedules. The Master Management Plan will subsequently provide a schedule for reviewing each of the planning documents reported below.

[3] **McDonald, T. 2000. Resilience, Recovery and the Practice of Restoration. Ecological Restoration. 18:1. Spring.**

Coolum Creek Environmental Reserve has been classified as a B2 Reserve. Under this classification, Table 3 lists the planning documents and maintenance requirements allocated to this Reserve. All planning documents will be reviewed according to a schedule which will be included in the Natural Areas Master Management Plan.

Table 3. Coolum Creek Nature Reserve Service Level category B2 – District Reserve

a) Planning

Category	MP	SMI	BOA	Flora Assessment.	Fauna Assessment.	FMP	(restoration) Work Plan
***B2**		✓	✓	✓	✓	✓	✓
Frequency	*Frequency will be determined as an outcome of the Natural Areas Master Management Plan 2013*						*Annual*
Current Status		*Complete Feb 2012*	*Complete July 2012*	*Plant Species list completed 1999, 2009.*	*Preliminary Survey 2010*	*Complete 2010 (review - 2012)*	*Commence 2012*

**B# = Biodiversity Class.*
MP: Management Plan; SMI: Statement of Management Intent, BOA: Bushland Operational Assessment; FMP: Fire Management Plan.

b) Maintenance

Category	Frequency
Inspections	Monthly
Weed Management	Monthly
Revegetation	Annual
Prescribed Burning	Annual
Fire Trail Management Drainage / Surface Maintenance	Annual
Fire trail Slashing	1 -6 x yr
Fuel Reduced Zones vegetation mngt	1 -6 x yr
Tree Management	Annual
Urgent & Hazardous matter arising	48 hrs
Garden/Rubbish Dumping	6 monthly
Vegetation buffer Maintenance	Quarterly

Table 4 below lists all of the management actions included in this PoM and shows the associated implementation reports and activities linked to the service level category for this reserve.

Management actions developed in the SMI and NRS PoM will guide the work plan for Coolum Creek Environmental Reserve to ensure the community vision and primary management objective is being met.

Ecological restoration of all council reserves is underpinned by the Bushland Operational Assessment, (BOA). This is a resilience–based condition classification system which guides resilience-based restoration works. The BOA information provides a snapshot of ecological condition which is included in a report and also captured on a GIS database. This information is used to guide restoration Work Plans which are reviewed annually to meet five year restoration condition targets.

All natural areas managed within Council are supported by the Community Conservation Partnerships Unit within Councils Environmental Operations. This provides stakeholder input and community awareness programs for council reserves as well as establishing strategic partnerships and communication with other Natural resource management groups across the region, including SEQ catchments, Catchment Care, Land care, Fauna watch, and the Wildlife Preservation Society of Qld.

Table 4. Management Actions

	VALUE	ACTIONS	START	STATUS
1.0	**Biodiversity**			
1.1	Native Plants			
1.1.1	Reserve Condition Mapping to identify ecosystem health.	BOA	2012	Complete
1.1.2	Rehabilitate cleared areas with appropriate native vegetation and/or regeneration practices	WP; Annual maintenance	2010	On going
1.1.3	Seek opportunities to collaborate with special interest groups in flora surveys/monitoring programs.	SMI MMP	2010 2011	On going On going
1.1.4	Liaise with key stakeholders on flora management.	SMI	2010	On going
1.1.5	Develop community education/awareness programs	CCP; Water watch Projects	2010	On going
1.2	Native Wildlife			
1.2.1	Maintain, and where appropriate enhance the quality and extent of native vegetation and associated habitats.	Annual maintenance	2010	On going
1.2.2	Compile a comprehensive fauna list for the reserve.	Fauna Report	2009	Review
1.2.3	Seek opportunities to collaborate with special interest groups in fauna surveys/monitoring programs.	SMI/NRS PoM	2010	On going
1.2.4	Liaise with key stakeholders on fauna management.	SMI/NRS PoM	2010	On going
1.2.5	Develop community education/awareness programs	SMI/NRS PoM; CCP	2010 2010	On going On going
1.3	Invasive Species			
1.3.1	Reserve Condition Mapping to identify ecosystem health and weed distribution	BOA	2012	In press
1.3.2	Operational action plans that provide strategic resource allocation.	WP	2012	Underway
1.3.3	Liaise with key stakeholders, particularly neighbours to expand and enhance pest management outcomes.	SMI/ NRS PoM Pest Management, SCRC	201O Annual	On going On going
1.3.4	Develop ongoing community education/awareness.	SC-LGA Pest Management Plan 2012-2016. SMI/ NRS PoM	2011 2010	On going. On going 2012
1.3.5	Seek opportunities to collaborate with special interest groups in relation to invasive species surveys/monitoring.	SC-LGA, Pest Management Plan 2011-2015.	2011	On going
1.3.6	Compliance with relevant legislation.	SCRC Pest management Unit SCRC Weed Management Plan MMP	2011 2010 2011 2011	Complete On Going 2012 Dec 2012
1.4	Fire Management			
1.4.1	Prepare a Fire Management Plan in consultation with key stakeholders	FMP	2010	Review

1.4.2	Work with Queensland Fire and Rescue Service and other relevant agencies to develop a Fire Response Plan.	FMP	2010	Review
1.4.3	Maintain natural species diversity through the exclusion of fire from fire-sensitive vegetation types.	FMP	2012	Review
1.4.4	Ensure all fire management infrastructure is properly maintained.	Annual maintenance	2010	On going
1.4.5	Develop ongoing community education/awareness.	SCRC Draft Bushland Reserve Fire management Strategy; CCP.	2011	Draft complete.
1.5	Waterways			
1.5.1	Reinstate riparian vegetation.	Community Conservation Partnerships;	2010	On going
		Annual maintenance;	2010	On going
		Vegetation Offsets.	2010	On going
1.5.2	Work with key stakeholders to develop a range of measures to combat anthropogenic erosion issues.	Maroochy Water Watch projects; Sunshine Coast Waterways and Coastal Management Strategy 2011-2021.	May 2012 2010 2011	May 2015 On going Review 2021
1.5.3	Monitor bank erosion to identify causes and inform planning and management of issues.	Waterways Operation , SCRC. Water Watch and SEQ	2010	On going
1.5.4	Seek opportunities to collaborate with special interest groups in relation to water quality monitoring.	Catchments partnership projects	2010	On going
1.5.5	Participate in the development and implementation of a broader Maroochy River Management Plan.	SCRC discussion paper - Current Use and management of on-water activities on Sunshine Coast estuaries.:	2010	Complete July 2012
2	**Governance and Legal Protection**			
2.1	Gazettal of SCRC parcels of Coolum Creek Environmental Reserve to Nature Refuge status.	NRS Program - council resolution of support	Sept 2012	
2.2	Compliance with IUCN management objectives for Category II National Park.	NRS PoM	2012	On going
3	**Cultural Heritage**			
3.1	Integrated planning to include council's cultural heritage strategy.	SMI/NRS PoM SCRC Cultural Heritage Strategy	2010 2012	Review
3.2	Complete cultural heritage survey.	MMP	Dec 2013	

3.3	Compliance with relevant legislation where specific sites have been identified.	MMP	Dec 2013	
3.4	Seek opportunities to collaborate with special interest groups in relation to cultural heritage sites and knowledge.	SMI/NRS PoM	2010	On going
3.5	Where appropriate provide educational and interpretative material.	SMI/NRS PoM	2010	On going
4	**Recreation and Education**			
4.1	Investigating the feasibility of passive recreational facilities in compliance with relevant ICUN category	SCRC Draft Recreational Trails Strategy 2011.	2011	2013
4.2	Promotion of sustainable use principles	SMI/NRS PoM MMP	2012 Dec 2012	On going On going
4.3	Signage that outlines key natural and cultural values, safety considerations and regulator functions	SMI/NRS PoM WP; Annual maintenance	2012 Annual	Underway
4.4	Fostering a consultative approach to the planning and management of any recreation/education activities	SMI/NRS PoM MMP; SCRC Draft Recreational Trails Strategy 2011.	2010 Dec 2012 2011	2012 On Going 2013
5	**Research and Monitoring**			
5.1	Building collaborative partnerships with tertiary institutions and special interest groups.	SCRC Biodiversity Strategy, 2010 – 2020; SCRC Research Partnership Committee.	2010 2011 2011	On going On going
5.2	Limiting the disturbance caused by these activities.	SCRC Natural Areas Research Permits Request Form –as per Qld and Australian Gov guidelines and regulations.	2011	Updated June 2012
5.4	Establishing a protocol for conducting research and monitoring.	SCRC Natural Areas Research Permits Request Form –as per Qld and Australian Gov guidelines and regulations.	2011	Updated June 2012
5.6	Developing a communication process for reporting results.	MMP	2011	Dec 2012

* BOA: Bush land Operational Assessment; CCP: Community Conservation Partnerships Unit SCRC; FMP: Fire Management Plan; MMP: Master Management Plan; SMI: Statement of Management Intent; NRS: National Reserve System; PoM: Plan of Management; Restoration Work Plan.

4. Looking to the Future

The Coolum Creek Community Working Group has provided valuable input into this management planning process. The working group represents a broad range of stakeholders including local environmental groups, business owners, private landholders, traditional owners and state government agencies. Continued participation of these community representatives will be necessary in the delivery of the Community Vision for the reserve and will encourage stewardship by neighbouring landholders, local communities, corporate stakeholders and the wider community. Council hopes to build on the goodwill and support of the working group and will investigate how this can be supported into the future.

The Coolum Creek Community Working Group has provided a clear perspective and strong vision for the reserve, ensuring that these public lands will be managed in line with community expectations and broader national and international standards. This process provides a best practice model to inform management planning and has been instrumental in assisting council to deliver its vision for the Sunshine Coast as Australia's most sustainable region:

vibrant, green, diverse

5. APPENDIX

Appendix I: Plant Species Checklist 1999[4]

Coolum Creek Plant Species Checklist:

PLANT SPECIES	FAMILY	G/F
Cordyline rubra	AGAVACEAE	SH
Crinum pedunculatum	AMARYLLIDACEAE	H
Schinus terebinthifolia *	ANACARDIACEAE	T
Centella asiatica	APIACEAE	H
Melodinus australis	APOCYNACEAE	V
Parsonsia straminea	APOCYNACEAE	V
Schefflera actinophylla #	ARALIACEAE	T
Livistona australis	ARECACEAE	T
Ischnostemma(Cynnanchum) carnosum	ASCLEPIADACEAE	V
Ageratum houstonianum *	ASTERACEAE	H
Baccharis halimifolia *	ASTERACEAE	ST
Crassocephalum crepidioides *	ASTERACEAE	H
Hypochaeris radicata *	ASTERACEAE	H
Avicennia marina v. australasica	AVICENIACEAE	T
Blechnum indicum	BLECHNACEAE	F
Casuarina glauca	CASUARINACEAE	T
Commelina cyanea	COMMELINACEAE	H
Ipomoea cairica *	CUCURBITACEAE	V
Baumea articulata	CYPERACEAE	H
Bulboschoenus fluviatilis	CYPERACEAE	H
Cladium procerum	CYPERACEAE	H
Eleocharis dulcis	CYPERACEAE	H
Fimbristylis tristachya	CYPERACEAE	H
Lepironia articulata C	CYPERACEAE	H
Schoenoplectus validus	CYPERACEAE	H
Hypolepis muelleri	DENNSTAEDTIACEAE	F
Pteridium esculentum	DENNSTAEDTIACEAE	F
Elaeocarpus obovatus	ELAEOCARPACEAE	T
Excoecaria agallocha	EUPHORBIACEAE	T
Glochidion sumatranum	EUPHORBIACEAE	T
Macaranga tanarius	EUPHORBIACEAE	T
Omalanthus populifolius	EUPHORBIACEAE	ST
Flagellaria indica	FLAGELLARIACEAE	V
Juncus krausii	JUNCACEAE	H
Triglochin procera	JUNCAGINACEAE	H
Cinnamomum camphora *	LAURACEAE	T
Dianella caerulea	LILIACEAE	H
Hibiscus diversifolius	MALVACEAE	SH
Hibiscus tiliaceaus	MALVACEAE	T
Stephania japonica	MENISPERMACEAE	V

[4] **Thomas, G. 1999. Coolum Ck Vegetation Assessment, report prepared for Maroochy Shire Council**

Acacia melanoxylon	MIMOSACEAE	T
Ficus virens	MORACEAE	T
Myoporum acuminatum	MYOPORACEAE	SH
Aegiceras corniculata	MYRSINACEAE	T
Melaleuca quinquenervia	MYRTACEAE	T
Rhodomyrtus psidioides	MYRTACEAE	T
Nymphaea capensis *	NYMPHAEACEAE	H
Ludwigia octovalvis	ONAGRACEAE	SH
Geitonoplesium cymosum	PHILESACEAE	V
Pittosporum revolutum	PITTOSPORACEAE	SH
Brachiaria mutica *	POACEAE	H
Ottochloa gracillima	POACEAE	H
Paspalum distichium	POACEAE	H
Phragmites australis	POACEAE	H
Polygonum attenuatum	POLYGONACEAE	H
Polygonum strigosum	POLYGONACEAE	H
Platycerium bifurcatum C	POLYPODIACEAE	F
Acrostichum speciosum	PTERIDACEAE	F
Bruguiera gymnorhiza	RHIZOPHORACEAE	T
Rhiziphora stylosa	RHIZOPHORACEAE	T
Cupaniopsis anacardioides	SAPINDACEAE	T
Guioa semiglauca	SAPINDACEAE	T
Jagera pseudorhus	SAPINDACEAE	T
Lygodium microphyllum	SCHIZAEACEAE	F
Bacopa monnieri	SCROPHULARIACEAE	H
Solanum americanum *	SOLANACEAE	SH
Solanum seaforthianum *	SOLANACEAE	V
Commersonia bartramia	STERCULIACEAE	T
Trema tomentosa v viridis	ULMACEAE	ST
Clerodendron inerme	VERBENACEAE	ST
Lantana camara *	VERBENACEAE	SH
Cissus hypoglauca	VITACEAE	V
Lomandra longifolia	XANTHORRHOEACEAE	H

Key to Table:

C	Common or Schedule 5 plant Queensland *Nature Conservation Act 1992.*
*	Naturalised (weed) species.
#	Native species outside of its normal distribution range.
G/F	Growth form.
F	Fern.
H	Herb.
SH	Shrub.
ST	Small Tree.
T	Tree.
V	Vine.

Appendix II: Botanical List, 2009[5].

COOLUM CREEK BURTON RD C P ***26-Nov-09***

BOTANICAL LIST IN FAMILY ORDER - compiled by Ann Moran & Silva
* = weed Preliminary Track only

COOLUM CREEK BURTON RD C P Area: **100** Lat: **26.34881** Long: **153.03701**

Soil: **Grey sandy loam** Description: **Brush Box (15-20m) Rainforest understory**

FAMILY	FORM		GENUS SPECIES	COMMON NAME	ABUNDANCE
Acanthaceae	**Herb**		***Pseuderanthemum variabile***		**love flower Occasional**
Adiantaceae	**Fern**		***Adiantum hispidulum v hispidulum***	**rough maidenhair**	**Present**
Anacardiaceae	**Tree**	*	***Schinus terebinthifolius***	**broad-leaf pepper tree**	**Rare**
Apocynaceae	**Vine**		***Parsonsia straminea***	**monkey rope**	**Edge**
Apocynaceae	**Shrub**		***Tabernaemontana pandacaqui***	**banana bush**	**Occasional**
Araliaceae	**Tree**		***Polyscias elegans***	**celerywood**	**Occasional**
Araliaceae	**Tree**	*	***Schefflera actinophylla***	**umbrella tree**	**Occasional**
Arecaceae	**Tree**		***Archontophoenix cunninghamiana***	**piccabeen palm**	**Rare**
Arecaceae	**Tree**		***Livistona australis***	**cabbage tree palm**	**Rare**
Arecaceae	**Tree**	*	***Syagrus romanzoffiana***	**cocoas plumosa**	**Rare**
Asteraceae	**Herb**	*	***Ageratum houstonianum***	**billygoat weed**	**Uncommon**
Asteraceae	**Herb**	*	***Aster subulatus***	**wild aster**	**Edge**
Asteraceae	**Shrub**	*	***Baccharis halimifolia***	**groundsel bush**	**Edge**
Asteraceae	**Herb**	*	***Bidens pilosa***	**clobbers pegs**	**Edge**
Asteraceae	**Herb**	*	***Conyza sumatrensis***	**tall fleabane**	**Edge**
Asteraceae	**Herb**	*	***Crassocephalum crepidioides***	**thick head**	**Edge**
Bignoniaceae	**Vine**		***Pandorea pandorana***	**wonga vine**	**Present**
Byttneriaceae	**Tree**		***Commersonia bartramia***	**brown kurrajong**	**Occasional**
Caesalpiniaceae	**Shrub**	*	***Senna pendula v glabrata***	**easter cassia**	**Common**
Casuarinaceae	**Tree**		***Casuarina glauca***	**swamp she-oak**	**Edge**
Commelinaceae	**Creeper**		***Commelina diffusa***	**wandering Jew**	**Occasional**
Commelinaceae	**Herb**	*	***Tradescantia albiflora***	**white wandering jew**	**Edge**
Convolvulaceae	**Vine**	*	***Ipomoea cairica***	**mile-a-minute**	**Occasional**

[5]

Cucurbitaceae	**Vine**		***Sicyos australis***	**star cucumber**	**Rare**
Cyperaceae	**Sedge**		***Cyperus enervis***	**sedge**	**Occasional**
Cyperaceae	**Sedge**		***Cyperus laevis***	**slender sedge**	**Occasional**
Dennstaedtiaceae	**Fern**		***Pteridium esculentum***	**bracken**	**Uncommon**
Dicksoniaceae	**Fern**		***Calochlaena dubia***	**soft bracken**	**Present**
Euphorbiaceae	**Shrub**		***Acalypha nemorum***	**southern acalypha**	**Uncommon**
Euphorbiaceae	**Tree**		***Macaranga tanarius***	**nasturtium tree**	**Present**
Euphorbiaceae	**Tree**		***Mallotus philippensis***	**red kamala**	**Present**

COOLUM CREEK BURTON RD C P Area: **100 m** Lat: **26.34881** Long: **153.03701**

Soil: **Grey sandy loam** Description: **Brush Box (15-20m) Rainforest understory**

FAMILY	FORM		GENUS SPECIES	COMMON NAME	ABUNDANCE
Eupomatiaceae	**Shrub**		***Eupomatia laurina***	**native guava, bolwarra**	**Common**
Fabaceae	**Vine**		***Austrosteenisia blackii ssp blackii***	**blood vine**	**Uncommon**
Fabaceae	**Vine**		***Derris involuta***	**native derris**	**Present**
Fabaceae desmodium	**Creeper**		***Desmodium rhytidophyllum***	**native**	**Present**
Fabaceae	**Vine**	*	***Desmodium uncinatum***	**silver-leaf desmodium**	**Uncommon**
Fabaceae	**Creeper**		***Glycine clandestina v clandestina***	**lover's twine**	**Present**
Fabaceae	**Creeper**		***Kennedia rubicunda***	**running postman**	**Rare**
Fabaceae	**Vine**		***Mucuna gigantea ssp gigantea***	**burny bean**	**Edge**
Lamiaceae	**Tree**		***Clerodendrum floribundum***	**lolly bush**	**Rare**
Lauraceae	**Tree**	*	***Cinnamomum camphora***	**camphor laurel**	**Occasional**
Lauraceae	**Tree**		***Cryptocarya obovata***	**pepperberry**	**Present**
Lauraceae	**Tree**		***Endiandra sieberi***	**hard corkwood**	**Present**
Laxmanniaceae	**Shrub**		***Cordyline rubra***	**red-fruit palm lily**	**Rare**
Laxmanniaceae	**Herb**		***Lomandra longifolia***	**spiny headed mat-rush**	**Occasional**
Lobeliaceae	**Creeper**		***Lobelia purpurascens***	**white root**	**Uncommon**
Loranthaceae	**Parasite**		***Amyema cambagei***	**needle-leaved mistletoe**	**Rare**
Loranthaceae	**Parasite**		***Amylotheca dictyophleba***	**rainforest mistletoe**	**Present**
Loranthaceae	**Parasite**		***Dendrophthoe vitellina***	**long flowered mistletoe**	**Present**
Luzuriagaceae	**Vine**		***Geitonoplesium cymosum***	**scrambling lily**	**Common**
Malvaceae	**Shrub**	*	***Sida rhombifolia***	**paddy lucerne**	**Present**
Meliaceae	**Tree**		***Melia azedarach***	**white cedar**	**Present**
Menispermaceae	**Vine**		***Stephania japonica v***	**snake vine**	**Uncommon**

			discolor		
Mimosaceae	**Tree**		***Acacia melanoxylon***	**blackwood**	**Uncommon**
Monimiaceae	**Shrub**		***Wilkiea huegeliana***	**veiny wilkiea, Tetra Beech**	**Rare**
Moraceae	**Tree**		***Ficus platypoda***	**rusty fig**	**Rare**
Moraceae	**Vine**		***Maclura cochinchinensis***	**cockspur thorn**	**Uncommon**
Myrsinaceae	**Vine**		***Embelia australiana***	**embelia vine**	**Common**
Myrtaceae	**Tree**		***Callistemon salignus***	**willow bottlebrush**	**Uncommon**
Myrtaceae	**Tree**		***Corymbia intermedia***	**pink bloodwood**	**Occasional**
Myrtaceae	**Tree**		***Eucalyptus robusta***	**swamp mahogany**	**Edge**
Myrtaceae	**Tree**		***Eucalyptus tereticornis***	**Qld blue gum**	**Edge**
Myrtaceae	**Tree**		***Lophostemon confertus***	**brush box**	**Common**
Myrtaceae	**Tree**		***Melaleuca quinquenervia***	**broad-leaved paper-bark**	**Edge**

COOLUM CREEK BURTON RD C P Area: **100** Lat: **26.34881** Long: **153.03701**

Soil: **Grey sandy loam** Description: **Brush Box (15-20m) Rainforest understory**

FAMILY	FORM		GENUS SPECIES	COMMON NAME	ABUNDANCE
Ochnaceae	**Shrub**	*	***Ochna serrulata***	**mickey mouse plant**	**Rare**
Oleaceae	**Tree**		***Notelaea longifolia***	**long-leaved mock-olive**	**Uncommon**
Orchidaceae	**Orchid**		***Cymbidium madidum***	**buttercup**	**Rare**
Oxalidaceae	**Herb**		***Oxalis chnoodes***	**hairy oxalis**	**Occasional**
Passifloraceae	**Vine**	*	***Passiflora edulis***	**common passionfruit**	**Present**
Passifloraceae	**Vine**	*	***Passiflora suberosa***	**corky passionflower**	**Common**
Passifloraceae	**Vine**	*	***Passiflora subpeltata***	**white passionflower**	**Occasional**
Petiveriaceae	**Shrub**	*	***Rivina humilis***	**coral berry**	**Common**
Phormiaceae	**Herb**		***Dianella caerulea v assera***	**blue flax lily**	**Uncommon**
Phormiaceae	**Herb**		***Dianella longifolia v longifolia***	**pale flax lily**	**Occasional**
Phyllanthaceae	**Shrub**		***Breynia oblongifolia***	**coffee bush**	**Occasional**
Phyllanthaceae	**Tree**		***Glochidion ferdinandi v ferdinandi***	**cheese tree**	**Present**
Phyllanthaceae	**Tree**		***Glochidion sumatranum***	**umbrella cheese tree**	**Present**
Phyllanthaceae	**Herb**	*	***Phyllanthus tenellus***	**spurge**	**Occasional**
Pittosporaceae	**Shrub**		***Pittosporum revolutum***	**wild yellow jasmine**	**Rare**
Poaceae	**Grass**	*	***Cynodon dactylon***	**green couch**	**Edge**
Poaceae	**Grass**		***Imperata cylindrica***	**blady grass**	**Present**
Poaceae	**Grass**		***Ottochloa gracillima***	**slender forest grass**	**Occasional**
Poaceae	**Grass**		***Ottochloa nodosa***	**hairy forest grass**	**Edge**
Poaceae	**Grass**	*	***Paspalum dilatatum***	**caterpillar grass**	**Uncommon**
Poaceae	**Grass**		***Phragmites australis***	**common reed**	**Edge**

Poaceae	**Grass**	*	***Urochloa mutica***	**para grass**	**Edge**
Putranjivaceae	**Tree**		***Drypetes deplanchei***	**yellow tulip**	**Present**
Putranjivaceae	**Vine**		***Flagellaria indica***	**supplejack**	**Occasional**
Rhamnaceae	**Tree**		***Alphitonia excelsa***	**soapy or red ash**	**Uncommon**
Ripogonaceae	**Vine**		***Smilax australis***	**barbwire vine**	**Uncommon**
Rubiaceae	**Shrub**		***Psychotria loniceroides***	**hairy psychotria**	**Uncommon**
Rutaceae	**Tree**		***Flindersia schottiana***	**bumpy ash**	**Rare**
Samolaceae	**Tree**		***Myrsine variabilis***	**muttonwood**	**Occasional**
Sapindaceae	**Tree**		***Alectryon coriaceus***	**beach birds-eye**	**Uncommon**
Sapindaceae	**Tree**		***Cupaniopsis anacardioides***		**tuckeroo**
Uncommon					
Sapindaceae	**Tree**		***Guioa semiglauca***	**wild quince**	**Occasional**
Sapindaceae	**Tree**		***Jagera pseudorhus v pseudorhus***	**foambark tree**	**Present**
Sapotaceae	**Tree**		***Pouteria chartacea***	**thin-leaved plum**	**Occasional**
Scrophulariaceae	**Herb**		***Veronica plebeia***	**trailing spreadwell**	**Occasional**
Solanaceae	**Herb**	*	***Physalis peruviana***	**cape gooseberry**	**Rare**

COOLUM CREEK BURTON RD C P Area: **100** Lat: **26.34881** Long: **153.03701**

Soil: **Grey sandy loam** Description: **Brush Box (15-20m) Rainforest understory**

FAMILY	FORM		GENUS SPECIES	COMMON NAME	ABUNDANCE
Solanaceae	**Tree**	*	***Solanum mauritianum***	**wild tobacco bush**	**Present**
Solanaceae	**Vine**	*	***Solanum seaforthianum***	**brazilian nightshade**	**Occasional**
Solanaceae	**Tree**	*	***Solanum torvum***	**devil's fig**	**Rare**
Tremandraceae	**Shrub**		***Wikstroemia indica***	**tie bush**	**Rare**
Verbenaceae	**Shrub**	*	***Lantana camara***	**lantana**	**Uncommon**
Viscaceae	**Parasite**		***Notothixos subaureus***	**golden mistletoe**	**Present**
Vitaceae	**Vine**		***Cayratia clematidea***	**slender grape**	**Occasional**
Vitaceae	**Vine**		***Cissus hypoglauca***	**five-leaved native grape**	**Present**
Vitaceae	**Vine**		***Clematicissus opaca***	**small-leaved watervine**	**Present**

Total Plants Listed 109

STRUCTURE REPORT - compiled by Ann Moran

Canopy 15-20m

Lophostemon confertus	**brush box**	**Common**
Corymbia intermedia	**pink**	**bloodwood**
Occasional		
Syagrus romanzoffiana	**cocoas plumosa**	**Rare**
Archontophoenix		***cunninghamiana***
piccabeen palm	**Rare**	
Eucalyptus robusta	**swamp mahogany**	**Edge**
Eucalyptus tereticornis	**Qld blue gum**	**Edge**

Mid-Storey 8-10m

Lophostemon confertus	**brush box**	**Common**
Schefflera actinophylla	**umbrella-tree**	
Myrsine variabilis	**muttonwood**	**Occasional**
Polyscias elegans	**celerywood**	**Occasional**
Flagellaria indica	**supplejack**	**Occasional**
Pouteria chartacea	**thin-leaved-plum**	**Occasional**
Guioa semiglauca	**wild-quince**	**Occasional**
Commersonia bartramia	**brown-kurrajong**	**Occasional**
Alphitonia excelsa	**soapy-or-red-ash**	**Uncommon**
Cupaniopsis anacardioides	**tuckeroo**	**Uncommon**
Cryptocarya obovata	**pepperberry**	**Present**
Jagera pseudorhus v pseudorhus	**foambark tree**	**Present**
Melia azedarach	**white cedar**	**Present**
Glochidion sumatranum	**umbrella cheese tree**	**Present**
Macaranga tanarius	**nasturtium tree**	**Present**
Endiandra sieberi	**hard corkwood**	**Present**

Shrub Layer 2-5m

****Senna pendula v glabrata***	**easter cassia**	**Common**
****Rivina humilis***	**coral berry**	**Common**
Eupomatia laurina	**native guava, bolwarra**	**Common**
Commersonia bartramia	**brown-kurrajong**	**Occasional**
Pouteria chartacea	**thin-leaved-plum**	**Occasional**
****Schefflera actinophylla***	**umbrella-tree**	**Occasional**
Breynia oblongifolia	**coffee-bush**	**Occasional**
Guioa semiglauca	**wild-quince**	**Occasional**
Tabernaemontana pandacaqui	**banana-bush**	**Occasional**
****Cinnamomum camphora***	**camphor-laurel**	**Occasional**
Myrsine variabilis	**muttonwood**	**Occasional**
Polyscias elegans	**celerywood**	**Occasional**
Acalypha nemorum	**southern-acalypha**	**Uncommon**
Acacia melanoxylon	**blackwood**	**Uncommon**
Alectryon coriaceus	**beach-birds-eye**	**Uncommon**
Cupaniopsis anacardioides	**tuckeroo**	**Uncommon**
Psychotria loniceroides	**hairy-psychotria**	**Uncommon**

Maclura cochinchinensis	**cockspur-thorn**	**Uncommon**
Notelaea longifolia	**long-leaved-mock-olive**	**Uncommon**
Cryptocarya obovata	**pepperberry**	**Present**

Shrub Layer 2-5m

Mallotus philippensis	**red kamala**	**Present**
Glochidion ferdinandi v ferdinandi	**cheese tree**	**Present**
****Solanum mauritianum***	**wild tobacco bush**	**Present**
Drypetes deplanchei	**yellow tulip**	**Present**
Melia azedarach	**white cedar**	**Present**
****Solanum torvum***	**devil's fig**	**Rare**
Wikstroemia indica	**tie bush**	**Rare**
Cordyline rubra	**red-fruit palm lily**	**Rare**
Livistona australis	**cabbage tree palm**	**Rare**
****Schinus terebinthifolius***	**broad-leaf pepper tree**	**Rare**
Clerodendrum floribundum	**lolly bush**	**Rare**
Wilkiea huegeliana	**veiny wilkiea, Tetra Beech**	**Rare**
Flindersia schottiana	**bumpy ash**	**Rare**
Pittosporum revolutum	**wild yellow jasmine**	**Rare**

Understorey <1m

Embelia australiana	**embelia vine**	**Common**
Commelina diffusa	**wandering-Jew**	**Occasional**
Cyperus enervis	**sedge**	**Occasional**
Cyperus laevis	**slender-sedge**	**Occasional**
Dianella longifolia v longifolia	**pale-flax lily**	**Occasional**
Lomandra longifolia	**spiny-headed-mat-rush**	**Occasional**
Ottochloa gracillima	**slender-forest-grass**	**Occasional**
Oxalis chnoodes	**hairy-oxalis**	**Occasional**
Pseuderanthemum variabile	**love-flower**	**Occasional**
Veronica plebeia	**trailing-spreadwell**	**Occasional**
****Desmodium uncinatum***	**silver-leaf-desmodium**	**Uncommon**
Dianella caerulea v assera	**blue-flax-lily**	**Uncommon**
****Paspalum dilatatum***	**caterpillar-grass**	**Uncommon**
Pteridium esculentum	**bracken**	**Uncommon**
Smilax australis	**barbwire-vine**	**Uncommon**
Lobelia purpurascens	**white-root**	**Uncommon**
Adiantum hispidulum v hispidulum	**rough maidenhair**	**Present**
Derris involuta	**native derris**	**Present**
Glycine clandestina v clandestina	**lover's twine**	**Present**
Imperata cylindrica	**blady grass**	**Present**
Archontophoenix cunninghamiana	**piccabeen palm**	**Rare**
****Ochna serrulata***	**mickey mouse plant**	**Rare**
****Syagrus romanzoffiana***	**cocoas plumosa**	**Rare**
Kennedia rubicunda	**running postman**	**Rare**
****Tradescantia albiflora***	**white wandering jew**	**Edge**

Appendix III: Flora assessment data for Coolum Conservation Area, 2012[6].

a) Threatened Flora Species
(Within 25km radius of the study Area from DERM 2011b)

Family	Scientific Name	Common Name	Qld	Aust
Acanthaceae	*Graptophyllum reticulatum*	Reticulated holly	E	E
Apocynaceae	*Parsonsia largiflorens*		E	
Casuarinaceae	*Allocasuarina thalassoscopica*	Mt. Coolum she-oak	E	E
Casuarinaceae	*Allocasuarina emuina*	Mt. Emu she-oak	E	E
Lamiaceae	*Plectranthus torrenticola*		E	E
Myrtaceae	*Lenwebbia sp. (Blackall Range P.R.Sharpe 5387)*		E	
Myrtaceae	*Gossia fragrantissima*		E	E
Myrtaceae	*Gossia gonoclada*		E	E
Myrtaceae	*Eucalyptus conglomerata*	Swamp stringybark	E	E
Oleaceae	*Jasminum jenniae*		E	
Proteaceae	*Triunia robusta*		E	E
Proteaceae	*Macadamia jansenii*		E	E
Rutaceae	*Acronychia littoralis*	Scented acronychia	E	E
Rutaceae	*Zieria bifida*		E	E
Rutaceae	*Zieria exsul*		E	
Sapotaceae	*Planchonella eerwah*		E	E
Blandfordiaceae	*Blandfordia grandiflora*	Christmas bells	E	
Orchidaceae	*Phaius australis*	Tall swamp orchid	E	E
Orchidaceae	*Habenaria harroldii*		E	
Apocynaceae	*Marsdenia coronata*	Slender milkvine	V	V
Apocynaceae	*Parsonsia tenuis*	Slender silkpod	V	
Casuarinaceae	*Allocasuarina rigida subsp. exsul*		V	
Corynocarpaceae	*Corynocarpus rupestris subsp. arborescens*	Southern corynocarpus	V	
Euphorbiaceae	*Ricinocarpos speciosus*		V	
Lamiaceae	*Prostanthera sp. (Mt Tinbeerwah P.R.Sharpe 4781)*		V	
Mimosaceae	*Acacia attenuata*		V	V
Mimosaceae	*Acacia baueri subsp. baueri*	Tiny wattle	V	
Myrtaceae	*Xanthostemon oppositifolius*	Southern penda	V	V
Myrtaceae	*Laptospermum oreophilum*		V	
Myrtaceae	*Syzygium hodgkinsoniae*	Red lilly pilly	V	V
Proteaceae	*Macadamia ternifolia*	Bopple nut	V	V
Proteaceae	*Macadamia integrifolia*	macadamia nut	V	V
Proteaceae	*Macadamia tetraphylla*		V	V
Proteaceae	*Floydia praealta*	Ball nut	V	V
Rutaceae	*Boronia keysii*	Key's boronia	V	V
Simaroubaceae	*Samadera bidwillii*		V	V
Lauraceae	*Cryptocarya foetida*	Stinking cryptocarya	V	V
Laxmanniaceae	*Romnalda strobilacea*		V	V
Orchidaceae	*Prasophyllum wallum*	Wallum leek orchid	V	V
Orchidaceae	*Genoplesium cranei*		V	
Poaceae	*Arthraxon hispidus*		V	V
Rutaceae	*Bosistoa transversa*	Three-leaved bosistoa	C	V
Orchidaceae	*Cryptostylis hunteriana*		C	V
Orchidaceae	*Taeniophyllum muelleri*		C	V
Apocynaceae	*Marsdenia hemiptera*	Rusty vine	NT	
Bignoniaceae	*Tecomanthe hillii*	Fraser Island creeper	NT	
Caesalpiniaceae	*Senna acclinis*		NT	
Campanulaceae	*Lobelia membranacea*		NT	
Cucurbitaceae	*Nothoalsomitra suberosa*		NT	

Flora Assessment: Coolum Creek North Conservation Area, Coolum Creek
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[6] **Thomas, G. ECO9 Pty Ltd. 2012. Coolum Creek North Conservation Area: Flora Assessment. Prepared for Sunshine Coast Council, ECO9 Pty Ltd.**

Family	Scientific Name	Common Name	Qld	Aust
Euphorbiaceae	*Bertya sharpeana*	Mt. Coolum bertya	NT	
Fabaceae	*Glycine argyrea*		NT	
Lamiaceae	*Westringia blakeana*		NT	
Molluginaceae	*Macarthuria complanata*		NT	
Moraceae	*Fatoua villosa*		NT	
Myrtaceae	*Gossia inophloia*		NT	
Myrtaceae	*Choricarpia subargentea*	Giant ironwood	NT	
Rubiaceae	*Durringtonia paludosa*	Durringtonia	NT	
Rutaceae	*Boronia rivularis*	Wide Bay boronia	NT	
Symplocaceae	*Symplocos harroldii*	Hairy hazelwood	NT	
Aristolochiaceae	*Pararistolochia praevenosa*		NT	
Aponogetonaceae	*Aponogeton elongatus subsp. elongatus*		NT	
Burmanniaceae	*Thismia rodwayi*		NT	
Cyperaceae	*Carex breviscapa*		NT	
Cyperaceae	*Schoenus scabripes*		NT	
Orchidaceae	*Prasophyllum exilis*		NT	
Orchidaceae	*Bulbophyllum globuliforme*		NT	V
Orchidaceae	*Papillilabium beckleri*		NT	
Orchidaceae	*Genoplesium sigmoideum*		NT	
Orchidaceae	*Pterostylis nigricans*		NT	
Poaceae	*Arundinella montana*	Mountain reed grass	NT	

Key:

Qld	Queensland legislation (*NCA 1992*)
Aust	Commonwealth legislation (*EPBC Act 1999*)
E	Endangered (*NCA 1992* and *EPBC Act 1999*)
V	Vulnerable (*NCA 1992* and *EPBC Act 1999*)
NT	Near Threatened (*NCA 1992*)
C	Common (*NCA 1992*)

b) Possible Threatened Flora Species that may occur within the Study Area (from DERM 2011b)

Family	Scientific Name	Common Name	Qld	Aust
Orchidaceae	*Phaius australis*	Tall swamp orchid	E	E
Aponogetonaceae	*Aponogeton elongatus subsp. elongatus*		NT	

Key:

Qld	Queensland legislation (*NCA 1992*)
Aust	Commonwealth legislation (*EPBC Act 1999*)
E	Endangered (*NCA 1992* and *EPBC Act 1999*)
NT	Near Threatened (*NCA 1992*)

c) : Plant Species Checklist

Taxon	Family	Qld Herb. (2002)	Status	LP Act 2002	G/F	Common Name	g	l	m	c	e	Abund.
Acacia melanoxylon	MIMOSACEAE				T	Blackwood	-	l	m	-	-	O/C
Acrostichum speciosum	PTERIDACEAE				F	Mangrove Fern	g	-	-	-	-	A
Aegiceras corniculata	MYRSINACEAE				T	River Mangrove	g	l	m	-	-	C
Ageratum houstonianum *	ASTERACEAE	115	GEP		H	Blue Top	g	-	-	-	-	O/C
Alectryon coriaceus	SAPINDACEAE				T	Beach Alectryon	g	l	m	-	-	U/O
Alphitonia excelsa	RHAMNACEAE				T	Red Ash	g	l	m	-	-	O
Alternanthera denticulata	AMARANTHACEAE				H	Lesser Joyweed	g	-	-	-	-	O
Asplenium australasicum	ASPLENIACEAE				F	Bird's Nest Fern	g	l	-	-	-	U
Avicennia marina v. australasica	AVICENNIACEAE				T	Grey Mangrove	g	l	m	c	-	A
Baccharis halimifolia *	ASTERACEAE	2	SM	C2	ST	Groundsel	g	l	-	-	-	A
Bacopa monnieri	SCROPHULARIACEAE				H	Water Hyssop, Brahmi	g	-	-	-	-	O/C
Baumea articulata	CYPERACEAE				H	Jointed Twigrush	g	-	-	-	-	O/C
Blechnum indicum	BLECHNACEAE				F	Bungwahl	g	-	-	-	-	C
Bruguiera gymnorhiza	RHIZOPHORACEAE				T	Orange Mangrove	g	l	m	c	-	A
Casuarina glauca	CASUARINACEAE				T	Swamp Oak	g	l	m	c	e	A
Centella asiatica	APIACEAE				H	Pennywort	g	-	-	-	-	O
Cladium procerum	CYPERACEAE				H	Leafy Twig Rush	g	-	-	-	-	O
Clerodendron inerme	VERBENACEAE				ST	Glory Bower	g	l	-	-	-	C
Commelina diffusa	COMMELINACEAE				H	Native Wandering Jew	g	-	-	-	-	O
Commersonia bartramia	BYTTNERIACEAE				T	Brown Kurrajong	-	l	-	-	-	U
Cordyline rubra	LAXMANNIACEAE				SH	Red Fruit Palm Lilly	-	l	-	-	-	R
Crassocephalum crepidioides *	ASTERACEAE				H	Thickhead	g	-	-	-	-	O
Crinum pedunculatum	AMARYLLIDACEAE				H	River Lily	g	-	-	-	-	O
Cupaniopsis anacardioides	SAPINDACEAE				T	Tuckeroo	g	l	m	-	-	O
Dianella caerulea	LAXMANNIACEAE				H	Blue Flax Lilly	g	-	-	-	-	U
Elaeocarpus obovatus	ELAEOCARPACEAE				T	Hard Quondong	-	l	-	-	-	R
Eleocharis dulcis	CYPERACEAE				H	Chinese Water Chestnut	g	-	-	-	-	O
Enydra fluctuans	ASTERACEAE				H	Buffalo Spinach	g	-	-	-	-	O

Taxon	Family	Qld Herb. (2002)	Status	LP Act 2002	GF	Common Name	g	l	m	c	e	Abund.
Excoecaria agallocha	EUPHORBIACEAE				T	Milky Mangrove	g	l	m	c	-	A
Ficus virens	MORACEAE				T	White Fig	-	l	m	-	-	R/U
Fimbristylis tristachya	CYPERACEAE				H	Finger Rush	g	-	-	-	-	O
Flagellaria indica	FLAGELLARIACEAE				V	Flagellaria	g	l	m	c	-	C
Gahnia clarkei	CYPERACEAE				H	Tall Saw sedge	g	-	-	-	-	O
Glochidion sumatranum	PHYLLANTHACEAE				T	Umbrella Cheese Tree	-	l	m	-	-	U
Guioa semiglauca	SAPINDACEAE				T	Guioa	g	l	m	-	-	O
Hibiscus diversifolius	MALVACEAE				SH	Swamp Hibiscus	g	l	-	-	-	C
Hibiscus tiliaceus	MALVACEAE				T	Cotton Tree	-	l	m	c	-	C
Homalanthus nutans	EUPHORBIACEAE				ST	Bleeding Heart	-	l	-	-	-	U
Ipomoea cairica *	CONVOLVULACEAE	28	LC		V	Mile-A-Minute	g	l	m	c	-	A
Ischnosteman carnosum	APOCYNACEAE				V	Mangrove Milkweed	g	l	m	c	-	C
Jagera pseudorhus	SAPINDACEAE				T	Foam Bark	-	l	m	-	-	R
Juncus continuus	JUNCACEAE				H	Pithy rush	g	-	-	-	-	O
Juncus kraussii	JUNCACEAE				H	Sea Rush	g	-	-	-	-	O
Lantana camara *	VERBENACEAE	1	LC	C3	SH	Lantana	g	l	-	-	-	C/C
Livistona australis	ARECACEAE				T	Cabbage Palm	g	l	-	-	-	R
Lomandra longifolia	LAXMANNIACEAE				H	Spinyhead Mat Rush	g	-	-	-	-	O
Melaleuca quinquenervia	MYRTACEAE				T	Broad-leaf Paperbark	g	l	m	c	-	A
Melodinus australis	APOCYNACEAE				V	Melodinus	g	l	-	-	-	O
Mucuna gigantea	FABACEAE				V	Sea bean	g	l	m	-	-	O
Myoporum acuminatum	MYOPORACEAE				SH	Northern Boobiala	g	l	m	-	-	O
Notelaea longifolia	OLEACEAE				ST	Large Mock Olive	-	l	-	-	-	R
Parsonsia straminea	APOCYNACEAE				V	Monkey Vine	g	l	m	c	-	C
Paspalum conjugatum *	POACEAE		GEP		H	Sour grass	g	-	-	-	-	A
Paspalum distichum	POACEAE				H	Water Couch	g	-	-	-	-	C
Paspalum urvillei *	POACEAE				H	Vasey Grass	g	-	-	-	-	C
Passiflora suberosa *	PASSIFLORACEAE		LC		V	Small Passion Flower	g	l	-	-	-	U
Persicaria attenuata	POLYGONACEAE				H	Smartweed	g	-	-	-	-	O
Persicaria strigosa	POLYGONACEAE				H	Spotted Knotweed	g	-	-	-	-	O
											-	A
											-	U
											-	O

Taxon	Family	Qld Herb. (2002)	Status	LP Act 2002	G/F	Common Name	g	l	m	c	e	Abund.
Platycerium superbum	POLYPODIACEAE				F	Staghorn Fern	-	l	m	-	-	U/O
Pouteria chartacea	SAPOTACEAE				T	Thin-leaved Coondoo	-	l	m	-	-	O
Pteridium esculentum	DENNSTAEDTIACEAE				F	Common Bracken Fern	g	-	-	-	-	C
Rhizophora stylosa	RHIZOPHORACEAE				T	Red Mangrove	g	l	m	c	-	C
Schefflera actinophylla #	ARALIACEAE		LC		T	Umbrella Tree	-	l	-	-	-	R/U
*Schinus terebinthifolia **	ANACARDIACEAE	9	LC	C3	T	Broad-leaved Peppertree	-	-	m	-	-	R/U
*Setaria sphacelata v sericea **	POACEAE		LC		H	Sth African Pigeon grass	g	-	-	-	-	O
*Solanum americanum **	SOLANACEAE				SH	Glossy Nightshade	g	l	-	-	-	O
*Solanum mauritianum **	SOLANACEAE	61	GEP		ST	Wild Tobacco	g	-	-	-	-	U
Sporobolus virginicus	POACEAE				H	Sand Couch	g	-	-	-	-	O
Stephania japonica	MENISPERMACEAE				V	Snake Vine	g	-	-	-	-	U
Syzygium smithii	MYRTACEAE				T	Lilly Pilly	g	l	-	-	-	U/O
Trema tomentosa	ULMACEAE				ST	Native Peach	-	l	-	-	-	U

KEY TO FLORA SPECIES LISTS AND COMMUNITY STRUCTURE/FLORISTIC DATA

Key to Flora Species List:

Presence/Absence in Strata and Height Levels

Presence or absence of a species at each of five strata levels (ground-lower-mid-canopy-emergent) in a community is depicted for sites:

- = Not Present in Strata **g** = Ground Stratum (<1m) **l** = Lower stratum (1-3m)
m = Midstratum (3m to subcanopy level) **c** = Canopy

Abund. = Site Relative Abundance Ratings [estimation only]

R = Rare (< 5 plants) **U** = Uncommon (6 -10 Plants) **O** = Occasional (11-20 plants) **C** = Common (21-30 plants)
A = Abundant (>31 plants) **[Dist]** = Disturbed areas (occurs in cleared and regrowth) **# Planted** = landscape planting

Growth/Life Form (G/LF)

T = Tree **ST** = Small Tree **SH** = Shrub **SSH** = Subshrub **V** = Vine **H** = Herb **F** = Fern

Status

E = Endangered (*NCA 1994*) **V** = Vulnerable (*NCA 1994*) Vl = Vulnerable (*EPBC 1999*)
NT = Near Threatened (*NCA 1994*) **SFS** = Significant Flora Species(*Sunshine Coast Council 2010-2020*)
GEP, LC, SM from Sunshine Coast Council, Draft Pest Management Plan 2011-2015; see Appendix 4 for further explanation

Appendix IV: Coolum Creek/Finland Road Area: EMS Database fauna list, 2003[7]

Date: 19/05/2003

Search Area: N boundary: 26°32' 0"S S boundary: 26°36' 0"S W boundary:

* Denotes species recorded within the Finland Road study area May 2003

Vu = Vulnerable (Commonwealth *EPBC Act 1999*)

V = Vulnerable (Qld *NCA 1992*)

R = Rare (Qld *NCA 1992*)

LR-NT = Lower Risk - Near Threatened (IUCN 2000)

Little Black Cormorant*	*Phalacrocorax sulcirostris*
Great Cormorant	*Phalacrocorax carbo*
Pied Cormorant	*Phalacrocorax varius*
Little Pied Cormorant*	*Phalacrocorax melanoleuco*
Darter*	*Anhinga melanogaster*
White-necked Heron	*Ardea pacifica*
Great Egret	*Ardea alba*
Intermediate Egret*	*Ardea intermedia*
White-faced Heron*	*Egretta novaehollandiae*
Nankeen Night-Heron	*Nycticorax caledonicus*
Black-necked Stork R	*Ephippiorhynchus asiaticus*
Australian White Ibis*	*Threskiornis molucca*
Straw-necked Ibis*	*Threskiornis spinicollis*
Yellow-billed Spoonbill*	*Platalea flavipes*
Australian Wood Duck	*Chenonetta jubata*
Chestnut Teal	*Anas castanea*
Pacific Black Duck*	*Anas superciliosa*
Osprey	*Pandion haliaetus*
Pacific Baza	*Aviceda subcristata*
Black-shouldered Kite*	*Elanus axillaris*
Whistling Kite*	*Haliastur sphenurus*
Brahminy Kite*	*Haliastur indus*
White-bellied Sea-Eagle	*Haliaeetus leucogaster*
Swamp Harrier	*Circus approximans*
Brown Goshawk	*Accipiter fasciatus*
Brown Falcon	*Falco berigora*
Australian Brush-turkey	*Alectura lathami*
Dusky Moorhen	*Gallinula tenebrosa*
Masked Lapwing	*Vanellus miles*
White-headed Pigeon	*Columba leucomela*
Spotted Turtle-Dove	*Streptopelia chinensis*
Brown Cuckoo-Dove	*Macropygia amboinensis*
Crested Pigeon	*Ocyphaps lophotes*
Peaceful Dove	*Geopelia striata*
Bar-shouldered Dove*	*Geopelia humeralis*
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*
Galah	*Cacatua roseicapilla*

[7] **Barden, P. 2003. Preliminary Ecological Assessment, Swamp Forest on Coolum Ck/Lower Maroochy. Prepared for Maroochy Shire Council, Ecological Management Services Pty Ltd.**

Sulphur-crested Cockatoo	*Cacatua galerita*
Pale-headed Rosella	*Platycercus adscitus*
Rainbow Lorikeet*	*Trichoglossus haematodus*
Scaly-breasted Lorikeet	*Trichoglossus chlorolepidotus*
Pallid Cuckoo	*Cuculus pallidus*
Brush Cuckoo	*Cacomantis variolosus*
Fan-tailed Cuckoo	*Cacomantis flabelliformis*
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*
Little Bronze-Cuckoo	*Chrysococcyx minutillus*
Common Koel	*Eudynamys scolopacea*
Channel-billed Cuckoo	*Scythrops novaehollandiae*
Pheasant Coucal	*Centropus phasianinus*
Southern Boobook	*Ninox novaeseelandiae*
Australian Owlet-nightjar	*Aegotheles cristatus*
Tawny Frogmouth	*Podargus strigoides*
White-throated Needletail	*Hirundapus caudacutus*
Azure Kingfisher	*Alcedo azurea*
Laughing Kookaburra*	*Dacelo novaeguineae*
Forest Kingfisher*	*Todiramphus macleayii*
Collared Kingfisher*	*Todiramphus chloris*
Sacred Kingfisher	*Todiramphus sanctus*
Rainbow Bee-eater	*Merops ornatus*
Dollarbird	*Eurystomus orientalis*
Welcome Swallow	*Hirundo neoxena*
Tree Martin	*Hirundo nigricans*
Black-faced Cuckoo-shrike*	*Coracina novaehollandiae*
Cicadabird	*Coracina tenuirostris*
Varied Triller	*Lalage leucomela*
Golden-headed Cisticola	*Cisticola exilis*
Tawny Grassbird	*Megalurus timoriensis*
Willie Wagtail	*Rhipidura leucophrys*
Grey Fantail*	*Rhipidura fuliginosa*
Rufous Fantail	*Rhipidura rufifrons*
Black-faced Monarch	*Monarcha melanopsis*
Spectacled Monarch	*Monarcha trivirgatus*
Leaden Flycatcher	*Myiagra rubecula*
Shining Flycatcher	*Myiagra alecto*
Eastern Yellow Robin	*Eopsaltria australis*
Golden Whistler	*Pachycephala pectoralis*
Rufous Whistler*	*Pachycephala rufiventris*
Little Shrike-thrush	*Colluricincla megarhyncha*
Grey Shrike-thrush	*Colluricincla harmonica*
Eastern Whipbird*	*Psophodes olivaceus*
Red-backed Fairy-wren	*Malurus melanocephalus*
Variegated Fairy-wren*	*Malurus lamberti*
White-browed Scrubwren	*Sericornis frontalis*
Brown Thornbill	*Acanthiza pusilla*
Yellow Thornbill	*Acanthiza nana*
Weebill	*Smicrornis brevirostris*
White-throated Gerygone	*Gerygone olivacea*

Brown Gerygone*	*Gerygone mouki*
Mangrove Gerygone*	*Gerygone levigaster*
White-throated Treecreeper*	*Cormobates leucophaeus*
Mistletoebird	*Dicaeum hirundinaceum*
Spotted Pardalote	*Pardalotus punctatus*
Striated Pardalote	*Pardalotus striatus*
Silvereye*	*Zosterops lateralis*
Brown Honeyeater*	*Lichmera indistincta*
Scarlet Honeyeater*	*Myzomela sanguinolenta*
Lewin's Honeyeater*	*Meliphaga lewinii*
Yellow-faced Honeyeater	*Lichenostomus chrysops*
Mangrove Honeyeater	*Lichenostomus fasciogularis*
White-throated Honeyeater	*Melithreptus albogularis*
Noisy Friarbird*	*Philemon corniculatus*
White-cheeked Honeyeater*	*Phylidonyris nigra*
Blue-faced Honeyeater	*Entomyzon cyanotis*
Noisy Miner	*Manorina melanocephala*
Little Wattlebird	*Anthochaera chrysoptera*
Olive-backed Oriole	*Oriolus sagittatus*
Australasian Figbird	*Sphecotheres viridus*
Spangled Drongo*	*Dicrurus bracteatus*
Magpie-lark	*Grallina cyanoleuca*
White-breasted Woodswallow	*Artamus leucorynchus*
Grey Butcherbird	*Cracticus torquatus*
Pied Butcherbird	*Cracticus nigrogularis*
Australian Magpie	*Gymnorhina tibicen*
Pied Currawong	*Strepera graculina*
Torresian Crow*	*Corvus orru*
Red-browed Finch*	*Neochmia temporalis*
Yellow-footed Antechinus	*Antechinus flavipes*
Northern Brown Bandicoot	*Isoodon macrourus*
Long-nosed Bandicoot	*Perameles nasuta*
Common Ringtail Possum	*Pseudocheirus peregrinus*
Common Brushtail Possum	*Trichosurus vulpecula*
Eastern Grey Kangaroo	*Macropus giganteus*
Swamp Wallaby*	*Wallabia bicolor*
Black Flying-fox	*Pteropus alecto*
Grey-headed Flying-fox **Vu**	*Pteropus poliocephalus*
Chocolate Wattled Bat	*Chalinolobus morio*
Little Bentwing-bat	*Miniopterus australis*
Gould's Long-eared Bat	*Nyctophilus gouldi*
Grassland Melomys	*Melomys burtoni*
Bush Rat	*Rattus fuscipes*
Pale Field-rat **LR-NT**	*Rattus tunneyi*
Eastern Sign-bearing Froglet	*Crinia parinsignifera*
Wallum Froglet* **V**	*Crinia tinnula*
Brown-striped Frog	*Limnodynastes peronii*
Copper-backed Broodfrog*	*Pseudophryne raveni*
Green Tree Frog	*Litoria caerulea*
Eastern Dwarf Tree Frog	*Litoria fallax*

Appendix V. Potential occurrence of other significant fauna and flora species.

Coolum Creek Environmental Reserve contains habitat that is suitable for the following species which have been recorded in the local area:

Scientific Name	Common Name	EPBC Act Status	Qld NCA Status
Phaius tancarvillae	Swamp orchid	Endangered	Endangered
Schoenus scabripes	Sedge		Rare
Litoria olongburensis	Wallum sedgefrog	Vulnerable	Vulnerable
Litoria freycineti	Wallum rocketfrog		Vulnerable
Calyptorhynchus lathami halmaturinus	Glossy Black Cockatoo	Endangered.	
Rostratula australis	Australian painted Snipe	Vulnerable	Vulnerable
Rallus pectoralis	Lewins Rail		Rare
Numenius madagascariensis	Eastern Curlew		Rare
Accipiter novaehollandiae	Grey Goshawk		Rare
Erythrotriorchis radiatus	Red Goshawk	Vulnerable	Endangered
Lophoictinia isura	Square-tailed kite		Rare
Phascolarctos cinereus	Koala	Vulnerable	
Xeromys myoides	False water rat	Vulnerable	
Argyreus hyperbius inconstans	Australian Fritillary Butterfly	Vulnerable	

Appendix VI. SCRC Natural Areas Management Supporting Documents.

Sunshine Coast Local Government Area Pest Management Plan, 2012 – 2016.

Draft Sunshine Coast Recreational Trails strategy 2011.

South East Queensland Ecological Restoration Framework, Code of Practice, Guideline and Manual. 2012. Prepared by Chenoweth EPLA and Bushland Restoration Services on behalf of SEQ Catchments and SEQ Local Governments, Brisbane.

South East Queensland Natural Resource Management Plan 2009 – 2031, State of Queensland (Department of Environment and Resource management), 2009..
Sunshine Coast Waterways and Coastal Management Strategy, 2011 – 2021.

Sunshine Coast Waterways and Coastal Management Strategy - Implementation Plan, 2011 -2021.
Sunshine Coast Regional Council Biodiversity Strategy, 2010 – 2020.

Sunshine Coast Regional Council Biodiversity Strategy - Implementation Plan, 2010 – 2020.

Sunshine Coast Regional Council Climate Change Background Study - Climate Change and Peak Oil Strategy, 2010 – 2020.

Glossary and Abbreviations

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.

IBRA – Interim Biogeographic Regionalisation of Australia

http://www.environment.gov.au/parks/nrs/science/ibra.html

IUCN – International Union for the Conservation of Nature

MERI – Monitoring, Evaluation, Reporting, and Improvement

MMP – Master Management Plan

NRS – National Reserve System