Sunshine Coast COUNCIL

# Doonan Creek Environmental Reserve
# Management Plan

2017 - 2027

Your Environment Levy in action

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# Executive Summary

Doonan Creek Environmental Reserve protects a key link in the Maroochy Noosa wallum corridor—one of the most important coastal habitat areas on the Sunshine Coast.

The majority of the reserve (252ha) was acquired through Council's environment levy land acquisition program in 2013, creating a total protected area of 334hectares of diverse habitat ranging from iconic coastal heath, scribbly gum forest to melaleuca wetlands.

The reserve is located within the traditional boundaries identified for the Kabi Kabi people and the name Doonan comes from an Aboriginal word meaning "leaf of a tree". The whole reserve and surrounding landscape has evidence of past activities of the Kabi Kabi traditional owners making this area culturally and historically significant.

Doonan Creek Environmental Reserve is situated to the west of Peregian Springs within the Doonan Creek drainage basin which flows into Coolum Creek.

There are thirteen confirmed regional ecosystems (RE) within the entire reserve area, including critically endangered (EPBC Act 1999) subtropical lowland rainforest (RE 12.3.1) found within the new levy acquisition component.

208 terrestrial and 84 aquatic/wetland plant species have been identified in the reserve, including the 'endangered' Emu Mountain She-oak (*Allocasuarina emuina*) and Sunshine Coast Myrtle (*Lenwebbia sp blackall range*).

Fauna surveys identified 10 frog species, 13 reptile species, 24 different mammals, and 7 freshwater fish species, including the 'vulnerable' Wallum Froglet which was found in the open area drains, flooded pasture and in the Melaleuca forest.

Koalas which are listed as 'vulnerable' were also recorded in the reserve during fauna surveys and the site contains areas of Koala food trees, such as Swamp Mahogany and Forest Red Gum.

The site is a birdwatchers paradise with over 125 different species identified including many migratory birds that are dependent on the food and shelter resources found here. Some of the migratory birds which can be seen include the storm bird (Koel) and the channel billed Cuckoo, arriving in summer each year from as far away as New Guinea and South East Asia. During the winter months other species such as the scarlet honeyeater fly from the south during their east coast migration. Many local bird species that depend on this site also migrate from the hinterland to the coast in winter. The brightly coloured noisy pitta that is found at Mary Cairncross Scenic Reserve through the summer months can be found foraging for land snails at Doonan Environmental reserve in winter.

The reserve contains areas of open space and ecotone which add to the complexity and diversity of the site as well as providing opportunities for community access and enjoyment. In particular this site is distinctively located in close proximity to both high density and peri-urban populations.

Therefore the reserve is categorised as a "bushland" environmental reserve in which the management intent is to protect and enhance the sites terrestrial, riparian and aquatic habitats while also allowing for opportunities in sustainable nature based activities where public access is guided by the development of a landscape design. Planning will incorporate technologies in open data, explore the rich cultural knowledge of the area, provide sustainable access for enjoyment and learning and build on partnersips with the community.

This plan guides future management of the reserve over the next 10 years to ensure the significant ecological values are protected and maintained.

# 1 Introduction

This management plan supports Sunshine Coast Councils corporate vision "to be Australia's most sustainable region – healthy, smart, and creative".

In order to achieve this, council's Sunshine Coast Environment and Liveability strategy focuses on the preservation and enhancement of the natural environment and the liveability of the region—ensuring native plants, animals, and habitats are healthy, resilient and valued by the community. A key policy position to delivering on this outcome is that priority habitat areas are protected, enhanced, connected and responsive to changing environmental conditions. This is supported through the environment levy land acquisition program.

Under the land acquisition program, 252 hectares of the Doonan Creek Environmental Reserve was purchased—protecting a key link in the Maroochy Noosa wallum corridor.

In 2015, state-owned properties to the north-east were added to the Doonan Creek Environmental Reserve management area—bringing the total area to 334 hectares.

The reserve is currently managed by Council's Natural Areas Planning team and the Natural Area Operations team (**Appendix 2a**).

## 1.1 Purpose of the management plan

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

The Management Plan is subject to a 10-year review schedule underpinned by the framework of actions, relevant monitoring and evaluation strategies, and performance indicators described in this plan.

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

## 1.2 Management intent

The reserve category for this site is "Bushland" environmetal reserve. Under this category the management intent is to ensure the significant ecological values are protected and maintained, whilst allowing for sustainable public access that is managed through the development of a reserve landscape design, associated signage and purpose-built infrastructure. Sensitive habitat areas are excluded from public impacts through the design process.

Council encourages the utilisation of these bushland reserves for acceptable and sustainable nature based recreation—to facilitate access where people can connect with and value nature.

# 2 Description of the reserve

## 2.1 Location and description

The Doonan Creek Environmental Reserve is situated to the west of Peregian Springs as shown in figure 1. The reserve can be accessed for maintenance via Doonan Bridge Road, Verrierdale on the western boundary and via Thomson Street in Peregian Springs on the eastern boundary.

The reserve is comprised of the following three allotments (shown in figure 1):

- Lot 436 on CG491 (Lot 436) - Council freehold
- Lot 996 on CG2907 (Lot 996) - Council trustee
- Lot 15 on SP154207 (Lot 15) - Council trustee

The terrain within the reserve is dominated by relatively uniform floodplain associated with Doonan Creek with low rises (10m ASL) present in the western and north-eastern sections of the reserve (**Appendix 2c**).

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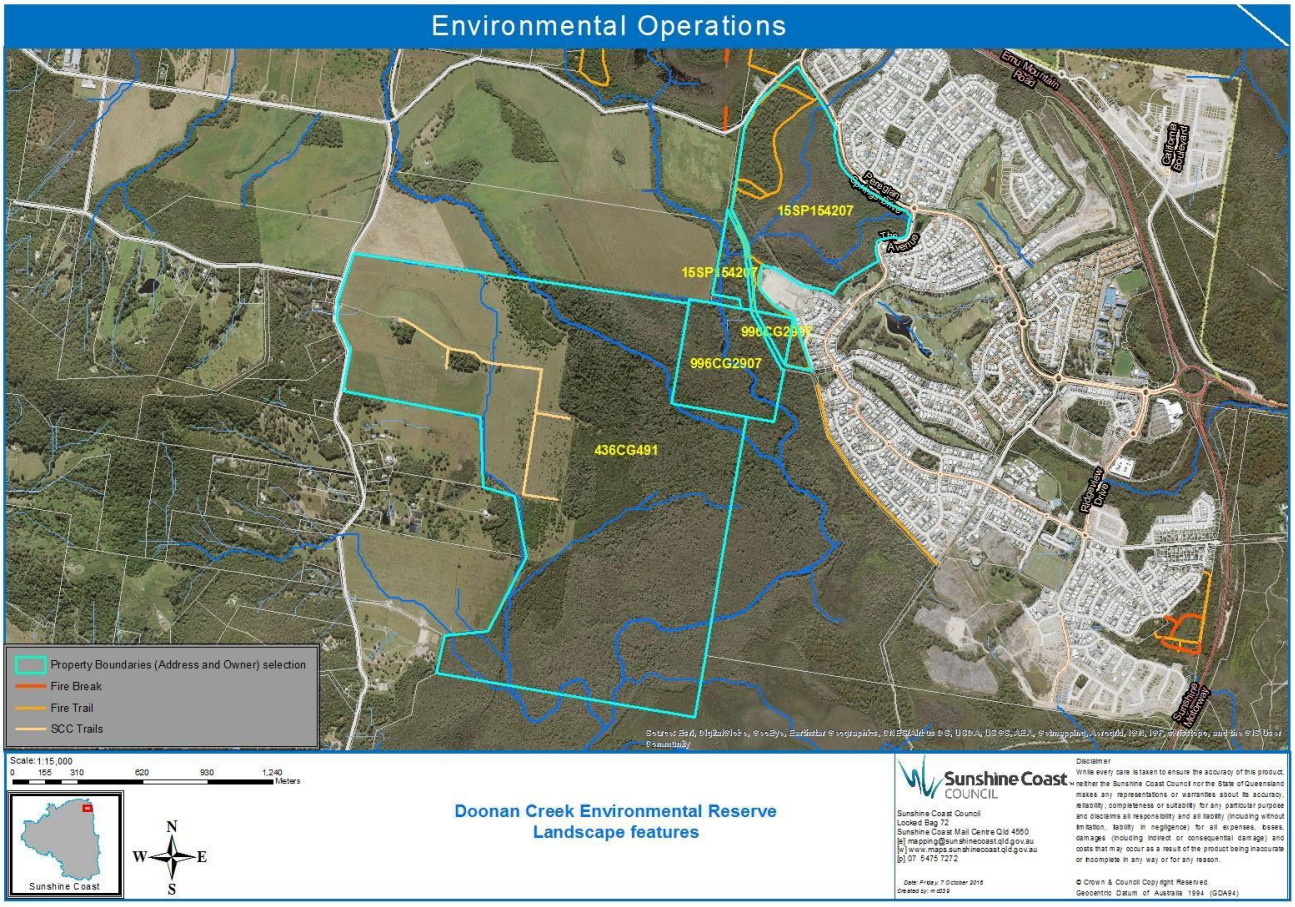



**Figure 1. Doonan Creek Environmental Reserve landscape features**

### 2.1.1 Catchment and Landscape Context

The reserve is located within the lower middle section of the 54 km$^2$ Doonan Creek drainage basin, which flows from the southern boundary of the Noosa Shire and discharges to the south of the reserve into Coolum Creek. The main channel of Doonan Creek enters the central north of Lot 436 and drains to the south-west after traversing a large area of Melaleuca swamp forest in the southern component of the

reserve. A number of artificial drainage channels also occur within the reserve.

In combination with other Council and Queensland Government managed conservation reserves, the site forms a component of a north-south regional corridor identified in the Queensland Government Biodiversity Planning and Assessment Mapping (BPA) for SEQ (Maroochy River to Elliot Heads Terrestrial Corridor) (EPA 2006) (See map in Appendix 2d). The southern boundary of Lot 436 is linked to the Noosa National Park.

The property is also mapped as a Core Habitat Area in Council's Sunshine Coast Biodiversity Strategy 2010 – 2020 (SCC 2014) and forms part of the National Estate's Maroochy-Noosa wallum corridor (Barden 1998) (Appendix 2e)

### 2.1.2 Land zones

The reserve is identified under Queensland Government RE mapping (v8) as containing the following four land zones (**Appendix 2f**).

- Quaternary sandplain deposits in the extreme south-eastern corner of reserve (Land Zone 2);
- Quaternary alluvial river and creek flats throughout reserve (Land Zone 3);
- Remnant tertiary surfaces +/- Cainozoic and Mesozoic sediments on a low rise that occurs in Lot 996 and Lot 15 (Land Zone 9- 10); and
- Mesozoic to Proterozoic igneous rocks forming low hills in the western portion of Lot 436 (Land Zone 12).
- Tertiary-early Quaternary loamy and sandy plains and plateaus In the northern portion of Lot 15 (Land Zone 5)

Land Zone 3 (Quaternary alluvium) is the most widespread geological type within the vegetated areas of the reserve.

## 2.2 History and landuse

The Doonan area is the traditional land of the of the Kabi Kabi people. It is noted that the Kabi Kabi are the first farmers of this area, utilising traditional fire-stick farming to sustain rich biodiverse habitats, including the areas of Wallum that persist today within DCER and across other protected areas of the coastal plain. "Traditional land management practices kept country healthy and productive and passable, through the management of native pastures for food resources like Emu and Kangaroos, (Coaldrake, 1961). "Wallum" is a Kabi Kabi word referring to the heathland of the coastal lowlands (Sharpe, 2009).

Prior to and following European settlement important resources were present in the reserve for indigenous people's culture and economy, particularly in the areas of lowland forests, swamps and riverine sites along Doonan Creek (Mathew 1910; Petrie 1904). For example, the roots of the Bungwall or Swamp Water Fern *(Blechnum indicum*) that occurs extensively across the reserve were a staple in the local indigenous diet (Mathew, 1910). To this day many remnants of the Kabi Kabi peoples land management and culture can be seen throughout the reserve and the surrounding landscape including pathway signs along Doonan Bridge road (Kerry Jones, Kabi Kabi, pers comm.) Mount Peregian was named by members of the Kabi Kabi tribe and it is likely named after the large flocks of emus that once inhabited the wetland and wallum habitats of this area.

*"..Looking over the wetlands to the west one could regularly see large flocks of these graceful emus roaming over the heath.."* (Sharpe, 2009)

Culturally significant species such as the emu (seed disperser), potoroo (fungi dispersers/soil conditoners) and sand goanna are known to have occurred in areas of wallum habitat on the coastal lowlands, (G.Jones, Kabi Kabi First nations submission),

but are no longer present according to recent fauna survey data.

**Management Action**

- Develop an indigenous cultural ecological restoration plan for DCER which includes occurring and locally extinct significant species.

European settlement in the Doonan and Coolum region commenced in the 1890's with bullock teams used to recover the logged timber and land settlement in the vicinity of the reserve was based on leases where conversion to freehold was contingent on land clearing "improvement" (Gregory 1991). Early cadastral mapping show that the current property boundaries for the reserve were established prior to 1920 (**Figure 2a**).

Other early agricultural activities included beef production, dairying, and sugar cane and banana crops. Agricultural development of floodplain sites in the region was facilitated by the construction of a network of drains to channelise the floodplain and dry out the wetland (Windolf and Windolf 2004).

It is likely that the freehold portion (Lot 436) was selected as a farming block by William Hamilton in the Ninderry land reserve release of 1888. William Hamilton constructed one of the first sugar mills on his land selection in 1893 and while early attempts to grow sugar cane on the reserve and in the local area failed, the mill was used for many years to crush arrowroot (Gregory 1991). In the 1920s cane farming was successfully established in the region.

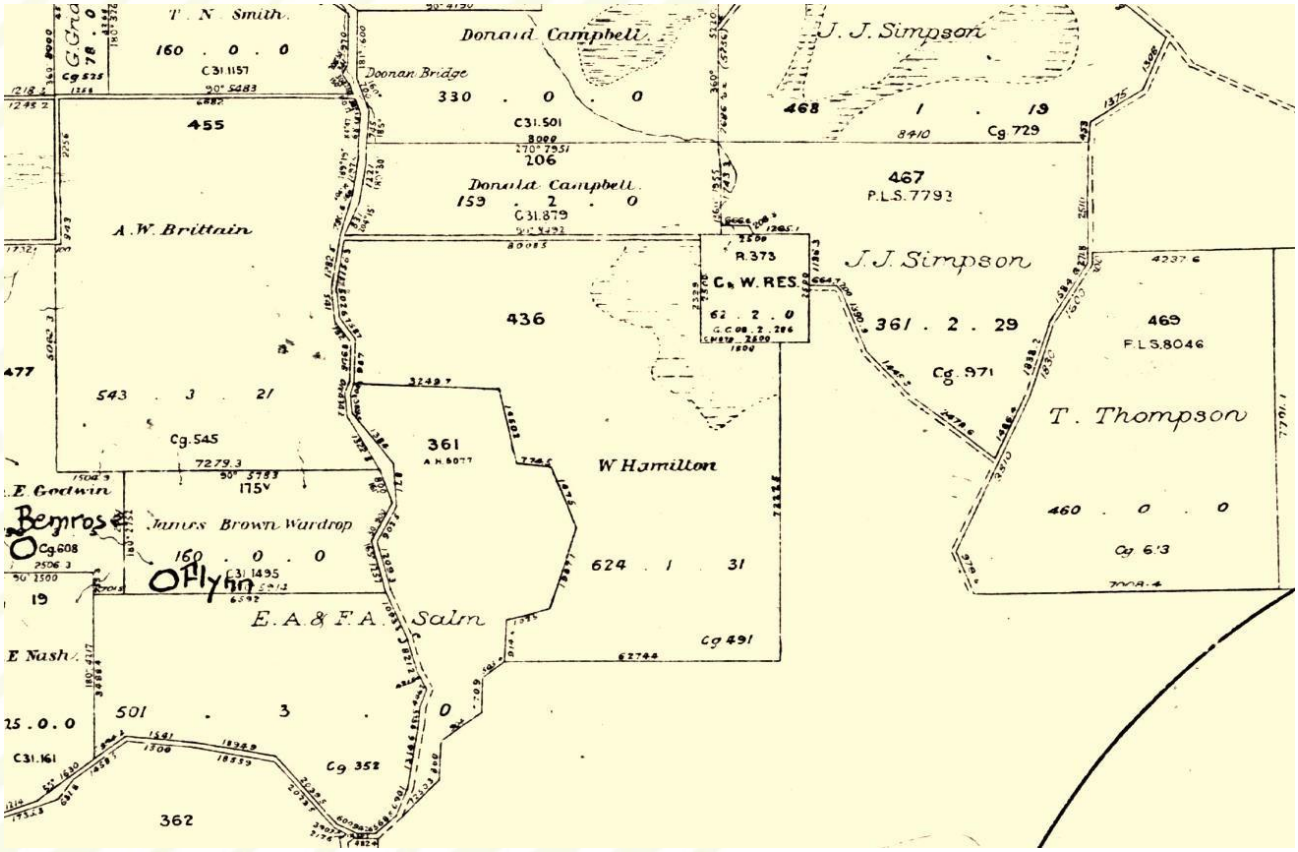



**Figure 2a: Map source – Moreton 40 Chain map sheet 17 north, 1920**

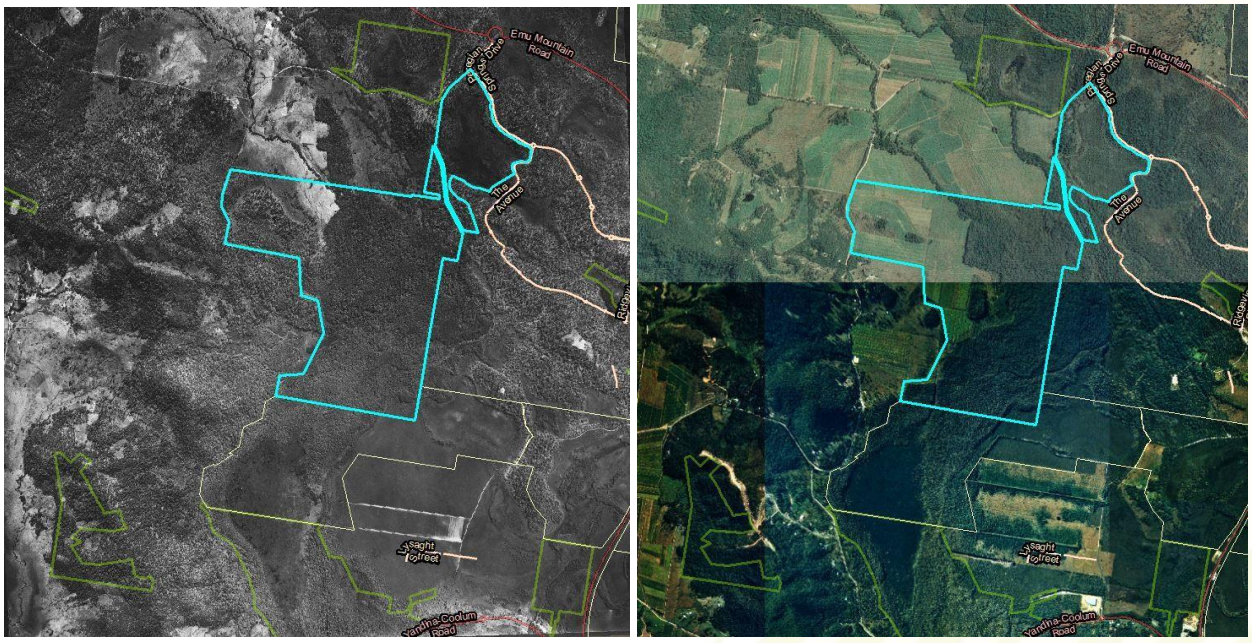



**Figure 2b: Aerial images showing land use history 1958 and 1994**

Historical aerial photography indicates that much of the western section of Lot 436 was cleared for agriculture or grazing by the 1950's (**Figure 2b**). Further clearing occurred on the western margins of the forested section of Lot 436 following the expansion of cane farming. The construction of drains and the channelisation of portions of the western branch of Doonan Creek within the reserve are likely to have been associated with the expansion of sugar cane to the site in the post 1950's period. The aerial photography indicates that few changes to the vegetation cover have occurred in the period following the cessation of cane farming with the exception of developing areas of Melaleuca and Acacia regrowth on the eastern margin of the cleared non-remnant component of Lot 436 (**Figure 2b**).

Following the loss of cane allocations in the late 1990's and closure of the Moreton Mill in 2004, the cleared areas of the reserve have been used to graze cattle.

State government land to the east and south of the reserve was formerly held by the Queensland Department of Primary Industries as unallocated crown land and timber reserve. A DPI research field station was established in 1952 on 700 hectares to the south-east of the reserve (Windolf and Windolf 2004). Investigations at this site in the 1950's to 1980's focused on the potential for establishing pine plantations, pasture and cropping on extensive coastal wallum areas held by the state government (Bryan 1973). Slash pine (*Pinus elliotii*) infestations in the local area originated and spread from trial plantings in the vicinity of the research station (DEH 1994). These schemes failed and following closure of the station in 1983, state government land (timber reserve and experimental farm) to the south and east of the reserve were converted to a range of contemporary land uses including urban development (Coolum Ridges), conservation (Noosa National Park, West Coolum Section), community leases and an industrial precinct (Windolf and Windolf 2004; QPWS 1999).

Lot 996 is a state camping and water reserve where Council is the trustee land manager and has not been subject to previous land clearing for agriculture. A cleared fire trail is located within this area and the area is adjacent to urban streets

and house lots on the western margin of the Peregian Springs estate (**Figure 1.)**

The reserve has historically been situated in a rural landscape comprising agricultural land and forested habitats on large rural lots. In the early 2000's an area of dense urban development was established to the east of the reserve at Peregian Springs and development in this area is ongoing (**Appendix 2b**).

The proximity of the urban area has resulted in some edge effects on the margin of the reserve, including artificial lighting, noise and weed infestations from dispersal of seeds and dumping, as well as minor impacts from human access, domestic dogs and possibly cats (P. Barden personal observation).

The fire history of the reserve is poorly known. A wildfire was recorded in 2009 in the national park areas to the south-east and in 2017 the Peregian-Coolum Wildfire impacted approximately 40% of the reserve.

Small Council planned burns were undertaken in 2009 & 2013 within a small (1.3 ha) asset protection zone on the northern and eastern boundaries of the water and camping reserve. (Scheduled to be burnt every 3-5 years). A burn also took place in the north west of Lot 15 on SP154207 in 2012, which was a dual purpose hazard reduction and ecological burn covering 5ha.

The vegetation present in the central and northern sections of Lot 436 (Melaleuca and Eucalypt dominated canopy with regenerating gallery vine forest species in the mid-canopy) indicate that these areas have, until recently remained unburnt over a long period of time.

Connecting habitat *at Doonan Ck Environmental Reserve* - community tree planting day hosting local school 2018.

# 3 Establishment Works

All properties purchased under the Environment Levy Land Acquisition Program receive an annual allocation of funding for establishment works as a percentage of the purchase price from the Environment Levy budget. This initial injection of funds covers the establishment costs for a period of 3-6 years and prepares the reserve for future operational maintenance.

Establishment works completed for Doonan Creek Environmental Reserve to date are described in **Table 1** below. It is anticipated that due to the extent of open space recovery required at Doonan Creek Environmental Reserve, establishment works will extend beyond 2018. After this the reserve will be managed by the Natural Areas operations team, guided by this Management Plan and supporting technical documents which are also summarised in this plan.

The following planning reports have been completed or scheduled, with key elements incorporated into this management plan.

- Doonan Ck Environmental Reserve Regeneration Works Plan (Brush Turkey Enteprises 2014)
- Bushland Operation Assessment (BTE 2014 and Hansen 2007)
- Fire Management Plan (2012)
- Doonan Ck Environmental Reserve public involvement plan (Group GSA 2015)
- Draft Landscape Design Plan (SCC 2017)
- Future Directions Report (scheduled)
- Fauna and flora assessments 2014-2015)

In addition to these, the Environmental Reserves Network management plan (2017) provides an overarching management framework to guide priorities and review schedules for management and operational activities.

Doonan Creek Environmental Reserve will also be assessed for potential cultural values and further assessment undertaken if required.

The on-going planning and maintenance requirements of Doonan Creek Environmental Reserve are guided by Council's Service Level Reserve Score, (rank 1-3 for each biodiversity and recreation score).

The scoring matrix includes a biodiversity and a recreational score for each reserve based on a range of criteria including size, connectivity, significant species, biodiversity and recreational use.

The biodiversity score for Doonan Creek Environmental Reserve is regional reserve – B1. There is currently no recreational score since recreation planning has not been finalised. **Table 2** and **3** lists service level requirements under this category.

**Table 1: Status of establishment works at Doonan Creek Environmental Reserve.**

| Establishment Activity | Description | Status |
|---|---|---|
| Condition Assessment | Commission the preparation of a resilience based condition assessment (Bushland Operational Assessment - BOA) to guide management. | BOA completed 2007 (Lot 15 and Lot 996) and 2014 (Lot 436 and Lot 996) |
| Restoration Works Plan | Commission the preparation of a Bush Regeneration Works Pan (RWP) to guide management. | RWP completed 2014 (Lot 15 and Lot 996) |

| | | |
|---|---|---|
| Weed Management | According to the works plan all high priority areas are targeted for weed removal<br>Maintain cattle agistment in open grassed areas to prevent weed growth, pending ecological restoration, revegetation and open space planning. | Annual works plan implemented in line with service level for this reserve |
| Trail construction and maintenance | Maintenance of access and fire trails<br>Trail construction as per Landscape Design Plan | Management trails constructed and mapped on Council open space layer completed 2015<br>Landscape planning underway |
| Access Gate and fencing | Install access gates and fencing at entrance. | Access gate and fence installed 2013 |
| Revegetation | Revegetate open areas which have not been designated open space.<br>Include recommendations to address shortage of fruiting rainforest trees which are necessary to maintain populations of resident and migratory bird species. | Offset 11ha koala habitat planted in 2014.<br>Revegetation underway with annual community tree planting commenced in 2016.<br>4 305 plants including fruiting rainforest food trees |
| Signage | Install reserve signage at access points | Signage installed 2013 |
| Tenure Protection | Progress perpetual protection | Current |
| Values assessment | Commission a flora and a fauna assessment at Lot<br>436 and Lot 996; Undertake Cultural heritage protected matters search and follow up as required with cultural; heritage assessment. | Aquatic and terrestrial flora surveys, 2014; mammals and reptiles survey, 2014; frog and fish survey 2015; Avian survey 2014; cultural heritage protected matters search, 2013. |
| Hazards removed | Address following potential hazards and waste;<br>• Remnant of farm shed;<br>• General farm waste and iron<br>• Broken fences and barbed wire<br>• Regulated waste (tyres and batteries) | Bulk of iron and rubbish removed 2015;<br>Regulated waste removed 2016.<br>Shed demolished and removed 2017.<br>Barbed wire fencing removed 2017 |

**Table 2: Planning Service Levels**

| Category | MP | BOA | Flora survey | Fauna survey | FMP | Work Plan |
|---|---|---|---|---|---|---|
| *B1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Frequency | *10 yr* | *5 yr* | *10 yr* | *10 yr* | *10 yr* | *5 yr* |
| Current status | *Draft* | *Complete 2014* | *Complete 2014* | *Complete 2015* | *Scheduled review 2016* | *Complete 2014* |

*B# = Biodiversity Class

Note: The above table provides an overview of the required planning documentation required. SMI = Statement of Management Intent, BOA = Bushland Operational Assessment, FMP = Fire Management Plan

**Table 3: Maintenance Service Levels**

| | |
|---|---|
| Category | B1 |
| Inspections | Monthly |
| Weed Management | Monthly |
| Revegetation | Annual |
| Prescribed burning – if required | As per FMP |
| Fire trail management drainage/surface maintenance | Annual |
| Fire trail slashing | 4 x per year |
| Fuel reduced zones management | 4 x per year |
| Tree management | Annual |
| Urgent & hazardous matter arising | 24-48 hours |

# 4. Reserve Values

## 4.1 Ecological Values

Doonan Creek Environmental Reserve protects coastal regional ecosystems which have been extensively cleared across the Sunshine Coast.

Natural values of the reserve have been documented during a number of surveys since Council commenced management, with data compiled in the following resources[1]:

- Terrestrial flora assessment (Thomas 2013)
- Birds of the Doonan Creek Environmental Reserve – Avian fauna assessment (Barden 2015)
- Preliminary Assessment of mammal and reptile fauna of Doonan Ck Environmental Reserve (O2 Ecology 2015)
- An assessment of the frog and fish habitat values at Doonan Ck Environmental Reserve (Meyer 2015)
- Bushland Operation Assessment (BTE 2014 and Hansen 2007)
- Aquatic flora assessment (Thomas 2014)

A number of surveys and management plans provide additional and historical information on species and habitats within the local area (McFarland 1989; SKM 1989; DEH 1994; Barden 1998; Bergstrom 1998; McDonald2002; EPA 2007 Meyer 2010; Rose et al, .2015).

All fauna and flora data records have been entered into the state Wildnet database.

[1] The scope of flora and fauna assessments is restricted to Lot 436 and Lot 996 at this reserve

### 4.1.1 Vegetation Communities and Ecosystems

Vegetation communities within the reserve have been assessed using existing RE mapping (Queensland Government, v8). Mapping indicates that approximately 64.7% (216 hectares) of the reserve is covered in remnant vegetation comprising thirteen RE types (Appendix 2f).

The mapping shows that pursuant to the Queensland VM Act (Appendix 2f).

- 5.3% (17 hectares) of the reserve is mapped as an 'endangered' RE
- '11.6% (38 hectares) of the reserve. is mapped as having a subdominant Endangered' RE
- 4.3% (14 hectares) of the reserve with an 'of concern' RE
- 40.3% (134 hectares) of the reserve where REs have an 'of concern' Biodiversity Status (Appendix 2f and 2g).
- 3.7% (12.14 ha) of the reserve area supports three areas of High Value Regrowth (HVR) containing an 'endangered' RE. (Appendix 2j)
- Areas of 'least concern' and 'of concern' HVR are also present (4.65ha and 0.3ha respectively

Ground surveys of vegetation distribution within Lot 436 and Lot 996 confirmed the presence of seven vegetation communities and equivalent RE types within this portion of the reserve (Thomas 2013) (Table 4 and Appendix 2h).

Regional ecosystems observed at the reserve include:

- RE 12.3.1, which is listed as 'endangered' under the Queensland Vegetation Management Act 1999 (VM Act) and 'critically endangered' under the Environment Protection and Biodiversity Conservation Act 1999,

- RE 12.3.11, which is listed as 'of concern' under the VM Act.
- RE 12.3.5 is listed as 'least concern' (VMA Class) and 'of concern' (Biodiversity Status) under the VM Act. (RE 12.3.5 has been extensively cleared in south-east Queensland for sugar cane and urban development (Queensland Government 2014)).

The remaining RE types observed within Lot436 and Lot 996 are 'least concern' (VMA class) and 'no concern' (Biodiversity Status) under the VM Act (**Table 4**).

**Table 4: Regional Ecosystems observed at Doonan Creek Environmental Reserve (Lot 436 and Lot 996)**

| RE | VMA class /BD Status | Short Description (Sattler and Williams 1999; Thomas 2013) | Distribution in the reserve |
|---|---|---|---|
| 12.2.12 | LC / NC | Closed heath on seasonally waterlogged sand plains. | Approximately 3 hectares in the south-east corner of the reserve. |
| 12.3.1 | EN / EN | Gallery rainforest (notophyll vine forest) on alluvial plains | Confined to floodplains associated with Doonan Creek in the central north of the reserve. |
| 12.3.5 | LC / OC | *Melaleuca quinquenervia* open forest on coastal alluvium | Broad areas of the alluvial plain associated with Doonan Creek. Intergrades with RE 12.3.1 (subdominant) in the central and north-eastern sections of Lot 436. |
| 12.3.6 | LC / NC | *Melaleuca quinquenervia, Eucalyptus tereticornis, Lophostemon suaveolens* woodland on coastal alluvial plains | Limited area on the south-western reserve boundary (Lot 436). |
| 12.3.11 | OC / OC | *Eucalyptus siderophloia, E. tereticornis, Corymbia intermedia* open forest on alluvial plains | Narrow distribution on the northern boundary of Lot 436 and 996. |
| 12.9-10.4 | LC / NC | *Eucalyptus racemosa* woodland on sedimentary rocks | Occurs on the slope in the north-eastern section of Lot 996. |
| 12.9-10.17 | LC / NC | *Eucalyptus microcorys, E. racemosa, E. tindaliae, Corymbia intermedia, Lophostemon confertus* tall open forest on sedimentary rocks (Thomas 2013) | Mapped as RE12.12.12 in Qld Govt. RE mapping, however Thomas (2013) identified this area as a mosaic of RE12.9-10.17 and 12.9-10.4. Isolated remnants located in the western pasture. |

LC = Least concern; OC = Of concern; EN = Endangered

More recent and comprehensive vegetation assessment data has been developed for the Sunshine Coast local government area (SCLGA) based on a fine scale (LIDAR) vegetation mapping report. This assessment, shows that four of the seven RE types found within the reserve are poorly conserved throughout SEQ and/ or the Sunshine Coast (Table 5 and Appendix 3). RE 12.3.11 has had the greatest loss relative to its pre-clearing extent with 95% cleared in the SCLGA

**Table 5.** Sunshine Coast LGA status of RE's found at Doonan Ck Environmental Reserve (Sunshine Coast Council biodiversity report card, 2015

| RE | Poorly conserved (10% adequacy at SCC/SEQ) | SCLGA Vulnerable (lost >70% of pre-clear extent) |
|---|---|---|
| 12.3.1 | SCC/SEQ | - |
| 12.3.6 | SCC | 73 |
| 12.3.11 | SCC | 95 |
| 12.9-10.4 | SCC | 79 |

**Management Actions**

- Undertake a detailed flora assessment at Lot 15 on SP154207 to verify vegetation communities and equivalent RE types occurring there

### 4.1.2 Flora

Two hundred and eight (208) native flora species in eighty-one (81) families were recorded during the terrestrial flora assessmentat Lot 436 and Lot 996 (Thomas 2013). Twenty-three (23) exotic species were also identified in this portion of the reserve (Thomas 2013).

An assessment of the aquatic flora at Lot 436 and Lot 996 identified eighty-four (84) aquatic/ wetland native flora species and ten (10) aquatic/ wetland weed species within Lot 436 and Lot 996 (Thomas 2014). **Appendix 4** lists all flora species found in this portion of the reserve to date.

The area supports two observed 'threatened' plant species that are listed under the EPBC Act 1999 and the Queensland *Nature Conservation Act 1992* (NC Act) (**Table 6**). Other significant species recorded are *Acacia flavescens, Myrsine howittiana* and *Philotheca queenslandica* (Thomas 2013).

208 native terrestrial and 84 native aquatic/ wetland plant species have been identified so far at the Doonan Creek Environmental Reserve in 2013 – 2014, including the 'endangered' Emu Mountain She-oak and Sunshine Coast Myrtle.

A number of additional listed 'threatened' and 'near threatened' plant species have been reported from areas to the north and east of Lot 996 (McDonald 2002), including *Symplocos harroldii* ('near threatened') and *Acronychia littoralis* ('endangered'). The status of these species in the local area remains unknown and they were not observed during recent surveys of the reserve (Thomas 2013).

**Management Actions**

- Undertake a detailed flora assessment at Lot 15 on SP154207 to verify vegetation communities and equivalent RE types occurring there

**Table 6: Listed 'threatened' plant species found at Doonan Creek Environmental Reserve**

| Common Name | Scientific Name | Status |
|---|---|---|
| Emu Mountain She-oak* | *Allocasuarina emuina* | Endangered (EPBC Act)<br>Endangered (NC Act) |
| Sunshine Coast Myrtle | *Lenwebbia sp.* 'Blackall Range' (P.R.Sharpe 5387) | Endangered (NC Act) |

* *A. emuina* is now treated as a synonym of *A. thalassoscopica* (Rose *et al.* 2015

### 4.1.3 Fauna

Field surveys conducted over spring and summer in 2014 – 2015 at Lot 436 and Lot 996 identified 179 native vertebrate fauna species, comprising the following numbers of species in each of the major terrestrial fauna groups.

- 10 amphibian species
- 13 reptile species
- 125 bird species
- 16 ground dwelling, scansorial and arboreal mammal species
- 8 bat species
- 7 freshwater fish species

**Appendix 5** lists all current fauna records for the reserve. Details of the status of listed 'threatened' species recorded at Doonan Creek Environmental Reserve are shown in **Table 7** below.

All fauna records have been added to the Queensland government Wildnet Database.

**Table 7: Listed 'threatened' fauna species known to occur at Doonan Creek Environmental Reserve and adjacent habitats**

| Common Name | Scientific Name | NC Act | EPBC Act | Record Locality | Source |
|---|---|---|---|---|---|
| Doonan Creek Environmental Reserve – Confirmed Records | | | | | |
| Wallum Froglet | *Crinia tinnula* | Vu | | Flooded pasture, drains and regrowth, western reserve<br>RE 12.3.5 south-eastern reserve | Meyer (2015) |
| Koala | *Phascolarctos cinereus* | Vu | Vu | RE12.3.5/12.3.1 northern central reserve | O2 Ecology (2014) |
| Existing Records Adjacent Areas | | | | | |
| Wallum Sedgefrog | *Litoria olongburensis* | Vu | Vu | East of the reserve (Peregian Springs area) | McDonald (2002) |
| Wallum Rocketfrog | *Litoria freycineti* | Vu | | East of the reserve (Peregian Springs area) | McDonald (2002) |
| Glossy Black- | *Calyptorhynchus lathami* | Vu | | Open forest to the east of Lot 996 (Peregian Springs) | McDonald (2002) |
| Ground Parrot | *Pezoporus wallicus wallicus* | Vu | | West Peregian section, Noosa National Park (1994) | DEH (1994) |
| Powerful Owl | *Ninox strenua* | Vu | | Open forest to the east of Lot 996 (Peregian Springs) | McDonald (2002) |
| Koala | *Phascolarctos cinereus* | Vu | Vu | RE12.9-10.4 north-eastern reserve margin adjacent to Lot 996 | McDonald (2002) |
| Grey-headed Flying-fox | *Pteropus poliocephalus* | | Vu | West Peregian section, Noosa National Park (1994) | DEH (1994) |
| Swamp Crayfish | *Tenuibranchiurus glypticus* | En | | Regional records in wallum habitat (RE 12.2.12/12.3.5) | |
| Tusked Frog | *Adelotus brevis* | | Vu | Regional records | Doonan area (Queensland Museum) |

The Australian government draft recovery plan for Grey-headed Flying-fox (*Pteropus poliocephalus*) (2017), notes that the primary threat to the survival of this species is loss and degradation of foraging and roosting habitat. Key recovery actions under this plan are to "identify, manage and secure key foraging and roosting habitat". This action is also included in Councils Regional Flying Fox Management Plan to encourage populations of Flying-fox to move out of the urban roost sites where their habitat footprint is diminished through various roost management actions.

Sunshine Coast Council has developed a flying fox habitat map showing the vegetated areas of Doonan Creek Environmental Reserve are suitable flying-fox habitat that is low conflict (>300m from occupied buildings), as shown in the **appendix 2l map.** It is therefore noted that for the protection of the vulnerable Grey-headed Fying-fox, any potential foraging and roosting sites within the reserve will be protected and—where appropriate—enhanced. However Council will ensure roosting habitat remains at the low conflict distance of more than 300 m from the nearesr residence.

Two listed 'threatened' fauna species are known to occur in this reserve, including the 'vulnerable' Koala and Wallum Froglet.

The 'vulnerable' Wallum Froglet (Crinia tinnula) was recorded in drains, flooded grazed pasture and regrowth Melaleuca habitat in the western section of Lot 436 (Meyer 2015). The Wallum Froglet was also calling in flooded Melaleuca woodland (RE 12.3.5) in the south-eastern section of the reserve in January 2014 (P. Barden personal obs.). The 'vulnerable' Koala. (*Phascolarctos cinereus*) occurs in tall open forest (RE 12.9-10.4) in the north-east section of the reserve (Lot 996) (McDonald 2002), and has been recorded in core areas of the reserve where important Koala food trees such as Swamp Mahogany (*Eucalyptus robusta*) and Forest Red Gum (*Eucalyptus tereticornis*) occur in RE 12.3.5 on the Doonan Creek floodplain (O2 Ecology 2014). Barden (2014) provides a review of the significance of the Doonan Creek Environmental Reserve for migratory birds, including regional, altitudinal, east coast and extra-limital migrants (see **Table 8** and **9**). A number of winter migrant birds, including species involved in east coast migration from southern to northern Australia and birds that move from higher altitudes to the coastal lowlands during winter months, were more abundant within the reserve during the cool season surveys (Barden.2014).

**Table 8: Listed Migratory and Marine species (EPBC Act) at Doonan Creek Environmental Reserve**

| Common Name | Scientific Name | EPBC Act 1999 | Habitat/RE Type |
|---|---|---|---|
| White-throated Needletail | *Hirundapus caudacutus* | Migratory/Marine | Aerial/RE 12.3.5 |
| Rainbow Bee-eater | *Merops ornatus* | Marine | Acacia regrowth, 12.2.12, 12.9-10.14, 12.3.1, 12.3.5 |
| Cattle Egret | *Ardea ibis* | Marine (JAMBA) | Pasture |
| White-bellied Sea-eagle | *Haliaeetus leucogaster* | Marine | Pasture, 12.3.1 |

**Table 9: Migration systems for birds recorded within the Doonan Creek Environmental Reserve**

| Season | Warm season migrants | Cool season east coast migrants | Cool season altitudinal migrants | Regional Nomadic Species |
|---|---|---|---|---|
| Migration System | Northern Australia/ Extra-limital (e.g. NewGuinea, W allacea, Eurasia). Absent or at low abundance during the cool season period in SEQ | East coast migration system, moving from south-eastern Australia to SEQ during the cool season | Move between higher altitude habitats (e.g. Blackall and Conondale Ranges) and coastal lowlands. Disperse to SEQ lowland habitats during cool season | Move between habitats and areas in response to availability of resources (e.g. flowering events) |
| Examples of bird species recorded within the reserve | Channel-billed Cuckoo Cicadabird Spangled Drongo Rainbow Bee-eater Eastern Koel White-throated Needletail | Yellow-faced Honeyeater Scarlet Honeyeater Eastern Spinebill Silvereye Spotted Pardalote Rufous Whistler Leaden Flycatcher Rose Robin | Noisy Pitta Rose Robin Golden Whistler Brown Gerygone Green Catbird Eastern Spinebill Satin Bowerbird | Rainbow Lorikeet Scaly-breasted Lorikeet Brown Honeyeater White-cheeked Honeyeater |

Summer migrant birds that were present within the reserve include species that migrate to northern Australia or New Guinea/Wallacea during the SEQ winter (Barden 2014).

Rainbow Bee-eaters at Doonan Ck Enviroronmetal Reserve

The reserve also contains suitable habitat for additional listed 'threatened' and 'near threatened fauna species and a number of these have been recorded in adjacent habitats. These include records of the 'vulnerable' Powerful Owl (*Ninox strenua*), Glossy Black- cockatoo (*Calyptorhynchus lathami*), Wallum Rocketfrog (*Litoria freycineti*) and Wallum Sedgefrog (*Litoria olongburensis*) from the Peregian Springs area (McDonald 2002). The 'vulnerable' (EPBC Act) Grey-headed Flying- foxes (*Pteropus poliocephalus*) is likely to feed on flowering and fruiting trees in forested sections of the reserve and has been recorded in the West Coolum Section of Noosa National Park (DEH 1994)

Closed heathland (RE 12.2.7) in the West Coolum Section of the Noosa National Park formerly supported a population of the 'vulnerable' Ground Parrot (*Pezoporus wallicus*) (DEH 1994), however this species has not been observed in this area during recent surveys.

Fire management is an important factor in managing Ground Parrots, with the species thought to be excluded from areas that remain unburnt for long periods of time (McFarland 1989).

There is suitable habitat within the reserve for other listed 'threatened' species that are known to occur in the region, including the

'vulnerableTusked Frog (*Adelotus brevis*) and the 'endangered' swamp Crayfish (*Tenuibranchiurus glypticus*)

**(Management Actions**

- Undertake measures to protect and enhance Wallum Froglet populations
- Consider the requirements of Koala when undertaking revegetation/ offset programs ie. Include locally occurring Koala food trees (e.g. Eucalyptus microcorys, E. tereticornis and E.propinqua) in tree planting
- Undertake fire management planning in heath areas to potentially create conditions suitable for Ground Parrots, in consultation with QPWS
- Undertake ground parrot surveys to check for recruitment following 2017 wildfire
- Undertake freshwater invertebrate surveys targeting endangered swamp crayfish (Tenuibranchiurus glypticus)
- Protect and enhance flying fox roosting habitat.

### 4.1.4 Habitat

The reserve is identified as Core Habitat under the Sunshine Coast Biodiversity Strategy 2010 - 2020 and a range of regionally significant and uncommon species found within the reserve are dependent on the habitat characteristics protected by the reserve.

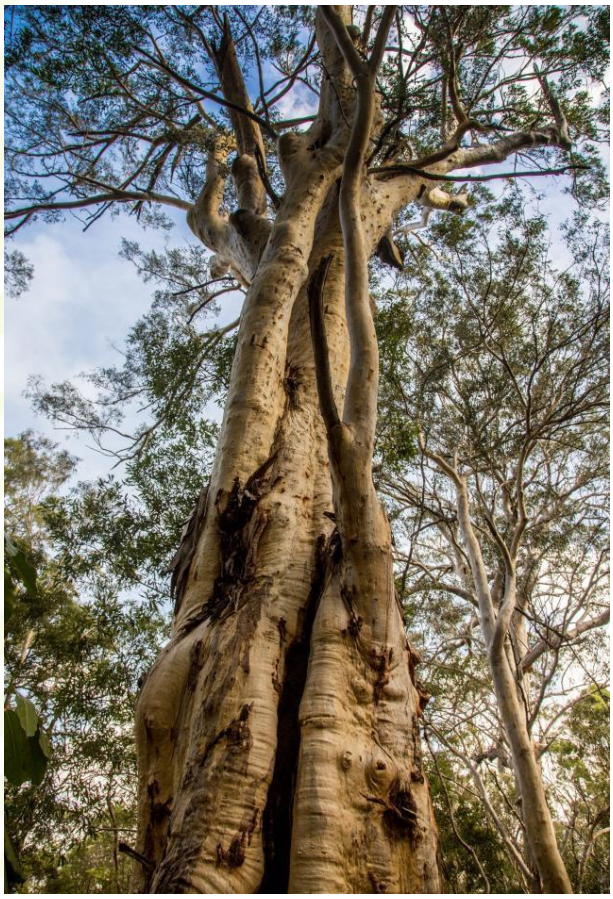
The reserve represents an important component of a regionally significant habitat corridor that provides a link between habitats along the Noosa River to the north and Maroochy River to the south (Barden 2014).

Areas of the reserve, including open forest mapped as RE 12.9-10.4, support old growth canopy trees with large numbers of hollows and fissures that represent important roost andnest habitat for wildlife. This includes suitable Koala food trees (e.g. *Eucalyptus robusta* and *Eucalyptus tereticornis*), rainforest and ecotonal habitats required for rainforest birds, and heath and wallum habitats favoured by species such as the Wallum Froglet and Ground Parrot.

The reserve supports an area of regionally uncommon riparian and floodplain forest habitats that have been preferentially clearedin SEQ. These habitat features include areas of open forests on low rises, uncommon floodplain swamp forest with vine forest elements, riparian gallery vine forests and instream habitat along drainage lines, and areas of Melaleuca and heathland typical of coastal wallum.

**Management Actions**

- Identify and protect remaining habitat trees and large hollow logs from fire damage
- Preserve ecotone habitat by maintaining a dynamic edge through ecological processes.



Mature Scribbly Gum (*Eucalyptus racemosa*) with numerous hollows (Image P Barden)

## 4.2 Cultural and Social Values

### 4.2.1 Indigenous

Doonan Creek Environmental Reserve is located within the native title application area boundary of the Kabi Kabi People[2]. The Native Title Act 1994 acknowledges retrospectively, that the Aboriginal Traditional Owners, prior to colonisation had and have their own systems of land ownership, governance and law. Any reference to history and land-use of the Doonan Creek Environmental Reserve should also acknowledge the farming and economic practices of Kabi Kabi people being maintained well into the 1860's and continuing at least into the early 20th Century, (G. Jones, Kabi Kabi First Nations submission).

At the time of purchase there were no Aboriginal cultural heritage sites recorded in the State Aboriginal Cultural Heritage Database or Register for Lot on plan 15SP154207, 436CG491, 996CG2907 and 1P242443. However, the absence of recorded Aboriginal cultural heritage may simply reflect a lack of cultural heritage surveys in this area.

In areas of the Doonan Creek Environmental Reserve which are undeveloped and undisturbed, there is potential for unrecorded Aboriginal cultural heritage to be present.

All Aboriginal cultural heritage is protected under the Queensland *Aboriginal Cultural Heritage Act 2003*, and penalties can apply forany harm caused. The legislation applies a cultural heritage duty of care whereby any person carrying out an activity must take all reasonable and practical measures to ensure the activity does not harm Aboriginal cultural heritage. To assist in meeting this duty of care, there are *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines that should be followed. It is a requirement under these guidelines for the relevant aboriginal party to be consulted prior to any works that will cause ground disturbance in a previously undisturbed area.

**Management Actions**

- Consult Kabi Kabi First nation prior to any works that will cauise ground disturbance in a previously undisturbed area.

### 4.2.2 Ecological Restoration

The condition of remnant habitat with the reserve is generally rated as 'very good' to 'good' under Council's Bushland Operation Assessments (BOAs). Establishment works have included mapping and control of weeds targeting areas with high resilience and forest edge management.

Balance areas of the reserve (non-remnant) are dominated by open pasture and Acacia regrowth. A component of this area is currently the subject of a revegetation project being undertaken as a biodiversity offset and further offset revegetation is planned for additional areas. The development of an artificial wetland is under investigation.

Community event planting rainforest fruiting trees for birdlife

[2] QC13.03 – QUD280/2013, Kabi kabi First Nation, Queensland South native Title Services Limited, Level 10, 307 Queens St, Brisbane, Q 4000.

### 4.2.3 Eco-recreation

There is no existing recreational infrastructure in the Doonan Creek Environmental Reserve. There are no existing trails or access roads other than a gravel roadway accessing the western pasture areas and fire trail on the eastern side via Thomson Street (**Appendix 2h**).

The reserve is located immediately to the west of high density urban development at Peregian Springs and Coolum Ridges, with an estimated population exceeding 4000 (2011 census data). The proximity of the reserve to this urban area indicates that recreational use could be considered, with a caveat that the ecological significance of the reserve should direct uses to be designed with consideration to the sensitivity and significance of the habitats and species protected in the reserve (**Appendix 2h).**

There is a high risk to habitats and wildlife within the reserve from increased access by recreational users, for example through direct disturbance by humans, increased presence of domestic pets (particularly dogs), spread of weeds and pathogens and unplanned ignition of fires. North-eastern components of the reserve are likely to be particularly vulnerable due to the close proximity of densely settled urban areas (Peregian Springs). Recreational use opportunities could be investigated for components of the western non-vegetated areas of the reserve. An area of the western non-remnant habitat would be suitable for the construction of an artificial wetland, which could act as a local hub facilitating bird watching and environmental education.

The Sunshine Coast Council Open Space Strategy 2011 includes a community hub to the east of the reserve at Peregian Springs, and there are two Future Open Space Recreational Parks and one Future District Sports Groundfacility nominated by the strategy within 2km of the reserve (**Appendix 2l**). Two Local Recreation Park upgrades are identified within this zone to the east of the reserve.

There are currently seven existing local area recreation parks and numerous amenity reserves in the Peregian Springs area. Four educational facilities are located to the east of the reserve.

**Management Actions**

- Investigate the potential for access and other infrastructure, including boardwalks, bird hides and—where appropriate—shared walking/cycling/horse riding trail.
- Investigate potential for constructed wetlands and associated ecotourism/ environmental education infrastructure in non-remnant habitat in the western section of the site
- Provide opportunities for public involvement in restoration of non-remnant areas of the site where appropriate
- Promote partnerships with organisations to facilitate ongoing research and data collection within the reserve

### 4.2.3 Reserve category

The reserve is identified as category 'Bushland Reserve', which is one of the five categories used for the coordinated management and promotion of the reserve network. The 'Bushland Reserve' category reflects the extent of open space which is more resilient to external impacts and may support various unsupervised nature based activities based on the outcomes of the landscape design. Reserve categories are described in more detail in the Environmental Reserves Master Management Plan 2017 – 2027. **Appendix 6** provides evaluation of potential reserve categories for this site.

**Management Actions**

- Ensure appropriate location and minimal use of embellishment options associated with bushland reserve category to preserve the natural experience and tranquillity of the site.

## 4.3 Economic Values

Conservation of natural values at the Doonan Creek Environmental Reserve may contribute to the local and broader economy. Sunshine Coast natural areas represent a major draw-card for tourism, including opportunities for nature-based tourism. Habitats preserving biodiversity can also attract wildlife enthusiasts and bird watchers from within and beyond the region.

Tourism and hospitality are key industries contributing $1,078.7 million to the local economy and employing 15% of the labour force (2013/2014). In addition, protection of floodplain vegetation may indirectly contribute to commercial and recreational fisheries by improving water quality in the lower Maroochy catchment.

**Management Actions**

- Investigate potential for this reserve to be used for environmental education and low impact eco-tourism (e.g. birdwatching)

It is noted that any commercial interests would have to demonstrate how the proposed activities complement and contribute to the protection and enhancement of environmental values and assist in achieving the optimum biodiversity conservation and reserve management outcomes.

## 4.4 Condition of the Values

Bushland Operation Assessments (BOAs) were completed at Lot 15 and 996 in December 2007 and at Lot 996 and 436 in February 2014 (**Figure 3** and **Appendix 2m**). The BOA provides a vegetation condition assessment tool used by Council to guide bush restoration activities. The condition of the majority of bushland assessed in 2014 is 'very good' (56%) to 'good' (8.5%).

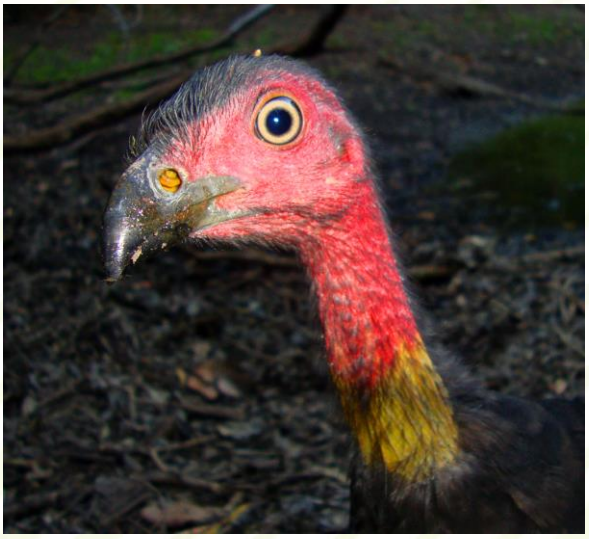
Other areas rated by the 2014 BOA are moderate (2.4%), poor (4.5%) and very poor (2.2%). Cleared areas that have been retained as pasture in the western section of the reserve are excluded from the BOA assessment

Factors potentially influencing the ecological condition of bushland include the presence of cattle in the western portion of Lot 436, the presence of historical artificial drainage networks within the reserve and the potential for edge effects where the reserve is located in close proximity to urban areas on the north eastern reserve boundary. Potential impacts from adjacent urban areas that may impact wildlife and habitat condition in the reserve include domestic animals (cats and dogs), drainage, sedimentation, water quality, weeds, plant pathogens, water pollution (nutrients and other chemicals), waste dumping, light pollution and noise pollution.

Community land uses for land to the south and south-east of the reserve currently present amenity issues (noise) in the reserve.

**Management Actions**

- Review BOA every 5 years (See Figure 3 below)
- Review Regeneration Works Plan every 5 years
- Subsequent BOA and Regeneration Works Plan to cover whole of reserve



Natures Bush Regenerator *(Brush turkey captured by a camera trap on Doonan Creek Environmental Reserve Image P Barden)*

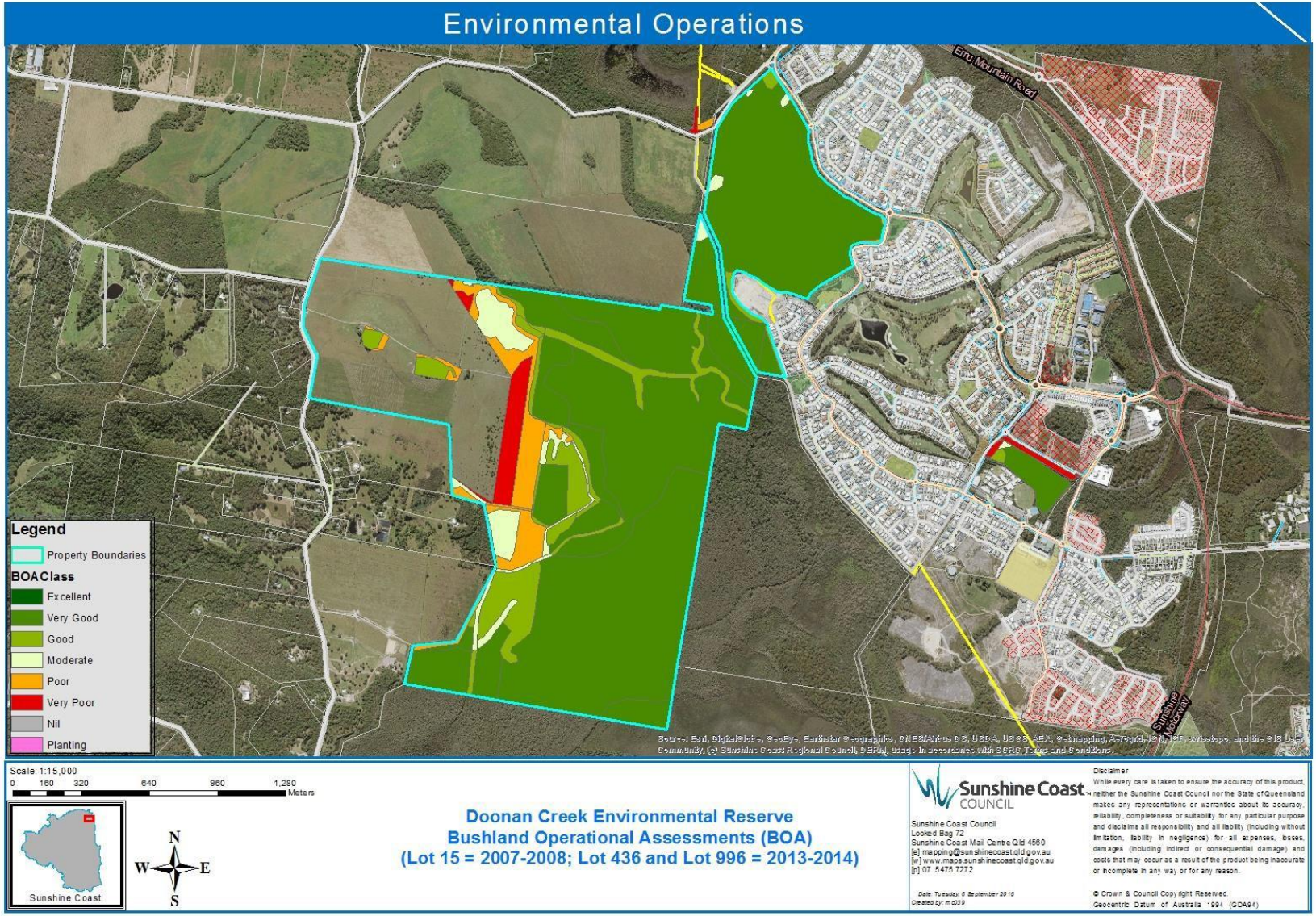



**Figure 3.** Bushland Operational Assessment May 2016 (Lot 436 and Lot 996) and December 2007 (Lot 15)

# 5. Bioregional landscape Context

The bioregional landscape descriptions which have been included here may be used to support any future recognition of this reserve as part of a national reserve system[3]

## 5.1 IBRA

Interim Biogeographic Regionalisation for Australia (IBRA) is endorsed by all levels of government as a key tool for identifying land for conservation. Australia's landscapes have been classified into 89 large geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. Under the latest IBRA (7), Doonan Creek Environmental Reserve is located in the South-east Queensland bioregion (no 74) which has a total area of 7,804,921 hectares. 13.1% of the SEQ IBRA region is protected in reserves and 13.98% of the Sunshine Coast / Gold Coast Lowlands subregion (SEQ04) that includes the site is protected in reserves (Commonwealth of Australia 2012).

## 5.2 Catchment

The reserve is located within the Maroochy River Catchment on the lower middle section of the 54 km$^2$ Doonan Creek drainage basin, which flows from the southern boundary of the Noosa Shire and discharges to the south of the reserve into Coolum Creek (Barden 2014). The main channel of Doonan Creek enters the central north of Lot 436 and drains to the south-west after traversing a large area of Melaleuca swamp forest in the southern component of the reserve. A number of artificial drainage channels also occur within the reserve (**Appendix 2b**).

[3] Australian Government, 2009, Australia's Strategy for the national reserve system, 2009 – 2030.

## 5.3 Local Planning Context

The area falls within the Sunshine Coast Council Planning Area. Under the Sunshine Coast Planning Scheme 2014, the site is mapped in the schedule 2 zone maps as Open Space zone code—environment category. Therfore an amendment of the site to Environment and Conservation zone code is scheduled.

## 5.4 CAR Contribution

***Comprehensive**:* There are thirteen Queensland Government mapped regional ecosystems at Doonan Creek Environmental Reserve that are included in the SEQ bioregion and SEQ04 Sunshine Coast – Gold Coast Lowlands IBRA sub-region.

***Adequate**:* The reserve comprises approximately 230 hectares of remnant and regrowth vegetation, with the majority of the vegetation assessed as being in 'good' to 'very good' condition. This indicates that the remnant habitats within the reserve have a high level of resilience and will require lower levels of management intervention to maintain habitat quality.

The reserve provides important regional links between other bushland reserves and regionally significant habitat corridors. The reserve contributes to ecological viability for flora and fauna populations, species and ecological communities.

***Representative**:* The regional ecosystem types present within Doonan Creek Environmental Reserve provide a representation of the pre-clearing landscape that previously covered the coastal lowlands of the Sunshine Coast and the broader South-east Queensland region. The reserve preserves an important mosaic of habitats, including 'endangered' riparian vine forests, floodplain forests dominated by Melaleuca, forest red gum, swamp mahogany and Lophostemon (with uncommon vine forest mid-canopy elements), open eucalypt forests and heathlands. A number of these habitats are poorly conserved in the SEQ component of the National Reserve System.

# 6. Management Issues

## 6.1 Regional Background

The SEQ region is the most densely populated part of Queensland, experiencing rapid growth over the previous two decades (Ambrey and Fleming, 2011). The SEQ bioregion has been identified as an area which is at a critical threshold, where increased development throughout the urban footprint is likely to lead to increasing loss and degradation of remaining ecosystems and their fauna (Peterson *et al.* 2007). Therefore the restoration and recovery of significant habitat corridors, catchments, and remnant vegetation, such as that which occurs at Doonan Creek Environmental Reserve, will play an important role in protecting ecological function and associated biodiversity for SEQ.

**Management Actions**

- Investigate options to include DCER in a pilot for an Indigenous ranger program in accordance with action 11 of the SCC Reconciliation Action Plan.

## 6.2 Preliminary Threat Analysis

Throughout the establishment phase of works undertaken on this reserve, a range of risks have been identified which may affect Council's capacity to protect and restore biodiversity values of this reserve if these are not addressed.

**Table 10** highlights the corresponding opportunities proposed to address each of the threats identified for the reserve.

**Table 10: Summary of reserve management risks and opportunities**

| Risks | Opportunities |
|---|---|
| Myrtle rust infestation on *Lenwebbia* sp. Blackall Range | • Partnerships with Queensland Herbarium and Myrtle Rust researchers (eg. Garry Thomas) |
| Trail network impacting sensitive ecological areas | • Proactive planning through landscape design process<br>• Horses potentially traversing the reserve from other areas pose a risk for weed infestation through manure droppings. High risk areas such as wetlands and wallum habitat are not suitable for recreational horse trails.<br>• Dog access managed through landscape design where dog on leash areas are restricted to suitable low risk pathways and excluded from wetland and wallum habitat areas. |
| Lack of fruiting plants for migratory and seasonal birds | • Planting rainforest fruit trees |
| Fire management required for listed 'vulnerable' ground parrot habitat | • Ground Parrot and fire history research (eg. Partnership with Angus Collins from Southern Cross University)<br>• Acquisition of adjoining properties to enable joint fire management with QPWS<br>• Partner with Kabi Kabi and SEQ catchments cultural burn program |
| Pinus sp. In south-east | • Partnerships with QPWS |

| | |
|---|---|
| Wallum Froglet habitat degraded by exotic fauna including cattle and Mosquitofish | • Plant areas of surface water with native sedges to provide frog embryos and larvae with more cover from predatory fish (Meyer 2015)<br>• Plant breeding ponds in sandy, low-nutrient soil areas (Meyer 2015)<br>• Exclude cattle and horses from important habitat areas (Meyer 2015) |
| Habitat fragmentation and clearing in adjoining landscape | • The Environment and Liveability and Environment Levy Land Acquisition Program is guided by a landscape ecology approach to biodiversity conservation. This includes the restoration of strategically located parcels of land within the Maroochy Noosa Wallum Corridor (MNWC) to strengthen ecological connectivity and functionality<br>**Management Action**<br>• Investigate options to expand and build resilience to the MNWC habitat extent |
| Encroachments along reserve boundary associated with urban devloipment. | • Condition future devlopments to provide road esplanade or recreational park adjacent to reseves which act as both a fire break and buffer to urban encroachment, and reduce likelihood of weed spread and rubbish dumping at reserve boundary, (ERNMP 2017). |

## 6.3 Restricted Matters and Locally Significant species

### *6.3.1 Weeds*

Thomas (2013) identified 23 exotic plant species within Lot 436 and Lot 996 (Appendix 4). A survey of aquatic flora within Lot 436 and Lot 996 identified ten exotic aquatic/wetland plant species (Thomas 2014) (Appendix 4). These species include four Restricted Matter (Category 3) invasive plant species—Baccharis halimifolia (Groundsel), Asparagus aethiopicus (Asparagus Fern), Cinnamomum camphora (Camphor Laurel) and Lantana camara (Lantana)--listed under the Biosecurity Act 2014 (Appendix 7

Salvinia is an aquatic water weed which damages freshwater habitats in the reserve

*Salvinia at Lot 996 that has washed downstream from a golf course and constructed lake during heavy rainfall*

**Management Actions**

- Update, and implement weed management activities in the RWP to control Restricted Matter (Category 3) invasive plants and Locally Significant weeds including Salvinia, and restore native habitats
- Monitor and control weed infestation and dumping on urban interface (eastern reserve) and along road verges of Doonan Bridge Rd
- Liaise with Queensland Parks and Wildlife Service (QPWS) regarding pine infestations (south-east reserve)

### *6.3.2 Pest animals*

Fauna surveys detected the following pest animal species within the reserve:

- Cane toad (*Rhinella marina*)
- Red fox (*Vulpes vulpes*)
- Wild dog (*Canis familiaris*)
- Cattle (*Bos taurus*)
- Mosquitofish (*Gambusia holbrooki*)
- Platy (*Xiphophorus maculatus*)

Two of these species, the Wild Dog and the Red Fox, are listed as Restricted Matter Invasive Animals under the *Biosecurity Act 2014* and are listed for management in the Sunshine Coast Local Government Area Biosecurity Plan. The Mosquitofish is listed as a Restricted Matter Noxious Fish under the Biosecurity Act whereas the Cane Toad is allocated for "local control" under the Sunshine Coast Local Government Area Biosecurity Plan.

Control of feral canids requires consideration of the presence of dingoes (*Canis dingo*) in the reserve area and the role dingoes play in ecological systems and biodiversity conservation. Dingoes suppress feral cat and fox numbers and restrict hunting behavior by these mid-level feral predators (Wang and Fischer 2012; Kennedy *et al.* 2012; Brook *et al.* 2012).

Conversely stable dingo populations may contribute to ecological management objectives by restricting fox and feral cat access to prey populations (Brook *et al.* 2012). These issues are particularly important in the context of local and regional populations of listed 'threatened' species such as the ground parrot (*Pezoporus wallicus*).

Cattle are present in pastoral areas in the western section of the reserve under an existing leasehold arrangement which will be reduced annually in conjunction with restoration plans and ends in 2020. The retention of cattle in the short to medium term provides a benefit in preventing development

of dense exotic grassland and melaleuca in pastoral areas, however if necessary, this role could be replaced by slashing. If cattle are to be retained in the medium term, measures to reduce access to bushland areas should be considered (e.g. appropriate fencing, additional watering points) to prevent impacts on natural habitat. Fencing maintenance on site boundaries is in place to prevent incursions of stock from adjacent rural lots.

As a condition of the leasehold arrangement, the agistee maintains fencing at a 1-10m distance from the forest edge to restrict cattle from remnant bushland and facilitate natural regeneration.

The area of pasture within the reserve is also being reduced through replanting for offsets and community revegetation projects. In these more open areas the exclusion of cattle will require plans for active weed management.

Council manages pest animal populations through its Animal Education and Control Team and in accordance with the Sunshine Coast Local Government Area Biosecurity Plan.

**Management Actions**

- Implement pest management activities in line with SCLGA Biosecurity Plan
- Fill artificial drains to control populations of exotic Mosquitofish
- Feral dog control must consider risk management of meso-predator release (eg. Cats and foxes)
- Control and manage exotic species in cattle excluded areas.

Refer to **Section 6.8.2** for management actions related to stock grazing

## 6.4 Plant Pathogens

Myrtle rust is a plant disease caused by the exotic fungus *Puccinia psidii* and plants impacted by Myrtle rust have been detected within the Doonan Creek Environmental Reserve (Thomas 2016).

Myrtle rust threatens trees and shrubs in the Myrtaceae family, which includes Australian native plants in the genera Callistemon, Melaleuca, Eucalyptus, Angophora, Corymbia and Lenwebbia. Symptoms including defoliation, leaf deformity, reduced fertility, stunted growth and plant death.

Within the Doonan Creek Environmental Reserve, infection has been detected on the 'endangered' Sunshine Coast Myrtle (*Lenwebbia sp*. "Blackall Range"), with only 15 of 63 individuals located with the reserve showing no signs of infection (Thomas 2016). Many individuals showed signs of severe infection, dieback and foliage loss due to Myrtle Rust (Thomas 2016).

Council is currently working in partnership with Garry Thomas and the Queensland Herbarium to map the distribution of Myrtle Rust at this site and at other locations.

**Management Actions**

- Continue monitoring extent of Myrtle rust and impacts on listed 'threatened' plants, In particular, Implement recommendations in Thomas (2016) relating to the 'endangered' Sunshine Coast Myrtle
- Develop a recovery plan for the Sunshine Coast Myrtle.

## 6.5 Fire

Doonan Creek Environmental Reserve shows signs of limited recent fire management. In particular, closed heath on the south-east boundary of the reserve appears to have remained unburnt for long periods, which may have impacted on suitability of this habitat for wildlife, including the 'vulnerable' Ground Parrot.

Recommendations from the Kabi Kabi first nation submissions to this plan have noted the ecological fire management of Doonan Creek Environmental Reserve, being an important

link in the Maroochy Noosa Wallum corridor, needs to include consultation with ans implementation with Kabi Kabi people.

Future fire management undertaken at this reserve will also have to be carried out in partnership with QPWS due to the connectivity with the adjacent section of the Noosa National Park (West Coolum Section). The presence of listed 'threatened' flora and fauna species that require specific fire management regimes, particularly in Land zone 2 on the south-east section of the reserve, highlights the importance of fire management planning in this area. The balance of the reserve is dominated by wet forest types which can be maintained in an unburnt state. Many of these areas are developing a dense vine forest mid-canopy due to the absence of fire.

The area has an existing maintained trail which provides access for management purposes and emergencies. Access is currently limited to authorised vehicles via a series of locked gates.

The development of a detailed fire management plan will provide guidance for asset protection and for the ecological management of vegetation at the reserve--taking into account maintenance of species and biodiversity.

**Management Action**

- Maintain recently upgraded fire access trail
- Develop/ finalise Fire Management Plan and include consultaion with Kabi Kabi people.
- Fire management of this reserve will consider the ecological requirements of significant fauna and flora species (and associated habitat) as an integral component of fire management planning
- Liaise with QPWS regarding existing fire management planning for the West Coolum Section of Noosa National Park
- Investigate opportunities to partner with Kabi Kabi and SEQ catchments cultural burn program.

## 6.6 Erosion

Soils types within the Doonan Creek Environmental Reserve are dominated by sand and weathered loam (land zones 2, 3 and 9-10) and are potentially susceptible to erosional processes. Dense vegetation cover in the remnant sections of the reserve is currently limiting erosional processes. Although erosion is continuing to occur along a number of artificial drainage lines that cross the reserve. Natural watercourse banks along Doonan Creek are generally stable

**Management Action**

- Implement erosion control measures where required in accordance with Council's Erosion and Sediment Control Manual (Version 1.2)
- Investigate stabilisation measures for artificial drains
- Consider potential presence of erosion-prone substrates when planning infrastructure including any trails, particularly in areas of land zone 2.3 and 9-10.
- Monitor drainage inputs from surrounding land uses (e.g. urban)

## 6.7 Acidity/Salinity

The majority of the reserve is mapped as current climate flood prone land in Council flood modelling layers, with large sections of this area mapped as below 5m AHD in the Sunshine Coast Planning Scheme Acid Sulphate Soils (ASS) mapping (SCC 2010) (Appendix 2n).

Acidic surface and sub-surface water is characteristic of the coastal lowlands of the Sunshine Coast, with specific ecosystems and species having evolved to occupy sites where these conditions are present, including the 'acid frog' group. These conditions do not generally cause negative impacts on streams and waterways unless there are excessive amounts of disturbance at a site, exposing acid sulphate soils and changing water table levels. These issues will require consideration

during development of any infrastructure within the reserve, including development of artificial wetlands.

The presence of a species of 'vulnerable' acid frog within the reserve indicates that care must be taken to preserve natural surface water pH levels during any management intervention, as changes (increases) in pH and other habitat characteristics can favour other generalist frog species and enable them to encroach on habitats occupied by the habitat specialist 'acid frogs' (Simpkins et al. 2014).

**Management Action**

- Monitor surface water quality and pH levels, particularly during any works or changes to drainage systems and water table levels
- Consider requirements of 'vulnerable' Wallum Froglet and other wallum habitat specialists during planning or implementation of changes to drainage or water table levels
- Works undertaken at reserve are to be in accordance with the Sunshine Coast Planning Scheme 2014 Acid sulphate Soils Overlay Code

## 6.8 Historical Land Use

### *6.8.1 Vegetation clearing*

Historical vegetation clearing has occurred within the reserve, particularly in the western section. A number of large canopy trees supporting hollows remain at sites in the central and north-eastern portions of the reserve. Recent clearing for residential development has occurred to the east of the reserve (Peregian Springs).

**Management Action**

- Develop conservation partnership initiatives with local landholders to preserve adjacent bushland that remains on freehold land
- Continue to manage the reserve to allow for ongoing natural recruitment of native species
- Investigate opportunities for offsets or community planting to revegetate some of the existing open areas as per future land use plan (**Appendix 2l**)
- Prioritise and implement riparian revegetation

### *6.8.2 Stock grazing*

Stock grazing continues to occur within the western section of the reserve under a lease arrangement with Council. Some impacts are evident in core bushland areas where stock enter the forest to gain access to water points and shade. Grazing in pasture areas is operating as a useful measure to control growth of exotic pasture species. Grazing has impacted habitat for the 'vulnerable' Wallum Froglet where this species occurs in drains and flooded pastures in the reserve (Meyer 2014).

Stock grazing adjacent to offset planting site

**Management Action**

- Unused fences still in place will be investigated for removal if not required or present a risk to staff or fauna
- Restrict stock access in areas where populations of Wallum Froglet occur within the reserve
- Phase out stock grazing as areas of the eserve are allocated to revegetation and offset projects. Upgrade fencing as required
- Provide additional fencing and watering points to minimise damage to core bushland areas in the interim
- Monitor stock proof fencing to ensure fencing is being maintained in good repair by the agister and restricting cattle in stock exclusion areas

### *6.8.3 Timber extraction & forestry*

It is likely that timber extraction has occurred on the property in historical times, with many valuable timber species occurring along tributaries of the Maroochy River subjected to early logging operations (Windolf and Windolf 2004). Experimental forestry plantations to the south-east of the reserve have left a legacy of Slash Pine (Pinus elliottii) wildlings, which are currently being managed under the RWP. The pines within the reserve were treated in 2014, however ongoing checks throughout the heathland area are required. Historic trails, drainage channels and associated bunds within the national park to the south of the reserve are a constant source for reinfestation

**Management Action**

- Continue to manage Slash Pine infestations in the south-east of the reserve
- Liaise with QPWS regarding control of Slash Pine in the West Coolum Section of Noosa National Park.

## 6.9 Climate Change

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, and increased bush fire risks. Stream processes may also be impacted by increased flood events.

Sunshine Coast Council Biodiversity Strategy 2010-2020 recognises that climate change is a significant long-term threat to the area's biodiversity. This is also addressed in the Sunshine Coast Council Climate Change and Peak Oil Strategy 2010-2020 where protecting habitat, rehabilitating areas, enhancing wildlife corridors and reducing pest species are suggested to help wildlife adapt to changing conditions and also provide the potential to sequester carbon.

Doonan Creek Environmental Reserve was purchased and established through the environment levy land acquisition program and forms an important part of Council's environment reserve network. This reserve contributes to the areas ecological functionality and connectivity, protecting regional biodiversity values and landscape resilience to the anticipated impacts of climate change

The habitats and species preserved within the Doonan Creek Environmental Reserve may be particularly vulnerable to climate change impacts due to the low lying nature of the reserve (<5 m AHD). Therfore any recreational use must not compromise the ecological core values of the site and resilience of the wetland areas.

**Management Action**

- Build resilience to change through habitat connectivity and if feasible, consider additional land acquisition to provide increased core habitat and connectivity
- Build resilience to hydrological changes through protecting natural surface and groundwater flows.

## 6.10 Visitor Use

There is currently limited recreational use within the reserve. Some use of fire trails on the north-eastern margin of the reserve for walking, and cycling has been observed in this area of the reserve. Other areas of the core bushland are difficult to access due to the presence of waterways, swamps and dense vegetation. Access to the western part of the reserve is restricted by locked gate and fencing.

**Management Action**

- Consider implementation of formal access to the reserve for nature-based low impact recreation and environmental education.
- Control and limit access for domestic dogs to minimise impacts on Koalas
- Visitor access will be reviewed within the broader context of the Recreational Trails Development Plan 2017 and the Environmental Reserves Network management plan 2017-2027. Note Recreational Trails Development Plan desired outcomes:
  a) *Create a range of trail offerings for a number of user groups that allows them to engage in at least an hour-long experience*.
  b) *Devlop a multi-user trail network that connects Eumundi and Peregian Springs to the surrounding natural areas*
- Retain open areas which complement the ecological values for potential future use by visitors
- Develop a landscape design plan for the site to guide future planning for public access, including parking, trails, retained open space and future revegetation areas.

Councils environment levy program funds the acquisition and establishment works of this site and ensures any future planning will benefit the whole Sunshine Coast community. Visitor use plans are guided by the development of a detailed landscape design plan that will consider the interests of the whole community and ensures ecological values are core values that will be protected.

**Management Action**

- All trail devlopments to include an environmental impact assessment to assess erosion risk and include where appropriate a Species Management Plan (SMP) for any EPBC listed species.

Doonan Ck Environmental reserve community field day 2017.

# 7. Implementation Plan

## 7.1 Purpose of the Protected Area

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

## 7.2 Management Objectives

- Manage the area in order to perpetuate, in as natural a state as possible, representative examples of regional ecosystems, biotic communities, genetic resources and unimpaired natural processes;
- Maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term;
- Contribute in particular to conservation of wide-ranging species, regional ecological processes and migration routes;
- Manage visitor use for inspirational, educational, cultural, and recreational purposes, at a level which will not cause significant biological or ecological degradation to the natural resources;
- Consult with and include Kabi Kabi Traditional Owners in issues of biodiversity and biosecurity management and support opportunities in 'caring for country' obligations and practices.

**Management Action**

- Support cultural obligations of the Kabi Kabi people "caring for country".
- Prioritise wherever possible council procuring goods and services from local, indigenous business in accordance with the Sunshine Coast Council strategic contracting procedures.
- Develop cultural ecological knowledge report to inform future interpretation and planning.
- Contribute to local economies through ecological knowledge, cultural heritage and habitat restoration and tourism

### 7.2.1. Protection Mechanism

Under the Sunshine Coast Planning Scheme 2014, the site is mapped in the schedule 2 zone maps as Open Space zone code with an added environment layer category. Therfore an amendment of the site to Environment zone code is scheduled.

The intent of reserve management established through this management plan is to ensure the conservation values are maintained so that the protection mechanisms are not compromised.

**Management Action**

- Planning scheme amendment - schedule 2 zone maps to include the Doonan Creek Environmetal reserve under Environnment zone code mapping.

## 7.3 Restoration Goals

Restoration activities at Doonan Creek Environmental Reserve aim to maintain and enhance existing biodiversity values and improve overall resilience of vegetation.

The Doonan Creek Environmental Reserve Restoration Works Plan (RWP) describes priorities for restoration activity based on the 2014 BOA mapping. All vegetation management activities undertaken on this reserve are guided by this RWP.

To assist restoration, the reserve has been partitioned into twelve management zones that govern the types of activities required to improve each zone's BOA classification.

**Management Action**

- Review Regeneration Works Plan every 5 years

### 7.3.1 Significant Fauna and Flora

Four listed 'threatened' fauna and flora species have been found at Doonan Creek Environmental Reserve. A range of management responses are included here based on survey recommendations, and Commonwealth and state guidelines.

Recovery plans for listed 'threatened' species and ecological communities have been made or adopted under the EPBC Act. Once a recovery plan is in place, Australian Government agencies must act in accordance with that plan.

The following plans are available for listed 'threatened' species relevant to Doonan Creek Environmental Reserve:

- National recovery plan for the Mount Emu She-oak (*Allocasuarina emuina= thalassoscopica*) (EPA 2007)
- National recovery plan for the wallum sedgefrog and other wallum-dependent frog species (Meyer *et al.* 2006)

Additional management plans available to guide management within the reserve include

- Threat abatement plan for predation by feral cats (DOE 2015).
- Threat abatement plan for predation by European Fox (DEWHA 2008).
- Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads (DSEWPC 2011).

The 'Back on Track Species Prioritisation Framework' is a Queensland Government initiative that uses multiple criteria to prioritise native species and guide conservation management and recovery. The framework incorporates the Species Recovery Information Gateway (SPRING), an online application that provides information about the conservation and recovery of EVNT species in Queensland. Under the 'Back on Track Species Prioritisation Framework', five flora and three fauna species found at Doonan Creek Environmental Reserve are classified as 'Priority species of the Southeast Queensland Natural Resource Management region'.

Threats and recovery actions for Priority species are summarised in the document, 'Back on track actions for biodiversity: taking action to achieve species conservation in the SEQ NRM Region' (DERM 2010).

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

**Management Action**

- Ensure management actions are in accordance with recovery plans available for listed 'threatened' and 'near threatened' species
- Ensure management actions consider relevant threat abatement plans
- Adopt SPRING guidelines for Priority Species listed under Queensland's 'Back on Track Species Prioritisation Framework'
- Ensure management activities align with Sunshine Coast Council conservation plans
- Develop plans to include monitoring and fauna crossing for Koalas along Doonan Bridge Road adjacent to Koala offset planting

Requirements for other significant fauna include:

- Maintaining or revegetating with suitable Koala food trees (e.g. *Eucalyptus microcorys* and *E. tereticornis*) and minimising access for domestic dogs.
- Manage feral dogs and dingoes in a manner that considers potential impacts on wildlife from meso-predators (cats and red fox).
- Protecting habitat for the Wallum Froglet which prefers acidic wallum swamp conditions (Meyer 2014).
- Excluding cattle from seasonally inundated areas of the reserve where Wallum Froglets occur and filling artificial drainage lines (Meyer 2014).
- Management of fire, particularly in the south-eastern heathlands (Emu Mountain She-oak, Ground Parrot).

## 7.4 Management Actions

The following section provides a table of all of the management actions reported in this document and shows the associated work plan linked to the service level category for this reserve.

Log habitat piles installed within and adjacent to revegetation site to accelerate habitat suitability for wildlife.

**Table 11: Management Implementation Plan for Doonan Creek Environmental Reserve**

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| **VEGETATION COMMUNITIES** | | | |
| • Undertake a detailed flora assessment at Lot 15 on SP154207 to verify vegetation communities and equivalent RE types occurring there. | Regulated vegetation management map and supporting map (Queensland Government) | Not started | Medium |
| **NATIVE FLORA, FAUNA AND HABITAT** | | | |
| • Ensure management actions are in line with recovery plans available for listed 'threatened' and 'near threatened' species | National recovery plans for Emu Mountain she-oak (EPA 2007) and wallum-dependent frog species (Meyer et al. 2006) | Underway | Ongoing |
| • Monitor existing populations of listed threatened or regionally significant fauna and flora species to detect population changes | Reserve fauna and flora surveys | Underway | Ongoing |
| • Consider the requirements of Koala when undertaking revegetation/ offset programs ie. Include locally occurring Koala food trees (e.g. Eucalyptus microcorys, E. tereticornis and E.propinqua) in tree planting | Sunshine Coast Koala Conservation Plan (Ecosure 2015) | Commenced 2014 | Ongoing |
| • Undertake fire management planning in heath areas to potentially create conditions suitable for Ground Parrots, in consultation with QPWS | Fire Management plan | Noted | Medium |
| • Undertake measures to protect and enhance Wallum Froglet populations | National recovery plan for the wallum sedgefrog and other wallum-dependent frog species (Meyer et al. 2006) | Noted | High |
| • Undertake freshwater invertebrate surveys targeting endangered swamp crayfish (*Tenuibranchiurus glypticus*) | Meyer, E. 2016. An Assessment of frog and fish habitat at DCER | Not started | Medium |
| • Undertake ground parrot surveys to check for recruitment following 2017 widfire | Relevant recovery plans | Not started | High |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| • Identify and protect remaining habitat trees and large hollow logs from fire damage | Fire Management plan | Not Started | High |
| • Protect and restore habitat for grazing macropods and other native grass dependent species through retention of understory grassland and some open areas | DCER Landscape Plan | Underway | Ongoing |
| • Prioritise and implement riparian revegetation | Management Considerations dataset | Not started | High |
| • Protect and enhance flying fox roosting habitat | Australian Government draft Grey- headed Flying- fox recovery plan 2017 (DEE). | Underway | High |
| • Develop plans to include monitoring and fauna crossing for Koalas along Doonan Bridge Road adjacent to Koala offset planting | SCC Koala management Strategy | Not started | High |
| **RESTRICTED MATTERS AND LOCALLY SIGNIFICANT SPECIES** | | | |
| • Implement pest management activities in line with Sunshine Coast Council Local Government Area Biosecurity Plan 2017 | Sunshine Coast Council Local Government Area Biosecurity Plan 2017 | Underway | Ongoing |
| • Update, and implement weed management activities in the RWP to control Restricted Matter (Category 3) invasive plants and Locally Significant Pests, including Salvinia, and restore native habitats | Biosecurity Act 2014; SCPMP | Underway | Ongoing |
| • Monitor and control weed infestation and dumping on urban interface (eastern reserve) and along road verges of Doonan Bridge Rd | RWP | Monitoring underway | Ongoing |
| • Liaise with QPWS regarding control of Slash Pine in the West Coolum Section of Noosa National Park | | Not started | High |
| • Control and manage exotic plant species in cattle excluded areas | | Underway | High |
| • Fill artificial drains to control populations of exotic Mosquitofish | An assessment of frog and fish habitat values at Doonan Creek Environmental Reserve (Meyer 2015) | Not started | High |
| • Consider meso-predator release (eg. Cats and foxes) when planning or undertaking management of feral canids | SCC Biosecurity Plan | | Ongoing |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| **PLANT PATHOGENS** | | | |
| • Continue monitoring extent of Myrtle rust and impacts on 'threatened' plants, In particular, Implement recommendations in Thomas (2016) relating to the 'endangered' Sunshine Coast Myrtle | Impact of Myrtle Rust on Lenwebbia sp. 'Blackall Range' (Thomas 2016) | Underway | High |
| • Develop a recovery plan for the Sunshine Coast Myrtle | Flora Assessment: Impact on Myrtle Rust on Lenwebbia sp. 'Blackall Range' (Thomas 2016) | Not started | Low |
| **CULTURAL, SOCIAL, AND ECONOMIC VALUES** | | | |
| • Develop an indigenous cultural ecological restoration plan for DCER which includes occurring and locally extinct significant species | Kabi Kabi first Nations submission to the DCER management plan | Not started | Medium |
| • Prioritise wherever possible council procuring goods and services from local, indigenous business in accordance with the Sunshine Coast Council strategic contracting procedures | SCC Reconciliation Action Plan | Underway | Ongoing |
| • Investigate options to include DCER in a pilot for an indigenous ranger program in accordance with action 11 of the SCC Reconciliation Action Plan. | SCC Reconciliation Action Plan | Underway | Ongoing |
| • Support cultural obligations of the Kabi Kabi people "caring for country". | Kabi Kabi first Nations submission to the DCER management plan | Underway | Ongoing |
| • Consult Kabi Kabi First Nation prior to any works that will cause ground disturbance in a previously undisturbed area | Aboriginal Cultural Heritage Act 2003 Duty of Care Guidelines | Underway | Ongoing |
| • Investigate potential for this reserve to be used for environmental education and low impact eco-tourism (e.g. birdwatching) | DCER Landscape Plan | Underway | Medium |
| • Investigate the potential for access and other infrastructure, including boardwalks and bird hides and—where appropriate—shared walking/cycling/horse riding trail. | DCER Landscape Plan | Underway | Medium |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| • Investigate potential for constructed wetlands and associated ecotourism/ environmental education infrastructure in non- remnant habitat in the western section of the reserve | DCER Landscape Plan; An assessment of frog and fish habitat values at Doonan Creek Environmental Reserve (Meyer 2015) | Underway | Medium |
| • Provide opportunities for public involvement in restoration of non-remnant areas of the site where appropriate. | DCER Public Involvement Plan | Commenced 2014. | Ongoing |
| • Promote partnerships with organisations to facilitate ongoing research and data collection within the reserve. | Open Data Expo for Doonan Creek Environmental Reserve proposed in the ERNMP; SCC Database Options Report 2016; DCER Public Involvement Plan | Scheduled | Medium |
| **CONDITION OF VALUES** | | | |
| • Review BOA every 5 years | Bushland Operational Assessment (BTE 2014); Doonan Creek Regeneration Works Plan (BTE 2014) | Scheduled 2019 | Low |
| • Review Regeneration Works Plan every 5 years | Bushland Operational Assessment (BTE 2014); Doonan Creek Regeneration Works Plan (BTE 2014) | Scheduled 2019 | Low |
| • Subsequent BOA and Regeneration Works Plan to cover whole of reserve | Bushland Operational Assessment (BTE 2014); Doonan Creek Regeneration Works Plan (BTE 2014) | Scheduled 2019 | Low |
| **FIRE** | | | |
| • Maintain recently upgraded fire access trail | DCER Fire Mangement Plan | Underway | Ongoing |
| • Develop/finalise fire management plan and include consultaion with Kabi Kabi people. | DCER Fire Mangement Plan | Underway | High |
| • Fire management of this reserve will consider the ecological requirements of significant fauna and flora species (and associated habitat) at this reserve. | DCER Fire Mangement Plan | Underway | High |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| • Liaise with QPWS regarding existing fire management planning for the West Coolum Section of Noosa National Park | Noosa National Park Management Plan 1999; DCER Fire Mangement Plan | Underway | High |
| • Investigate opportunities to partner with Kabi Kabi and SEQ catchments cultural burn program | http;//.firesticks.org.au; DCER Fire Mangement Plan | Not started | Medium |
| **EROSION** | | | |
| • Implement erosion control measures where required in accordance with Council's Erosion and Sediment Control Manual (Version 1.2) | MP; Council's Erosion and Sediment Control Manual (Version 1.2) | Underway | Ongoing |
| • Investigate stabilisation measures for artificial drains | Council's Erosion and Sediment Control Manual (Version 1.2) | Not started | Medium |
| • Consider potential presence of erosion-prone substrates when planning infrastructure including any trails, particularly in areas of land zone 2.3 and 9-10. | Council's Erosion and Sediment Control Manual (Version 1.2) | Underway | High |
| • Monitor drainage inputs from surrounding land uses (e.g. urban) | Council's Erosion and Sediment Control Manual (Version 1.2) | Not started | Medium |
| **ACIDITY/SALINITY** | | | |
| • Monitor surface water quality and pH levels, particularly during any works or changes to drainage systems and water table levels | | Not started | Medium |
| • Consider requirements of 'vulnerable' Wallum Froglet and other wallum habitat specialists during planning or implementation of changes to drainage or water table levels | National recovery plan for the wallum sedgefrog and other wallum-dependent frog species (Meyer et al. 2006) | Underway | High |
| • Works undertaken at reserve are to be in accordance with the Sunshine Coast Planning Scheme 2014 Acid Sulphate Soils Overlay Code | Sunshine Coast Planning Scheme 2014 | Underway | High |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| **HISTORICAL LAND USE** | | | |
| **Land Clearing** | | | |
| • Investigate options to expand and build resilience to the Maroochy Noosa wallum corridor habitat extent | ELS; Environment Levy Land Acquisition Program | Underway | Ongoing |
| • Develop conservation partnership initiatives with local landholders to preserve adjacent bushland that remains on freehold land. | SCC Land for Wildife program | Underway | Ongoing |
| • ·Continue to manage the reserve to allow for ongoing natural recruitment of native species | SEQ Ecological RestorationFramework (2013) | Underway | Ongoing |
| • Investigate opportunities for offsets or community planting to revegetate some of the existing open areas as per future land use plan (Appendix 2j) | SEQ Ecological RestorationFramework (2013) | Underway | Ongoing |
| • Prioritise and implement riparian revegetation | SEQ Ecological RestorationFramework (2013) | Commenced 2017 | Ongoing |
| **Stock Grazing** | | | |
| • Unused fences still in place will be investigated for removal if not required or present a risk to staff or fauna | | Underway | Ongoing |
| • Phase out stock grazing as areas of the reserve are allocated to revegetation and offset projects. | RWP | Commenced 2014 | Ongoing |
| • Provide additional fencing and watering points to minimise damage to core bushland areas while stock are present. | Licence for agistment – 219 Doonan Bridge Road, Verrierdale (July 2018-2020); | Completed 2014 | High |
| • Restrict stock access in areas where populations of Wallum Froglet occur within the reserve | An assessment of frog and fish habitat values at Doonan Creek Environmental Reserve (Meyer 2015) | Commenced 2014 | High |
| • Monitor stock proof fencing to ensure it is being maintained in good repair by the agister and restricting cattle in stock exclusion areas | Licence for agistment – 219 Doonan Bridge Road, Verrierdale (July 2018-2020); | Underway | Ongoing |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| **VISITOR USE AND IMPACT** | | | |
| • Consider implementation of formal access to the reserve for nature-based low impact recreation and environmental education | DCER Landscape Concept Plan | Underway | Medium |
| • Control and limit access for domestic dogs to minimise impacts on Koalas | DCER Landscape Concept Plan; Sunshine Coast Koala Conservation Plan (Ecosure 2015) | Underway | Medium |
| • Visitor access will be reviewed within the broader context of the Recreational Trails Development Plan 2017 and the Environmental Reserves Network management plan 2017-2027. Note the following RecreationalTrails Development Plan desired outcomes:<br>a) Create a range of trail offerings for a number of user groups that allows them to engage in at least an hour-long experience.<br>b) Devlop a multi-user trail network that connects Eumundi and Peregian Springs to the surrounding natural areas | Recreational Trails Development Plan 2017; ERNMP; DCER Landscape concept Plan | Underway | Medium |
| • All trail devlopments to include an environmental impact assessment to assess erosion risk and include where appropriate a Species Management Plan (SMP) for any EPBC listed species | DCER Landscape concept Plan | Not started | Medium |
| • Retain open space for future use by vistors in areas which complement the ecological values of the reserve | DCER Landscape concept Plan | Underway | Medium |
| • Develop a landscape plan to guide future planning for public access, including parking, trails, retained open space and future revegetation areas. | DCER Landscape concept Plan | Draft complete 2017 | High |
| • Retain designated open areas for potential future use by visitors | DCER Landscape Concept Plan | To be assessed | High |
| • Maintain existing trails for use in future trail network | DCER Landscape Concept Plan | To be assessed | High |

| Management Actions | Relevant documentation | Status | Priority |
|---|---|---|---|
| **CLIMATE CHANGE** | | | |
| • Build resilience to change through habitat connectivity and if feasible, consider additional ladn acquisition to provide increased core habitat and connectivity | | Underway | Ongoing |
| • Build resilience to hydrological changes through protecting natural surface and groundwater flows. | | Noted | High |
| **RESTORATION GOALS** | | | |
| • Ensure management actions are in accordance with recovery plans available for listed 'threatened' and 'near threatened' species | National recovery plans for Emu Mountain she-oak (EPA 2007) and wallum-dependent frog species (Meyer et al. 2006) | Not started | High |
| • Adopt SPRING guidelines for Priority Species listed under Queensland's 'Back on Track Species Prioritisation Framework' | Back on track actions for biodiversity: taking action to achieve species conservation in the SEQ NRM Region' (DERM 2010) | Not started | High |
| • Ensure management activities align with strategic goals in the Environmental reserves Network Management Plan and SCC Environment and Liveability strategy. | ERNMP; ELS | Underway | Ongoing |
| • Planning scheme amendment - schedule 2 zone maps to include the Doonan Creek Environmetal reserve under Environnment zone code mapping. | SCC Planninfg Scheme 2014 and schedule 2 zone mapping | Underway | High |

ELS: Environment and Liveability Strategy 2017; ERNMP: Environmental reserves Network Management Plan 2017 - 2027; SMI: Statement of Management Intent; BOA: Bushland Operational Assessment; FMP: Fire Management Plan; NRS: National Reserve System; MP: this Management Plan; RWP: Regeneration Works Plan; DCER Landscape Plan: Doonan Creek Environmental Reserve Landscape Plan; SCPMP: Sunshine Coast Local Government Area Pest Management Plan 2012-2016; Priority: Ongoing = Actions that will continue to be undertaken in the life of the MP; High = Actions that will commence within the next 12 months; Medium = Actions that will commence within the next two years; Low = Actions that will commence within the next five years; DEE: Department of Environment and Energy.

## 7.5 Finance and Resourcing

The Natural Area management program delivers the restoration, maintenance and development of Council's Environmental Reserve network.

### 7.5.1 Establishment

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

### 7.5.2 Opertaional

The levy operational budget is used for on-going maintenance of the reserve, following establishment. An annual operational budget is determined by the service level classification for each reserve which is based on several factors including:

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

The ongoing management and maintenance of the Doonan Creek Environmental Reserve will continue to be funded by the Environment Levy Program.

### 7.5.3 Community Conservation Partnerships Unit

The Community Nature Conservation Program supports Council's reserve management and maintenance—engaging and supporting community volunteers in actively protecting and rehabilitating the region's environmental assets on public lands and includes over 1,000 volunteers

### 7.5.4 Healthy Places Team

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

## 7.6 Comminaction Plan

Preliminary consultation for this management plan has been based on input from stakeholders within Council. This includes recreational, conservation, community partnerships, and cultural heritage sectors. The first draft version of the plan was developed following this consultation.

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

### 7.6.1 Publicity about the Values and Achievements

Council will continue to provide information to the public via reports, publications, and newsletters.

## 7.7 Monitoring and Plan Review Schedule

The SEQ NRM Plan uses the Monitoring, Evaluation, Reporting and Improvement (MERI) plan. **Figure 4** shows the MERI program logic which provides time-frames and outcomes linked to the management plan objectives which can be assessed during monitoring and evaluation.

The MERI plan provides a framework to:

- evaluate the contribution of the reserve to the overall Sunshine Coast reserve network;
- evaluate the effectiveness of the methodology and approach used; and
- incorporate lessons learned into future work in the area of land purchased for inclusion in Council's reserve estate

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

It is anticipated that this management plan will only be comprehensively evaluated after 10 years of implementation underpinned by the framework of actions; relevant monitoring and evaluation strategies, described in this plan.

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

**Figure 4**: MERI Program Logic – based on the National Reserve System and SREQ NR

# References


02-ECOLOGY 2014. Preliminary Assessment of Mammal and Reptile Fauna of Doonan Creek Environmental Reserve. Report to Sunshine Coast Council May 2014.

AMBREY, C. L. & FLEMING, C. M. 2012. Valuingecosystem diversity in South East Queensland: A life satisfaction approach. *Social indicators research,* 115**,** 45-65.

BANKS, P. B. and BRYANT, J.V. (2007). Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology letters*, **3**(6). 611-613.

BARDEN, P. A. 1998. Register of the National Estate Interim Listing of the Noosa - Maroochy Wallum Area: Objection and Proposed Area Assessment (Fauna Values). Report to the Australian Heritage Commission, Canberra.

BARDEN, P. A. 2014. Birds of the Doonan Creek Environmental Reserve: Avian Fauna Assessment. Report to Sunshine Coast Council, September 2014.

BERGSTROM, D. M. 1998. Objections to the Interim Listing of the Noosa Maroochy Wallum Areas - Vegetation. . Report to the Australian Heritage Commission, Canberra.

BROOK, L., JOHNSON, C. and RITCHIE, E. (2012). Effects of predator control on behaviour of an apex predator and indirect consequences for mesopredator suppression. *Journal of Applied Ecology* **49:** 1278–1286

BRUSH TURKEY ENTERPRISES 2014. *Doonan Creek Environmental Reserve Bushland Operations Assessment.* ArcGIS map to Sunshine Coast Council.

BRUSH TURKEY ENTERPRISES 2014. *DoonanCreek Environmental Reserve Regeneration Works Plan.* Report to Sunshine Coast Council.

BRYAN, W. 1973. A review of research findings concerned with pastoral development on the wallum of south-eastern Queensland. *Tropical Grasslands,* 7**,** 175.

COALDRAKE, J.E. 1961. The ecosystem of the Coastal Lowlands of Southern Queensland, *CSIRO Bulletin*, **vol. 283**, CSIRO.

COMMONWEALTH OF AUSTRALIA 2012. *IBRA Version 7.* Department of Sustainability, Environment, Water, Population and Communities, Canberra.

DEH 1994. CONSERVATION VALUES OF LOT 1451, PARISH OF MAROOCHY (D.BIRD LAND AT COOLUM). Conservation Resource Unit Southeastern Region Department of Environment and Heritage.

DEPARTMENT OF ENVIRONMENT, WATER, HERITAGE AND ARTS 2008. Threat abatement plan for predation by the European red fox. Commonwealth of Australia, Canberra.

DEPARTMENT OF ENVRONMENT 2015.*Threat abatement plan for predation by feral cats.* Commonwealth of Australia, Canberra.

DEPARTMENT OF ENVIRONMENT AND ENERGY 2017. Darft RecoveryPlan for the Grey-headed Flying-fox *Pteropus poliocephalus.* Australian Government, Canberra.

DEPARTMENT OF THE SUSTAINABILITY, ENVRONMENT, WATER, POPULATION AND COMMUNITIES 2011. *Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads.* Commonwealth of Australia, Canberra.

EPA 2006. Biodiversity Planning Assessment Southeast Queensland South Landscape Expert Panel Report. SEQ BPA v3.5. Queensland Government, Brisbane.

ENVIRONMENTAL PROTECTION AGENCY (2007). *National recovery plan for the Mt Emu she-oak* Allocasuarina emuina. Report to Australian Government Department of the Environment and Water Resources. Queensland Parks and Wildlife Service, Brisbane.

GREGORY, H. 1991. *Making Maroochy: a history of the land, the people and the Shire.* , Boolarong Publications, Nambour Queensland.

HANSEN, A 2007. *Doonan Creek Environmental Reserve Bushland Operations Assessment.* ArcGIS map to Sunshine Coast Council.

International Union for the Conservation of Nature, (IUCN). 2008. 'Guidelines for Applying Protected Area Management Categories', Nigel Dudley (Ed.), Gland, Switzerland Sunshine Coast Council, 2010. *Sunshine Coast Council Biodiversity Strategy, 2010 – 2020*. Sunshine Coast Council, Nambour, Qld.

KENNEDY, M., PHILLIPS, B., LEGGE, S., MURPHY, S. AND FAULKNER, R. 2012. Do dingoes suppress the activity of feral cats in northern Australia? *Austral Ecology* **37,** 134–139.

MATHEW, J. 1910. *Two representative tribes of Queensland with an inquiry concerning the origin of the Australian race*, TF Unwin.

MCDONALD, B. 2002. Targeted flora and fauna survey of the Peregian Springs Estate.

Environmental Management and Conservation Branch, Maroochy Shire Council Nambour. .

MCFARLAND, D. C. 1989. *The Ground Parrot* Pezoporus wallicus wallicus *(Kerr) in Queensland: Habitat, Biology and Conservation*. Queensland Department of Conservation, Brisbane.

MEYER, E. 2015. *An assessment of frog and fish habitat values at Doonan Creek Environmental Reserve*. Report to the Sunshine Coast Council, June 2015

MEYER, E. 2010. *Results of frog surveys undertaken in coastal reserves managed by Sunshine Coast Regional Council: February - March 2010.* Report to the Sunshine Coast Council, Nambour.

MEYER, E., HERO, J., SHOO, L. and LEWIS, B.2006. *National recovery plan for the wallum sedgefrog and other wallum-dependent frog species.* Queensland EPA, Brisbane.

PETERSON, A., MCALPINE, C. A., WARD, D. &

RAYNER, S. 2007. New regionalism and nature conservation: lessons from South East Queensland, Australia. *Landscape and Urban Planning,* 82**,** 132-144.

PETRIE, C. C. 1904. *Tom Petrie's reminiscences of early Queensland (dating from 1837)*, Watson, Ferguson & Company.

QPWS 1999. Noosa National Park Management Plan. State of Queensland, Queensland Parks and Wildlife Service Brisbane.

QUEENSLAND GOVERNMENT (2014). Regionalecosystem details for 12.3.5. https://environment.ehp.qld.gov.au/regional-ecosystems/details/?re=12.3.5 September 2014.

ROSE, P. F., WILSON, K. L., TELFORD, I. R., LAMONT, R. W. & BRUHL, J. J. 2015. Multiple lines of evidence clarify limits of Allocasuarina thalassoscopica, A. defungens and A. littoralis (Allocasuarina sect. Cylindropitys, Casuarinaceae). *Australian Systematic Botany,* 27**,** 257-281.

.

SCC 2010. *Acid Sulphate Soils Special Management Area Regulatory Map 1.4. November 2010.* Sunshine Coast Council, Nambour.

SCC 2014. Biodiversity Strategy 2010-2020 August 2014 edition. Sunshine Coast Regional Council SCC 2017, Environment and Liveability Strategy (ELS), Sunshine Coast Council.

SCC 2017, Environmental Reserves Network Management Plan (ERNMP), Sunshine Coast Council.

SHARPE, P 2009, *Up Rose an Emu – The development of Noosa's Peregian beach, Marcus Beach, Sunrise Beach.* A book of recollections by Peter Sharpe, On-demand PTY Ltd, Southbanlk Vic 3006.

SIMPKINS, C.A, SHUKER J.D., LOLLBACK G.W., CASTLEY, J.G., HERO, J.M. 2014.

Environmental variables associated with the distribution and occupancy of habitat specialist tadpoles in naturally acidic, oligotrophic waterbodies. *Austral Ecology*.

**39** (1): 95-105.

SKM 1989. Sunshine Motorway Stage 2: Pacific Paradise to Noosa. Environmental Assessment. Report to the Queensland Department of Main Roads.

THOMAS, G. 2016. Flora Assessment: Impact of Myrtle Rust on *Lenwebbia sp.* 'Blackall Range'. Report to Sunshine Coast Council.

THOMAS, G. 2014. Flora Assessment: Doonan Creek Environmental Reserve: Aquatic Flora Survey. Report to Sunshine Coast Council.

THOMAS, G. 2013. Flora Assessment: Doonan Creek Environmental Reserve. Report to Sunshine Coast Council.

WANG, Y. AND FISCHER, D. 2012. Dingoes affect activity of feral cats, but do not exclude them from the habitat of an endangered macropod. *Wildlife Research* **39**: 611–620.

WINDOLF, F AND WINDOLF, C. 2004. *An Island Surrounded by Sea. The History of an Earlier Coolum.* Southwest Press, Australia.

# Appendices

## Appendix 1: National Reserve System Principles of Protected Area Management

**Interconnectedness of values and places**

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

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

**Good neighbor**

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

**Community participation and collaboration**

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

**Environmental stewardship**

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

**Transparent decision making**

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

**Effective and adaptive management**

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

**Appropriate use**

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

**Indigenous people's knowledge and role**

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

the land through traditional laws, customs and beliefs passed on from their ancestors are also recognised. The role of Indigenous organisations in the protection and management of country is acknowledged.

**Applying the "precautionary principle"**

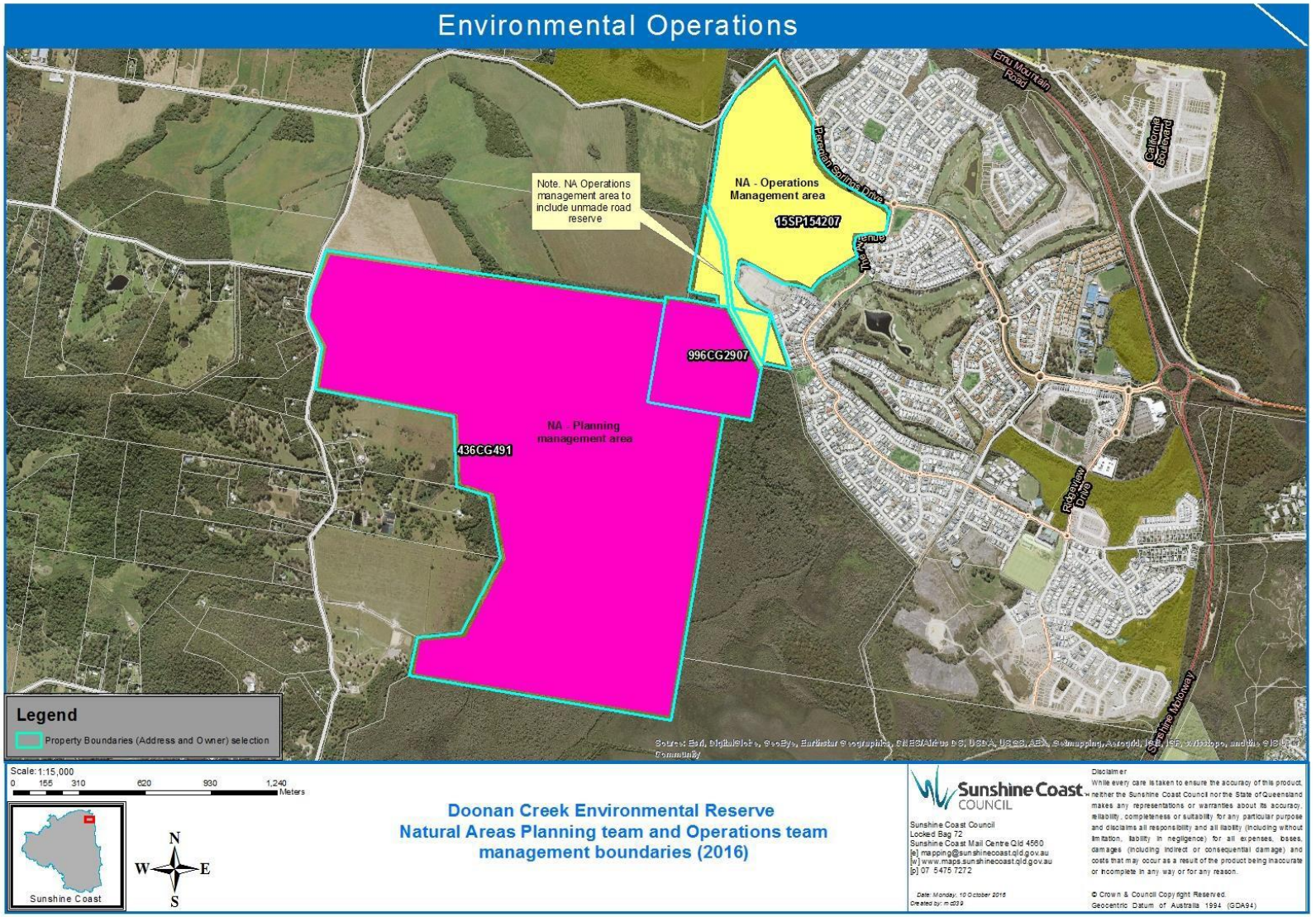
Protection of the natural and cultural heritage of the NRS should include identifying and taking appropriate actions to avert and actively manage emerging threats and risks. Effective management must be based on the best available information. However, where there are threats or potential threats of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

**Inter-generational and intra-generational equity**

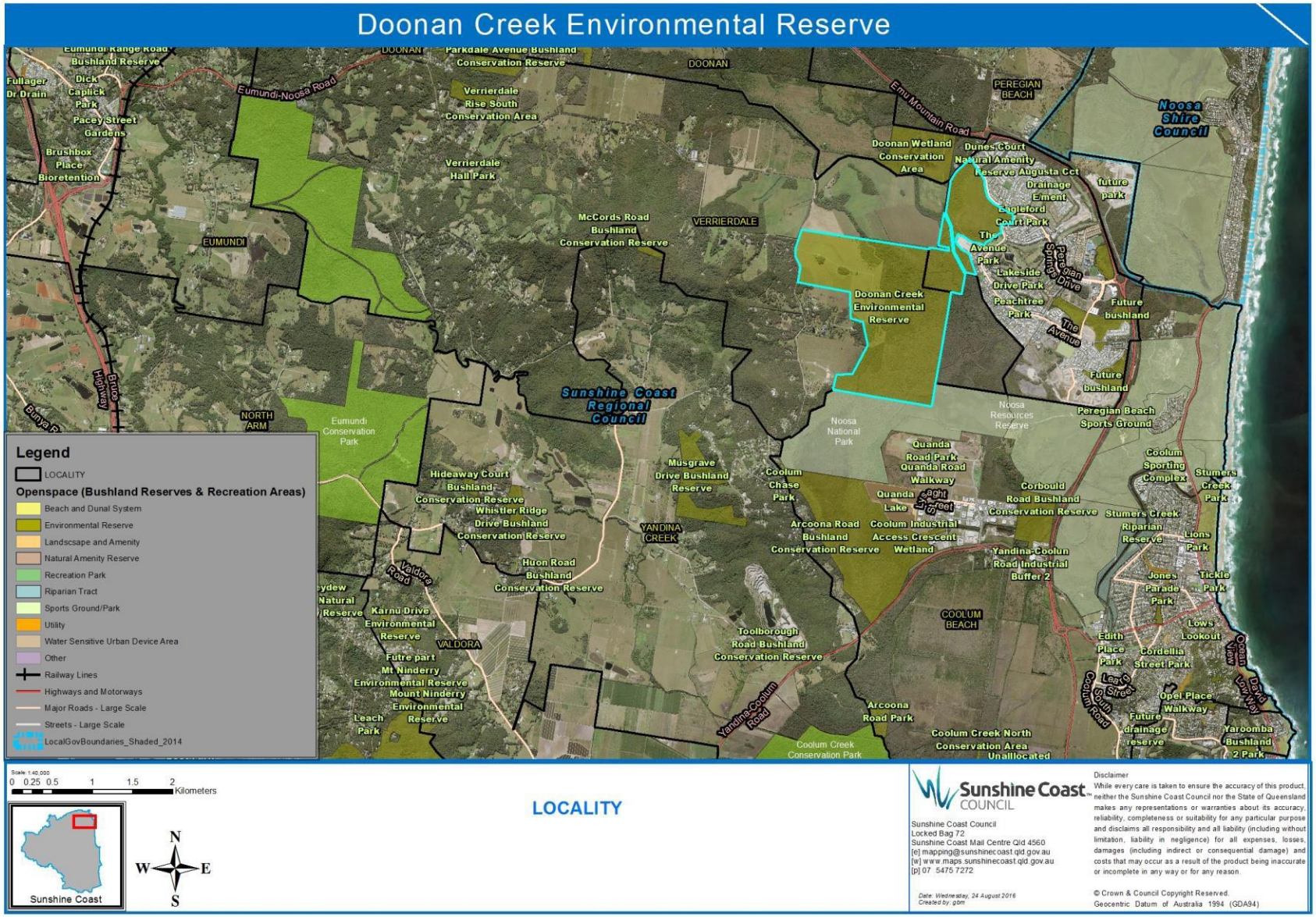
Management seeks to ensure that the health, diversity and productivity of the environment and the integrity and significance of cultural places are maintained or enhanced for the benefit of future generations and that decisions affecting current generations are socially equitable.

## Appendix 2: Commonwealth, state and local mapping

### 2a. Management boundaries



## 2b. Locality


Doonan Creek Environmental Reserve
Legend
LOCALITY
Openspace (Bushland Reserves & Recreation Areas)
Beach and Dunal System
Environmental Reserve
Landscape and Amenity
Natural Amenity Reserve
Recreation Park
Riparian Tract
Sports Ground/Park
Utility
Water Sensitive Urban Device Area
Other
Railway Lines
Highways and Motorways
Major Roads - Large Scale
Streets - Large Scale
LocalGovBoundaries_Shaded_2014
Sunshine Coast Regional Council
Noosa Shire Council
DOONAN
VERRIERDALE
EUMUNDI
NORTH ARM
PEREGIAN BEACH
YANDINA CREEK
VALDORA
COOLUM BEACH
Doonan Creek Environmental Reserve
McCords Road Bushland Conservation Reserve
Verrierdale Rise South Conservation Area
Verrierdale Hall Park
Parkdale Avenue Bushland Conservation Reserve
Eumundi Range Road Bushland Reserve
Dick Caplick Park
Pacey Street Gardens
Brushbox Place Bioretention
Fullager Dr Drain
Eumundi-Noosa Road
Emu Mountain Road
Doonan Wetland Conservation Area
Dunes Court Natural Amenity Reserve
Augusta Cct Drainage Ement
future park
Eagleford Court Park
The Avenue Park
Lakeside Drive Park
Peachtree Park
Peregian Springs Drive
The Avenue
Future bushland
Future bushland
Peregian Beach Sports Ground
Noosa Resources Reserve
Noosa National Park
Eumundi Conservation Park
Bruce Highway
Hideaway Court Bushland Conservation Reserve
Whistler Ridge Drive Bushland Conservation Reserve
Musgrave Drive Bushland Reserve
Coolum Chase Park
Quanda Road Park
Quanda Road Walkway
Quanda Lake
Eight Street
Corbould Road Bushland Conservation Reserve
Coolum Sporting Complex
Stumers Creek Park
Stumers Creek Riparian Reserve
Lions Park
Arcoona Road Bushland Conservation Reserve
Coolum Industrial Access Crescent Wetland
Yandina-Coolun Road Industrial Buffer 2
Huon Road Bushland Conservation Reserve
Valdora Road
Karnu Drive Environmental Reserve
Futre part Mt Ninderry Environmental Reserve
Mount Ninderry Environmental Reserve
Leach Park
Toolborough Road Bushland Conservation Reserve
Yandina-Coolum Road
Arcoona Road Park
Coolum Creek Conservation Park
Coolum Creek North Conservation Area Unalloc
Jones Parade Park
Tickle Park
Lows Lookout
Edith Place Park
Cordelia Street Park
Ocean View
Leat Street
Coolum South Road
Opel Place Walkway
Future drainage reserve
David Low Way
Yaroomba Bushland 2 Park
Scale: 1:40,000
0 0.25 0.5 1 1.5 2 Kilometers
Sunshine Coast
N
W
E
S
LOCALITY
Sunshine Coast COUNCIL
Sunshine Coast Council
Locked Bag 72
Sunshine Coast Mail Centre Qld 4560
[e] mapping@sunshinecoast.qld.gov.au
[w] www.maps.sunshinecoast.qld.gov.au
[p] 07 5475 7272
Date: Wednesday, 24 August 2016
Created by: gbm
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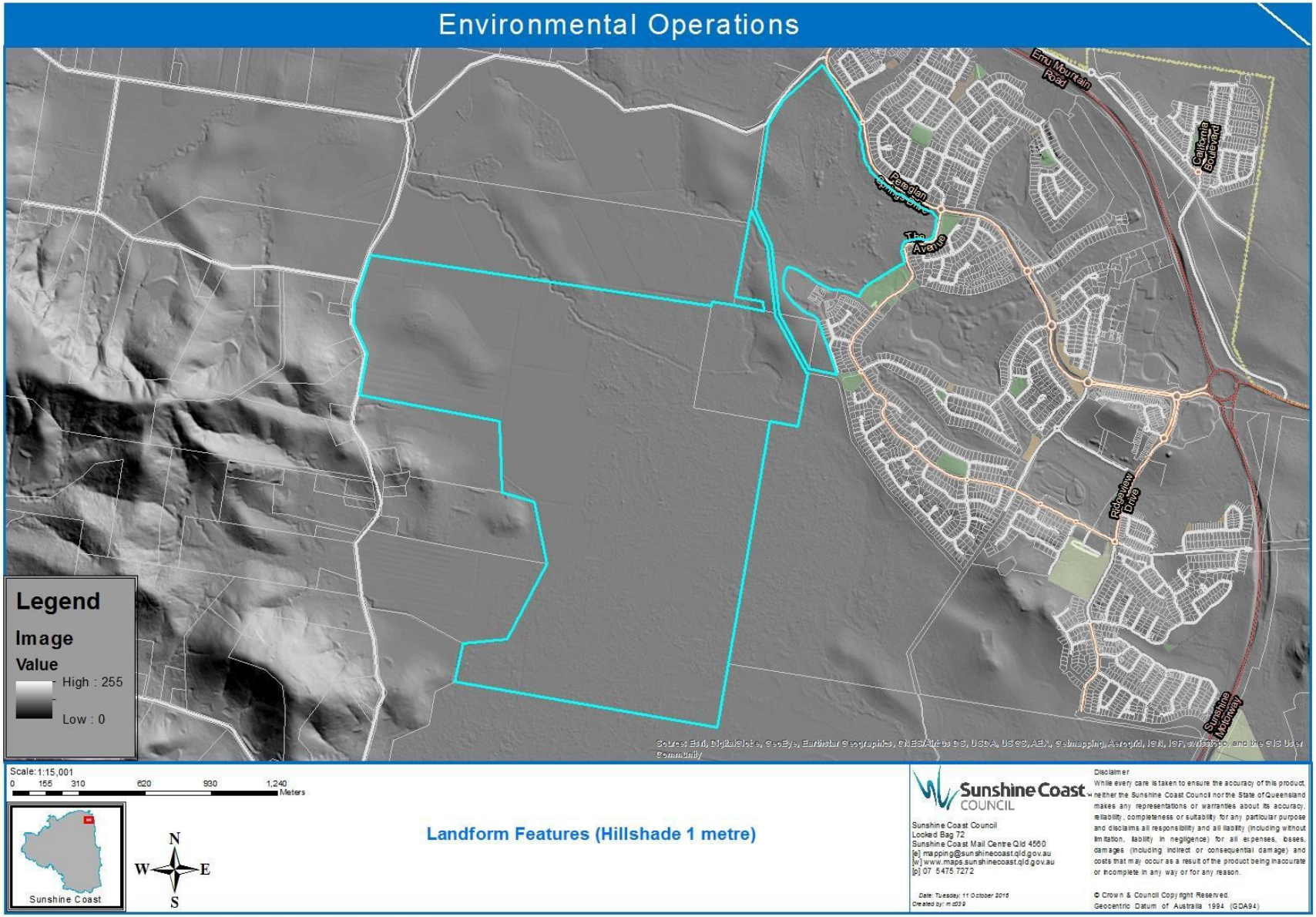
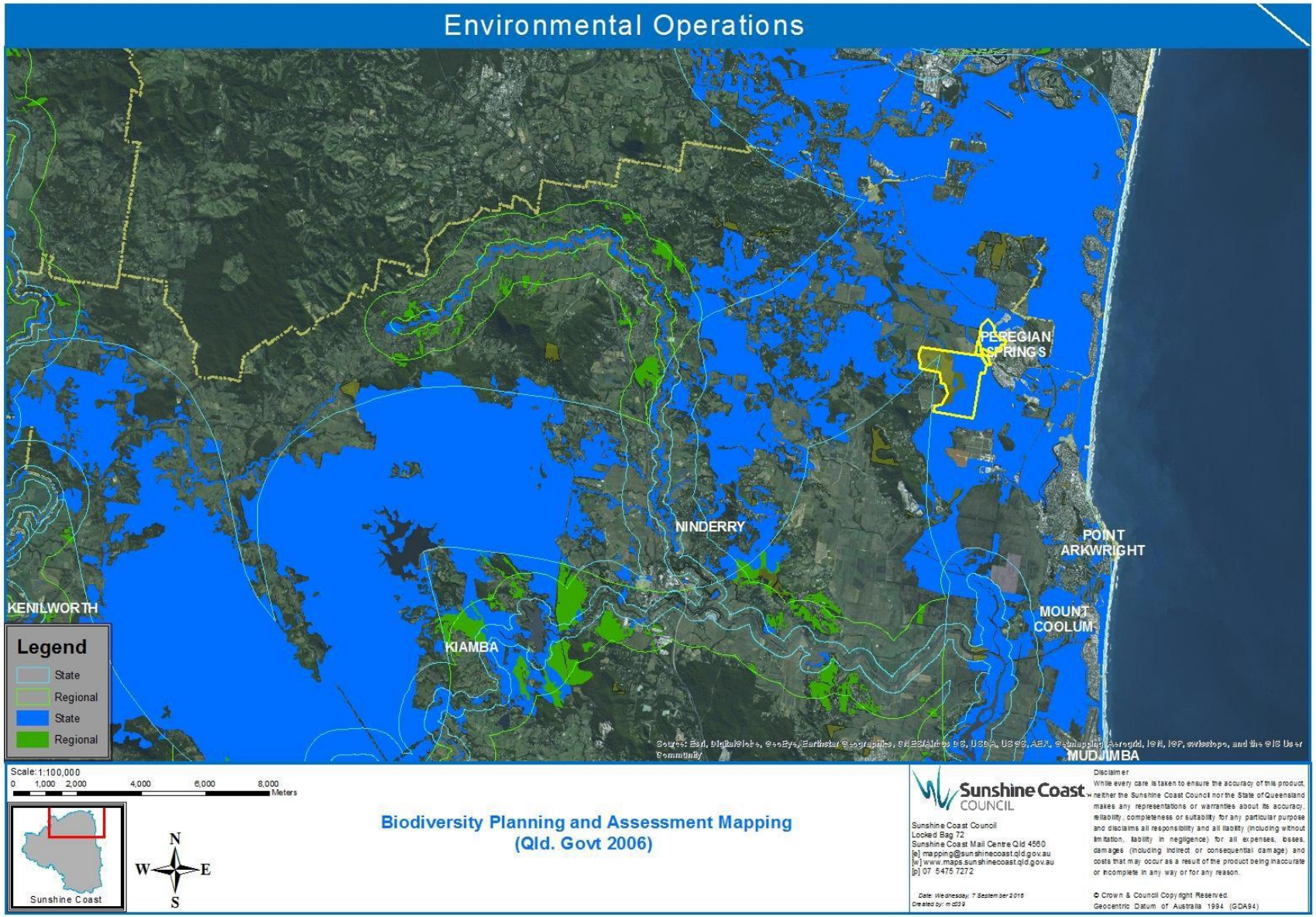
Geocentric Datum of Australia 1994 (GDA94)

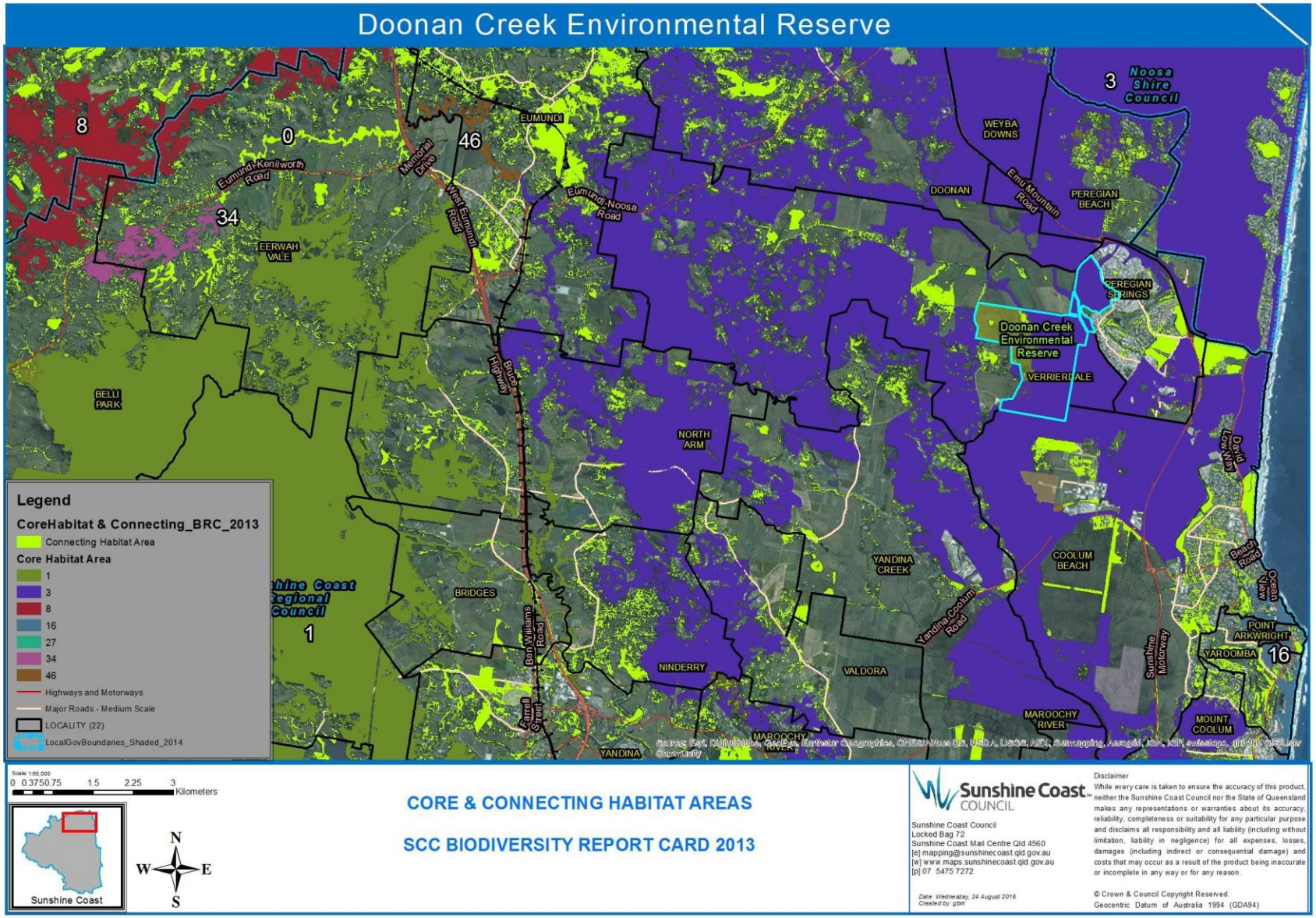
## 2c. Landform features



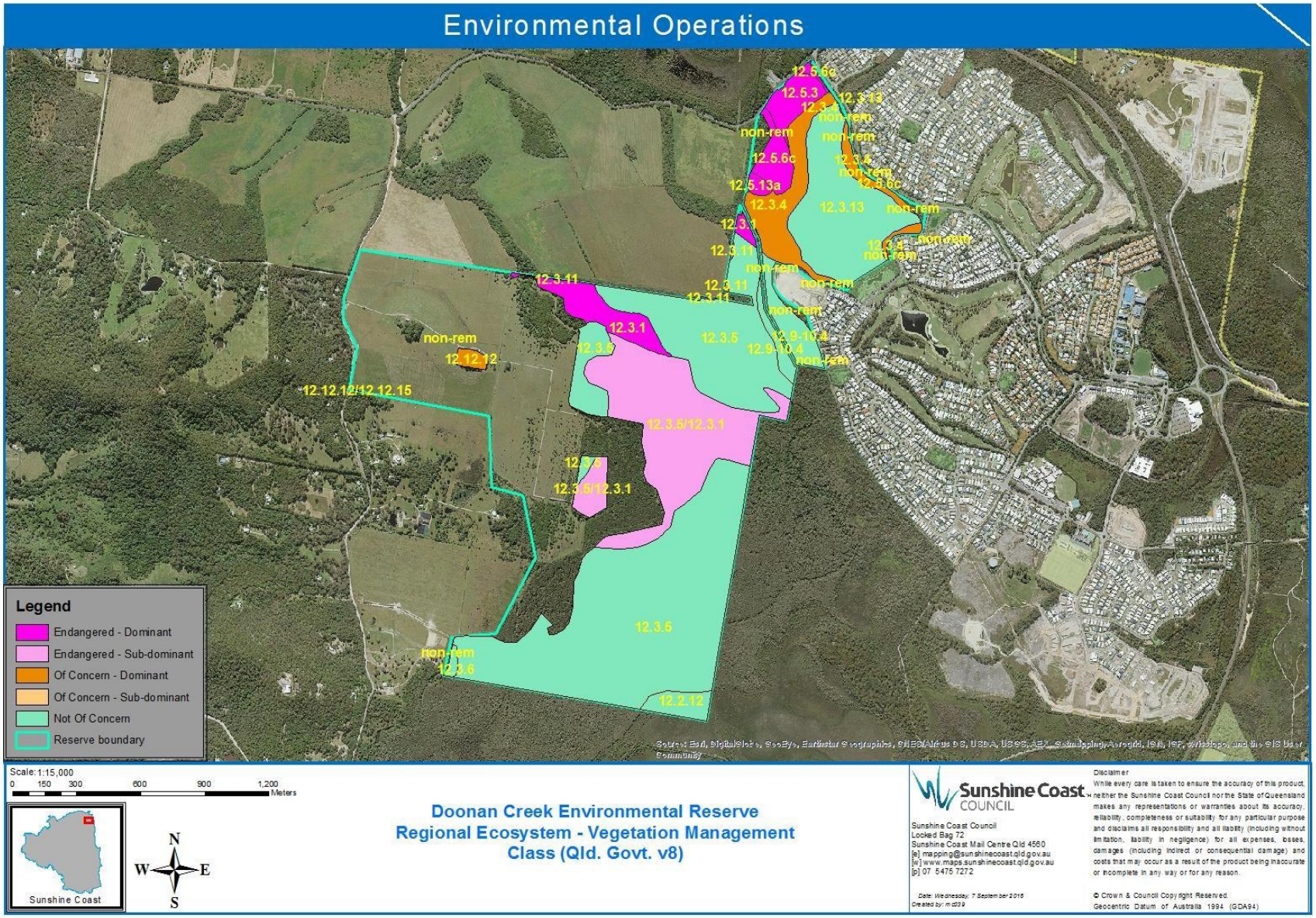
## 2d. State and regional corridors



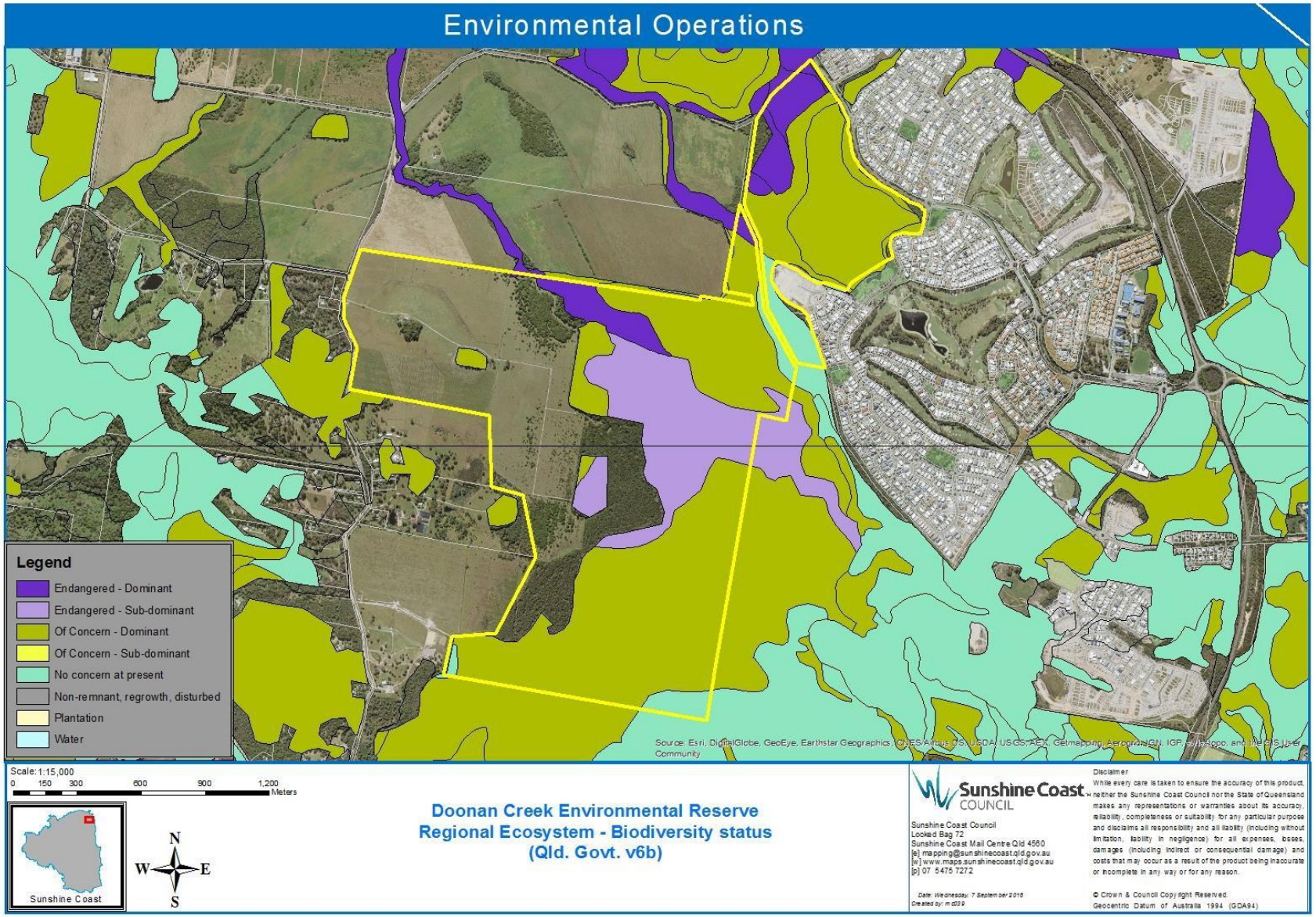
## 2e. Core habitat and connecting (BRC 2013)



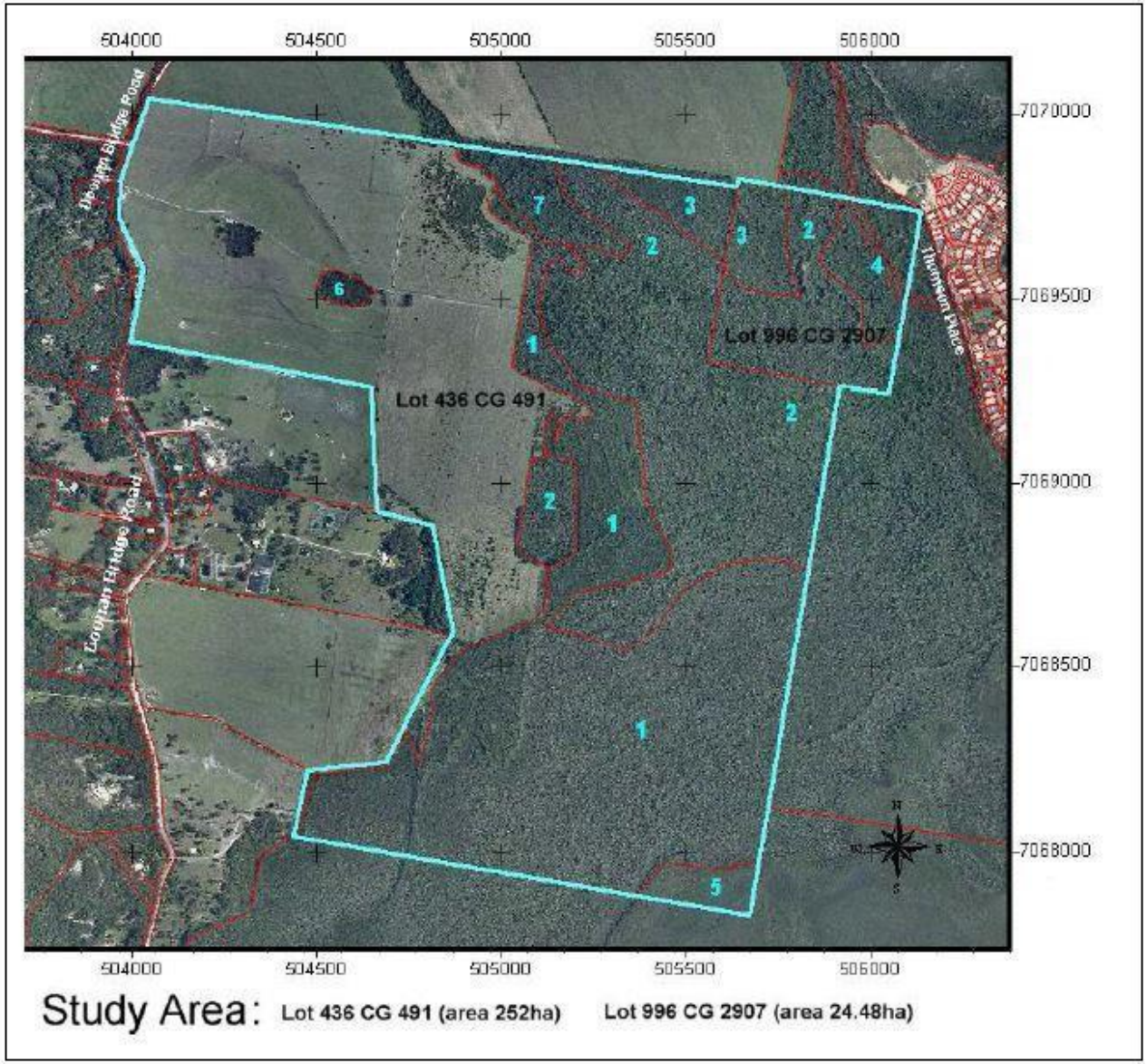
## 2f. Regional ecosystems (Vegetation management class) and Essential Habitat



## 2g Regional ecosystems (Biodiversity status)

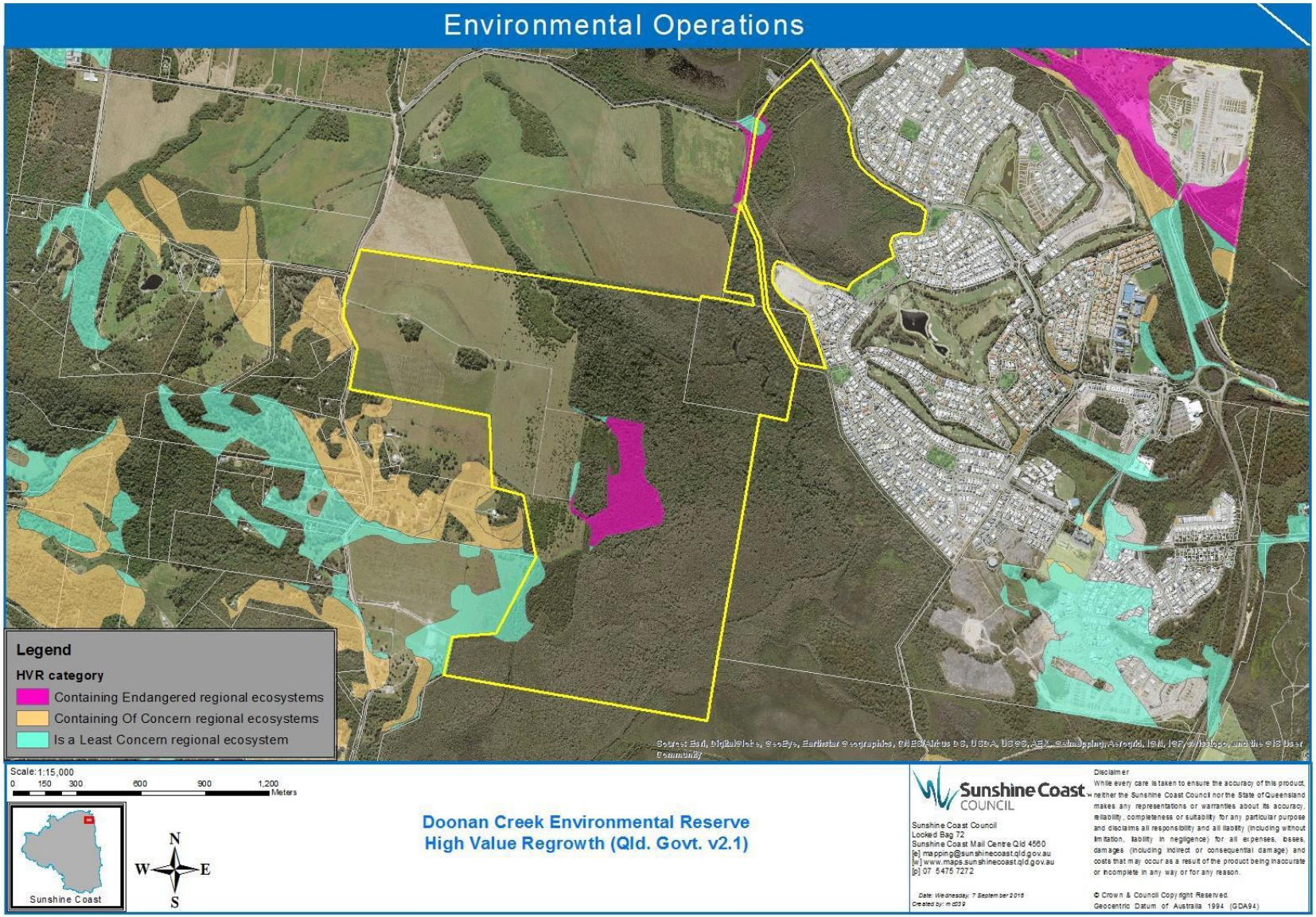


## 2h Observed vegetation communities (Thomas 2013)

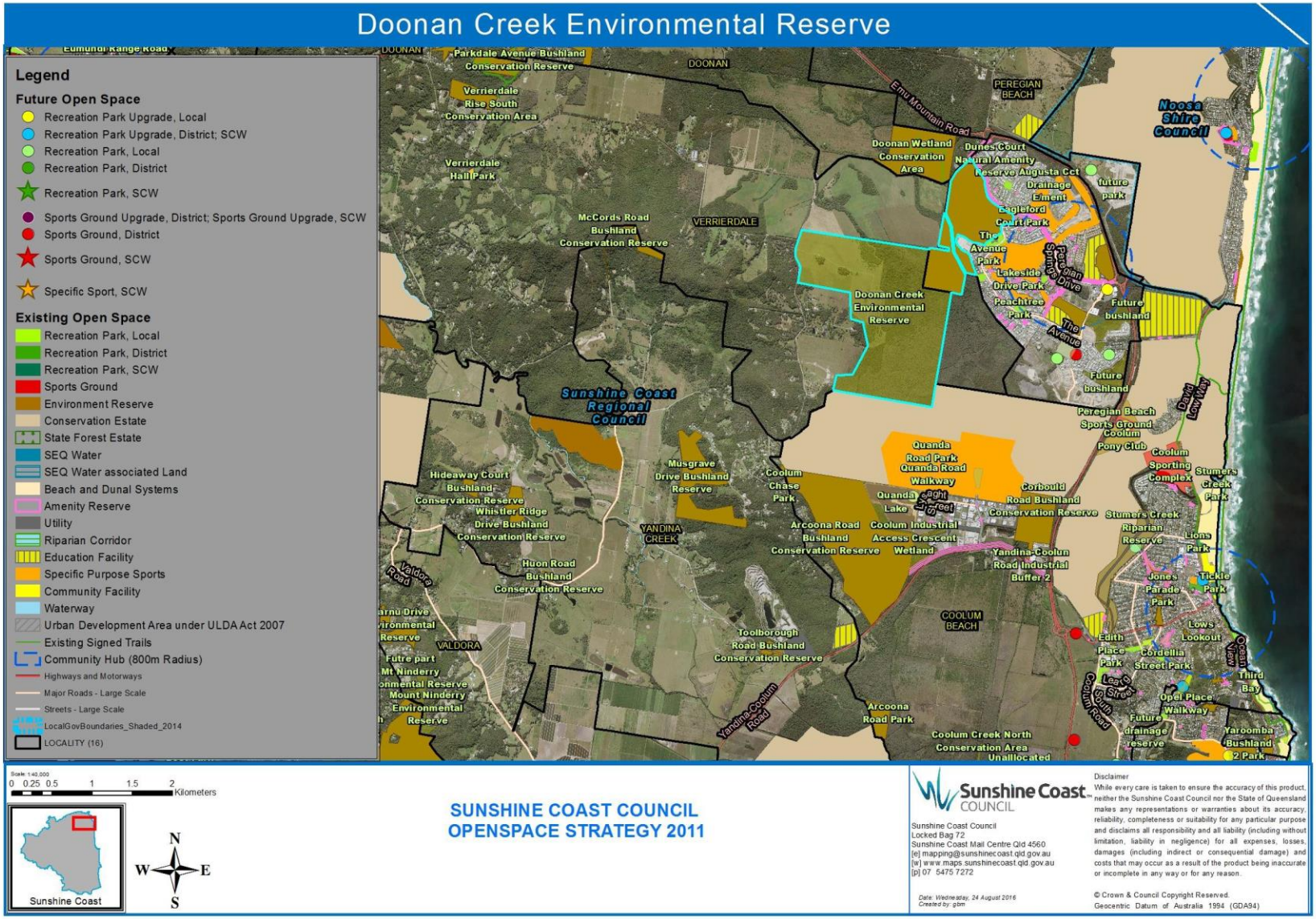


| Vegetation Community | Description | Regional Ecosystem Equivalent | Short Description (Sattler and Williams 1999) |
|---|---|---|---|
| 1 | Tall to very tall open forest with *Melaleuca quinquenervia*, *Lophostemon suaveolens*, ferns and sedges | 12.3.5 | *Melaleuca quinquenervia* open forest |
| 2 | Mosaic of tall to very tall open forest with *Melaleuca quinquenervia*, *Lophostemon suaveolens* and gallery rainforest (notophyll vine forest) | 12.3.5<br>12.3.1 | *Melaleuca quinquenervia* open forest<br>Gallery rainforest (notophyll vine forest) |
| 3 | Tall to very tall open forest with *Melaleuca quinquenervia*, *Eucalyptus tereticornis* and *Lophostemon suaveolens* | 12.3.6 | *Melaleuca quinquenervia, Eucalyptus tereticornis, Lophostemon suaveolens* woodland |
| 4 | Tall to very tall open forest with *Eucalyptus racemosa*, *Corymbia intermedia* and *Lophostemon confertus* | 12.9-10.4 | *Eucalyptus racemosa* woodland |
| 5 | Low wet heath with *Banksia robur*, *Melaleuca nodosa*, *Hakea actites*, sedges and heath | 12.2.12 | Closed heath |
| 6 | Mosaic of Tall to very tall open forest with *Eucalyptus microcorys, E.tindaliae, E.racemosa*, *Corymbia intermedia* and *Lophostemon confertus* | 12.9-10.17<br>12.9-10.4 | Open forest complex often with *Eucalyptus acmenoides, E. major, E. siderophloia +/- Corymbia citriodora*<br>*Eucalyptus racemosa* woodland |
| 7 | Gallery rainforest (notophyll vine forest) | 12.3.1 | Gallery rainforest (notophyll vine forest) |

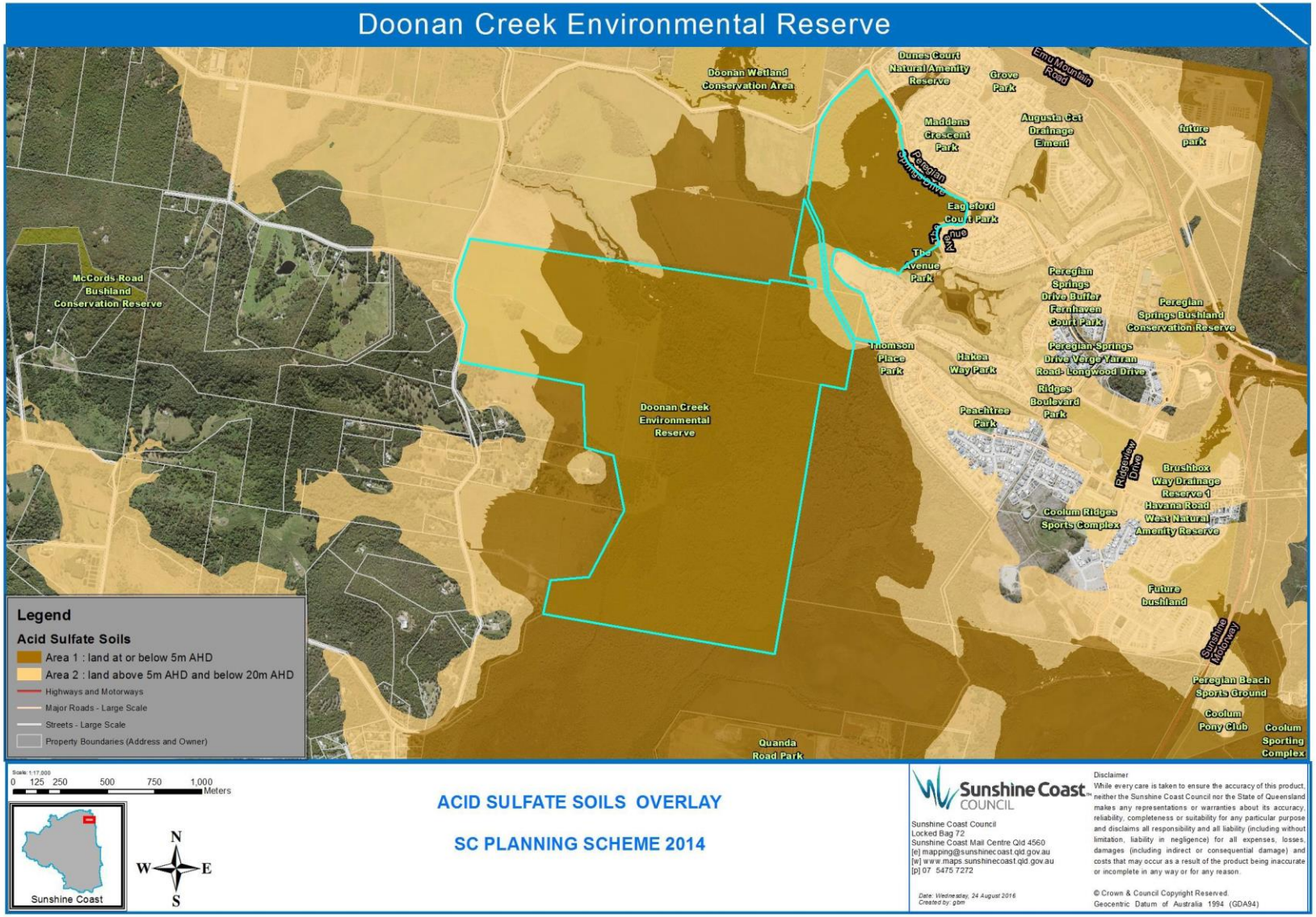
## 2i High Value Regrowth



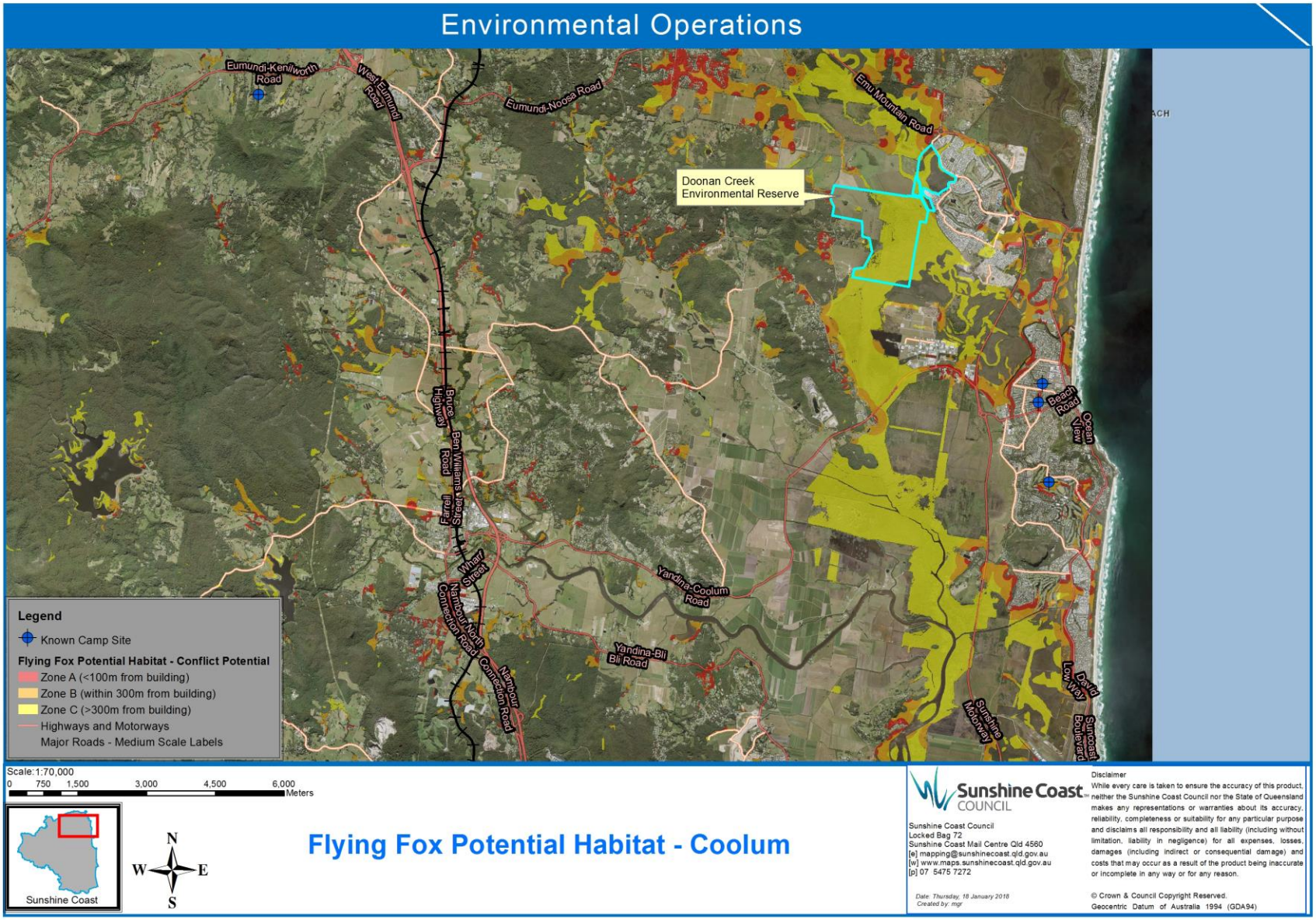
## 2j SCC Regional Open Space Planning Areas (Open Space Strategy 2011)



## 2k. Acid Sulphate Soils (SCC Planning Scheme 2014)



2L. Potentail Flying Fox habitat and associated conflict potential for the northern end of the Sunshine Coast.



## Appendix 3: Sunshine Coast Priority regional ecosystems

The Biodiversity Report 2015 for the Sunshine Coast Local Government Area is an inaugural report that uses 2010-12 data (with some 2014 conservation estate data i.e. recent Levy acquisitions included). Council is currently embarking on a second report which will enable comparisons.

The following tables summarise the status of vegetation communities occurring at Doonan Creek Environmental Reserve, including extents necessary for each regional ecosystem to be adequately represented in the Sunshine Coast protected area estate.

### 3.1 Status of vegetation communities on the Sunshine Coast in 2015

| RE | SCLGA Pre-clearing extent (Ha) | SCLGA Current extent (Ha) | SCLGA Vulnerable Loss (%) | Conservation status (VM ACT Class) | SCLGA Poorly Conserved REs | Extent currently protected (ha) | Additional area required to adequately represent (ha) | SEQ poorly Conserved | EPBC EEC/ LRS | Target RE |
|---|---|---|---|---|---|---|---|---|---|---|
| 12.2.12 | 2,281 | 760 | 67 | Least Concern | - | 523 (22.9%) | - | - | - | - |
| 12.3.1 | 4,627 | 1,840 | 60 | Endangered | ✓ | 331 (7.15%) | 132 | ✓ | ✓ | ✓ |
| 12.3.5 | 10,213 | 3,230 | 68 | Least Concern | - | 1,297 (12.7%) | - | - | - | - |
| 12.3.6 | 2,761 | 746 | 73 | Least Concern | - | 447 (16.2%) | - | - | - | - |
| 12.3.11 | 11,347 | 591 | 95 | Of Concern | ✓ | 130 (1.15%) | 1,004 | - | - | ✓- |
| 12.9-10.4 | 7,937 | 1,709 | 79 | Least Concern | ✓ | 437 (5.5%) | 357 | - | - | ✓ |
| 12.9-10.17 | - | - | - | Least Concern | - | - | - | - | - | - |

A regional ecosystem is considered a priority (Target RE) if it constitutes one (or more) of the following factors: VM Act Endangered conservation status; Lost more than 70% of its Sunshine Coast pre-clearing extent; Poorly conserved at a Sunshine Coast scale (>10% of SC pre-clearing extent protected); Poorly conserved at a SEQ scale (>10% of SEQ pre-clearing extent protected); Commonwealth EPBC Act listed Critically Endangered ecosystems (Lowland sub-tropical rainforest

## 3.2 Extent of observed regional ecosystems in Sunshine Coast conservation estate

| RE | Pre-clearing extent | Current Extent | Protected areas (Ha) | | | | | Voluntary Conservation Areas (Ha) | Total extent of RE within conservation estate (Ha) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Nature Refuge | Covenant | State | Council | Total extent in protected areas | Land for Wildlife | |
| 12.2.12 | 2,281 | 760 | 0 | 2 | 482 | 39 | 523 | 0 | 523 |
| 12.3.1 | 4,627 | 1,840 | - | - | - | - | 331 | - | - |
| 12.3.5 | 10,213 | 3,230 | 0 | 9 | 855 | 433 | 1,297 | 10 | 1,397 |
| 12.3.6 | 2,761 | 746 | 0 | 8 | 386 | 53 | 447 | 8 | 455 |
| 12.3.11 | 11,347 | 591 | - | - | - | - | 130 | - | - |
| 12.9-10.4 | 7,937 | 1,709 | 0 | 10 | 304 | 123 | 437 | 0 | 437 |
| 12.9-10.17 | - | - | - | - | - | - | - | - | - |

## Appendix 4. Flora Species List

Doonan Creek Environmental Reserve Plant Species Checklist
Amended May 2014 (Thomas 2014)

* = weed or pest species; # = naturalized or planted native species; EN = endangered

Abund = Abundance estimate for reserve from (Thomas 2014)

R = Rare (< 5 plants) U = Uncommon (6 -10 Plants) O = Occasional (11-20 plants) C = Common (21-30 plants)
A = Abundant (>31 plants

| Family | Scientific Name | Common Name | Abund |
|---|---|---|---|
| MIMOSACEAE | *Acacia disparrima* | Hickory Wattle | C |
| MIMOSACEAE | *Acacia flavescens* | Yellow or Red Wattle | O |
| MIMOSACEAE | *Acacia longissima* | Narrow-leaf Wattle | O |
| MIMOSACEAE | *Acacia maidenii* | Maiden's Wattle | O |
| MIMOSACEAE | *Acacia melanoxylon* | Blackwood | A |
| MIMOSACEAE | *Acacia penninervis v. penninervis* | Mountain Hickory | U |
| RUTACEAE | *Acronychia wilcoxiana* | Silver Aspen | U |
| ASTERACEAE | *Adenostemma lavenia* | Sticky Daisy | U/O |
| ADIANTACEAE | *Adiantum diaphanum* | Filmy Maidenhair | O |
| ADIANTACEAE | *Adiantum hispidulum* | Rough Maidenhair | U |
| ASTERACEAE | *Ageratina riparia* * | Mist Flower | R |
| ASTERACEAE | *Ageratum houstonianum* * | Blue Top | O |
| CASUARINACEAE | *Allocasuarina thalassoscopica (c.f. emunia) EN* | Mt Emu She Oak | U/O |
| CASUARINACEAE | *Allocasuarina littoralis* | Coastal She Oak | O |
| ARACEAE | *Alocasia brisbanensis* | Elephant's Ears | U |
| RHAMNACEAE | *Alphitonia excelsa* | Red Ash | O |
| ZINGIBERACEAE | *Alpinia arundelliana* | Small Native Ginger | O |
| ZINGIBERACEAE | *Alpinia caerulea* | Native Ginger | O |
| AMARANTHACEAE | *Alternanthera denticulata* | Lesser Joyweed | C |
| MYRTACEAE | *Angophora woodsiana* | Wood's Apple | R |
| FABACEAE | *Aotus ericoides* | Common Aotus | U |
| ULMACEAE | *Aphananthe philippinensis* | Rough leaved Elm | R |
| ARECACEAE | *Archontophoenix cunninghamiana* | Picabeen/Bangalow Palm | A |
| MYRSINACEAE | *Ardisia elliptica* * | Low Shoebutton | R/U |
| ASPARAGACEAE | *Asparagus aethiopicus* * | Asparagus fern | U |
| ASPLENIACEAE | *Asplenium australasicum* | Bird's Nest Fern | O/C |
| MYRTACEAE | *Austromyrtus dulcis* | Midyim | O |
| POACEAE | *Axonopus compressus* * | Broad leaf carpet grass | U |
| MYRTACEAE | *Babingtonia bidwillii* | Twiggy Myrtle | O |
| ASTERACEAE | *Baccharis halimifolia* * | Groundsel | R/U |
| MYRTACEAE | *Baeckea frutescens* | Weeping Baeckea | O |
| RESTIONACEAE | *Baloskion pallens* | Pale Cord Rush | O |
| RESTIONACEAE | *Baloskion tetraphyllum ssp meiostachyum* | Tassel Cord Rush | C |
| PROTEACEAE | *Banksia aemula* | Wallum Banksia | U |
| PROTEACEAE | *Banksia integrifolia v compar* | Banksia | O |
| PROTEACEAE | *Banksia robur* | Broad-leaved Banksia | O/C |
| CYPERACEAE | *Baumea articulata* | Jointed Twigrush | O |
| CYPERACEAE | *Baumea rubiginosa* | Soft Twigrush | O |
| LAURACEAE | *Beilschmiedia elliptica* | Grey Walnut | U |
| BLECHNACEAE | *Blechnum indicum* | Bungwahl | A |
| RUTACEAE | *Boronia rosmarinifolia* | Forest Boronia-butterfly plant | U |
| STERCULIACEAE | *Brachychiton acerifolius* | Flame Tree | R |

| Family | Scientific Name | Common Name | Abund |
|---|---|---|---|
| ACANTHACEAE | *Brunoniella australis* | Blue Trumpet | O |
| CAESALPINIACEAE | *Caesalpinia scortechinii* | Wait-A-While | U |
| ARECACEAE | *Calamus muelleri* | Lawyer Vine | O |
| FABACEAE | *Callerya megasperma* | Native Wisteria | O |
| CUPRESSACEAE | *Callitris columellaris* | Bribie Island Pine | U |
| DICKSONIACEAE | *Calochlaena dubia* | False Bracken | O |
| CYPERACEAE | *Carex appressa* | Tall Sedge | U |
| CYPERACEAE | *Carex maculata* | | A |
| CASUARINACEAE | *Casuarina glauca* | Swamp Oak | C |
| CYPERACEAE | *Chorizandra cymbaria* | Heron bristle rush | C |
| THELYPTERIDACEAE | *Christella dentata* | Dinung | U |
| LAURACEAE | *Cinnamomum camphora* * | Camphor Laurel | O |
| ASTERACEAE | *Cirsium vulgare* * | Scotch Thistle | U |
| VITACEAE | *Cissus antarctica* | Water Vine | O |
| VITACEAE | *Cissus hypoglauca* | Five leaf water vine | O |
| VITACEAE | *Cissus sterculiifolia* | Long-leaf water vine | U |
| VERBENACEAE | *Clerodendron floribundum* | Smooth Clerodendron | O |
| RUBIACEAE | *Coelospermum paniculatum* | Coelospermum | U |
| COMMELINACEAE | *Commelina diffusa* | Native Wandering Jew | O |
| BYTTNERIACEAE | *Commersonia bartramia* | Brown Kurrajong | U |
| LAXMANNIACEAE | *Cordyline rubra* | Red Fruit Palm Lilly | C |
| MYRTACEAE | *Corymbia intermedia* | Pink Bloodwood | C |
| LAURACEAE | *Cryptocarya glaucescens* | Jack wood | U |
| LAURACEAE | *Cryptocarya macdonaldii* | Cryptocarya | O |
| LAURACEAE | *Cryptocarya obovata* | Pepperberry Tree | O |
| LYTHRACEAE | *Cuphea carthagenensis* * | Common waxweed | C |
| CYATHEACEAE | *Cyathea cooperi* | Scaly Tree Fern | R |
| RUBIACEAE | *Cyclophyllum coprosmoides* | Coast Canthium | O |
| THELYPTERIDACEAE | *Cyclosorus interruptus* | Swamp Fern | O |
| ORCHIDACEAE | *Cymbidium madidum* | Native Cymbidium | O |
| CYPERACEAE | *Cyperus brevifolius* * | Mullumbimby Couch | O |
| CYPERACEAE | *Cyperus difformis* | Variable flatsedge | C |
| CYPERACEAE | *Cyperus haspan* | Haspan Flat Sedge | C |
| CYPERACEAE | *Cyperus lucidus* | Leafy Flat-sedge | U |
| CYPERACEAE | *Cyperus polystachyos* | Bunchy sedge | C |
| CYPERACEAE | *Cyperus trinervis* | | O |
| ALISMATACEAE | *Damasonium minus (infertile)* | | R |
| GOODENIACEAE | *Dampiera sylvestris* | Blue fan flower | U |
| RUBIACEAE | *Dentella repens* | | C |
| FABACEAE | *Desmodium nemorosum* | | O |
| LAXMANNIACEAE | *Dianella caerulea v caerulea* | | O/C |
| IRIDACEAE | *Dietes bicolor* * | | R |
| FABACEAE | *Dillwynia retorta v retorta* | Eggs & Bacon Pea | O |
| EBENACEAE | *Diospyros pentamera* | Myrtle Ebony | U |
| DROSERACEAE | *Drosera burmannii* | Sundew | R |
| POLYPODIACEAE | *Drynaria rigidula* | Basket Fern | O |
| PUTRANJIVACEAE | *Drypetes deplanchei* | Yellow Tulip | U |
| POACEAE | *Echinochloa crus-galli* * | Barn yard grass | C/A |
| POACEAE | *Echinochloa telmatophila* | Swamp Barnyard grass | U/O |
| ASTERACEAE | *Eclipta prostrata* | White Eclipta | O |
| ELAEOCARPACEAE | *Elaeocarpus obovatus* | Hard Quondong | A |
| ELAEOCARPACEAE | *Elaeocarpus reticulatus* | Blueberry Ash | U |
| ELATINACEAE | *Elatine gratioloides* | | C |
| CYPERACEAE | *Eleocharis equisetina* | Horsetail Spike-rush | O |

| Family | Scientific Name | Common Name | Abund |
|---|---|---|---|
| CYPERACEAE | *Eleocharis ochrostachys* | | O |
| CYPERACEAE | *Eleocharis sphacelata* | | U/O |
| MYRSINACEAE | *Embelia australiana* | Embelia | U |
| ASTERACEAE | *Emilia sonchifolia* | Emilia | U |
| LAURACEAE | *Endiandra discolor* | Rose Walnut | A |
| LAURACEAE | *Endiandra sieberi* | Corkwood | C |
| POACEAE | *Entolasia stricta* | Wiry Panic | C |
| ASTERACEAE | *Enydra fluctuans* | Buffalo Spinach | U |
| POACEAE | *Eriachne pallescens* | A Wanderrie Grass | O |
| MYRTACEAE | *Eucalyptus microcorys* | Tallowwood | C |
| MYRTACEAE | *Eucalyptus racemosa* | Scribbly Gum | C |
| MYRTACEAE | *Eucalyptus robusta* | Swamp Mahogany | U/O |
| MYRTACEAE | *Eucalyptus tereticornis* | Forest Red Gum | C |
| MYRTACEAE | *Eucalyptus tindaliae* | Qld White Stringybark | U |
| LAXMANNIACEAE | *Eustrephus latifolius* | Wombat Berry | U |
| MORACEAE | *Ficus coronata* | Creek Sandpaper Fig | A |
| MORACEAE | *Ficus virens* | White Fig | R |
| CYPERACEAE | *Fimbristylis dichotoma* | Common Finger Rush | O |
| CYPERACEAE | *Fimbristylis nutans* | Finger Rush | C |
| CYPERACEAE | *Fimbristylis pauciflora* | Finger Rush | C |
| CYPERACEAE | *Fimbristylis tristachya* | Finger Rush | U/O |
| CYPERACEAE | *Fimbristylis velata* | Finger Rush | O |
| FLAGELLARIACEAE | *Flagellaria indica* | Flagellaria | U |
| RUTACEAE | *Flindersia bennettiana* | Bennett's Ash | U |
| RUTACEAE | *Flindersia schottiana* | Bumpy Ash | U |
| PANDANACEAE | *Freycinetia scandens* | Broad-leaved Climbing Pandanus | A |
| CYPERACEAE | *Gahnia aspera* | Saw sedge | U |
| CYPERACEAE | *Gahnia clarkei* | Tall Saw sedge | O |
| HEMEROCALLIDACEAE | *Geitonoplesium cymosum* | Scrambling Lilly | U |
| ORCHIDACEAE | *Geodorum densiflorum* | Pink Nodding Orchid | U/O |
| GLEICHENIACEAE | *Gleichenia dicarpa* | Pouched Fern | O |
| MOLLUGINACEAE | *Glinus oppositifolius* | Carpet weed | C |
| PHYLLANTHACEAE | *Glochidion ferdinandi v. ferdinandi* | Cheese Tree | C |
| PHYLLANTHACEAE | *Glochidion sumatranum* | Umbrella Cheese Tree | C |
| FABACEAE | *Glycine clandestina v clandestina* | Twining Glycine | O |
| FABACEAE | *Glycine tomentella* | | U |
| VERBENACEAE | *Gmelina leichhardtii* | White Beech | U |
| HALORAGACEAE | *Gonocarpus chinensis v verrucosus* | Chinese raspwort | U |
| HALORAGACEAE | *Gonocarpus micranthus* | Creeping raspwort | U |
| SAPINDACEAE | *Guioa semiglauca* | Guioa | R/U |
| PROTEACEAE | *Hakea actites* | Wallum Hakea | O/C |
| FABACEAE | *Hardenbergia violacea* | Native Sarsaparilla | U |
| DILLENIACEAE | *Hibbertia acicularis* | Prickly Guinea Flower | C |
| DILLENIACEAE | *Hibbertia scandens* | Twining Guinea Flower | O |
| DILLENIACEAE | *Hibbertia vestita* | Hairy Guinea Flower | C |
| MALVACEAE | *Hibiscus diversifolius* | Swamp Hibiscus | U |
| EUPHORBIACEAE | *Homalanthus nutans* | Bleeding Heart | U |
| FABACEAE | *Hovea acutifolia* | Pointed-leaf Hovea | U |
| ACANTHACEAE | *Hygrophila angustifolia* | Willow Hygro | U/O |
| CLUSIACEAE | *Hypericum gramineum* | Small St. John's Wort | C |
| ASTERACEAE | *Hypochaeris radicata* * | Cat's Ears | U |
| POACEAE | *Imperata cylindrica* | Blady Grass | C |
| JUNCACEAE | *Juncus continuus* | Pithy rush | U |
| VERBENACEAE | *Lantana camara* * | Lantana | O |

| Family | Scientific Name | Common Name | Abund |
|---|---|---|---|
| MYRTACEAE | *Lenwebbia sp. (Blackall Range P.R.Sharpe 5387) EN* | Sunshine Coast Myrtle | O/C |
| CYPERACEAE | *Lepironia articulata* | Tube Sedge | O |
| RESTIONACEAE | *Leptocarpus tenax* | | C |
| MYRTACEAE | *Leptospermum liversidgei* | Lemon-scented tea tree, | O |
| MYRTACEAE | *Leptospermum whitei* | Paperbark tea-tree | O |
| ERICACEAE | *Leucopogon leptospermoides* | Beard heath | O |
| ERICACEAE | *Leucopogon pimeleoides* | Beard heath | O |
| LINDSAEACEAE | *Lindsaea ensifolia* | Lace fern | U |
| LAURACEAE | *Litsea reticulata* | Bolly Gum | U |
| ARECACEAE | *Livistona australis* | Cabbage Palm | O/C |
| CAMPANULACEAE | *Lobelia membranacea* | | U/O |
| CAMPANULACEAE | *Lobelia purpurascens* | White Root | O |
| CAMPANULACEAE | *Lobelia stenophylla* | | C |
| LAXMANNIACEAE | *Lomandra hystrix* | Matt Rush | C |
| LAXMANNIACEAE | *Lomandra longifolia* | Spinyhead Matt Rush | C |
| LAXMANNIACEAE | *Lomandra multiflora* | Many Flowered Matt Rush | O |
| PROTEACEAE | *Lomatia silaifolia* | Crinkle Bush | C |
| MYRTACEAE | *Lophostemon confertus* | Brush Box | O |
| MYRTACEAE | *Lophostemon suaveolens* | Swamp Box | A |
| ONAGRACEAE | *Ludwigia longifolia ** | | U |
| ONAGRACEAE | *Ludwigia octovalvis* | Willow Primrose | O |
| ONAGRACEAE | *Ludwigia peploides ssp montevidensis ** | Water Primrose | O |
| LYCOPODIACEAE | *Lycopodiella serpentina* | | U/O |
| SCHIZAEACEAE | *Lygodium microphyllum* | Climbing Maiden Hair Fern | U/O |
| MORACEAE | *Maclura cochinchinensis* | Cockspur Thorn | U |
| APOCYNACEAE | *Marsdenia fraseri* | Narrow-leaved Milk Vine | O |
| APOCYNACEAE | *Marsdenia lloydii* | Corky Milk Vine | O/C |
| MYRTACEAE | *Melaleuca linearifolia* | Snow in Summer | U/O |
| MYRTACEAE | *Melaleuca nodosa* | Pricklyleaf Paperbark | O/C |
| MYRTACEAE | *Melaleuca quinquenervia* | Broad-leaf Paperbark | A |
| MYRTACEAE | *Melaleuca saligna* | Pink Tips | O |
| MYRTACEAE | *Melaleuca thymifolia* | Thyme Honeymyrtle | C |
| MELASTOMATACEAE | *Melastoma malabathricum* | Blue Tongue | U |
| RUTACEAE | *Melicope elleryana* | Pink Euodia, Pink Princess | O/C |
| APOCYNACEAE | *Melodinus australis* | Melodinus | A |
| SAPINDACEAE | *Mischocarpus pyriformis* | Yellow Pear Fruit | U |
| LOGANIACEAE | *Mitrasacme paludosa* | Swamp Mitrewort | U |
| EPACRIDACEAE | *Monotoca scoparia* | Prickly Broom Heath | O |
| RUBIACEAE | *Morinda jasminoides* | Jasmine morinda | O |
| COMMELINACEAE | *Murdannia graminea* | Blue Murdannia | O |
| MYRSINACEAE | *Myrsine howittiana* | Brush Muttonwood | C |
| MYRSINACEAE | *Myrsine variabilis* | Muttonwood | R |
| LAURACEAE | *Neolitsea dealbata* | Grey Bollywood | U |
| NEPHROLEPIDACEAE | *Nephrolepis cordifolia* | Fishbone Fern | O |
| OLEACEAE | *Notelaea longifolia* | Large Mock Olive | U |
| NYMPHAEACEAE | *Nymphaea capensis ** | Cape Blue Waterlilly | R/U |
| MENYANTHACEAE | *Nymphoides geminata (infertile)* | | U |
| MENYANTHACEAE | *Nymphoides indica* | Water Snowflake | C |
| ORCHIDACEAE | *Oberonia palmicola* | | U |
| POACEAE | *Oplismenus aemulus* | Basket Grass | O |
| HYDROCHARITACEAE | *Ottelia ovalifolia* | Swamp Lilly | R |
| POACEAE | *Ottochloa nodosa* | Short glumed panic | C |
| FABACEAE | *Oxylobium robustum* | Golden Shaggy Pea | U |
| POACEAE | *Panicum effusum* | Hairy panic | O |

| Family | Scientific Name | Common Name | Abund |
|---|---|---|---|
| POACEAE | *Panicum repens* * | | U |
| APOCYNACEAE | *Parsonsia straminea* | Monkey Vine | A |
| POACEAE | *Paspalum conjugatum* * | Sour grass | C |
| POLYGONACEAE | *Persicaria attenuata* | Smartweed | O |
| POLYGONACEAE | *Persicaria hydropiper* | Water Pepper | O |
| POLYGONACEAE | *Persicaria orientalis* | | C |
| POLYGONACEAE | *Persicaria strigosa* | Spotted Knotweed | C/A |
| PROTEACEAE | *Persoonia stradbrokensis* | Broad-leaf Geebung | U |
| PROTEACEAE | *Persoonia virgata* | Narrow-leaf Geebung | O |
| PICRODENRACEAE | *Petalostigma pubescens* | Bitter Bark | O |
| RUTACEAE | *Philotheca queenslandica* | Wax Flower | U/O |
| PHILYDRACEAE | *Philydrum lanuginosum* | Frog's Mouth | O |
| POACEAE | *Phragmites australis* | Common Reed | O |
| VERBENACEAE | *Phyla nodiflora v nodiflora* | Fog-fruit | U |
| PHYTOLACCACEAE | *Phytolacca octandra* * | Ink Weed | U |
| MYRTACEAE | *Pilidiostigma rhytispermum* | Small Leaf Plum Myrtle | C |
| PINACEAE | *Pinus elliottii* * | Slash Pine | U/O |
| PIPERACEAE | *Piper hederaceum* | New Holland Pepper | O |
| PITTOSPORACEAE | *Pittosporum ferrugineum* | Brown Pittosporum | U |
| PITTOSPORACEAE | *Pittosporum revolutum* | Yellow Pittosporum | C |
| POLYPODIACEAE | *Platycerium bifurcatum* | Elkhorn Fern | U |
| COMMELINACEAE | *Pollia crispata* | Pollia | U |
| ARALIACEAE | *Polyscias elegans* | Celery Wood | U |
| RUBIACEAE | *Pomax umbellata* | Pomax | C |
| SAPOTACEAE | *Pouteria chartacea* | Thin-leaved Coondoo | C |
| ACANTHACEAE | *Pseuderanthemum variable* | Love Flower | U |
| PSILOTACEAE | *Psilotum nudum* | Skeleton or Fork Fern | O |
| RUBIACEAE | *Psychotria loniceroides* | Rusty Psychotria | O |
| DENNSTAEDTIACEAE | *Pteridium esculentum* | Common Bracken Fern | C |
| FABACEAE | *Pultenaea villosa* | Bronze Bush Pea | U |
| POLYPODIACEAE | *Pyrrosia confluens* | Robber Fern | U |
| RANUNCULACEAE | *Ranunculus inundatus* | | O |
| ROSACEAE | *Rhaphiolepis indica* * | Indian Hawthorn | R |
| MYRTACEAE | *Rhodomyrtus psidioides* | Native Guava | O |
| CYPERACEAE | *Rhynchospora corymbosa* | Corymbed Beak-sedge | O |
| RIPOGANACEAE | *Ripogonum album* | White Supplejack | O/C |
| ROSACEAE | *Rubus moluccanus v. moluccanus* | Molucca Bramble | U |
| POACEAE | *Sacciolepis indica* | India cupscale-grass | A |
| MENISPERMACEAE | *Sarcopetalum harveyanum* | Big-leaf Vine, Pearl Vine | U |
| ARALIACEAE | *Schefflera actinophylla* # | Umbrella Tree | O/C |
| SCHIZAEACEAE | *Schizaea dichotoma* | Branched Comb Fern | O |
| CYPERACEAE | *Schoenus melanostachys* | Black Bog Rush | O |
| CYPERACEAE | *Scleria rugosa* | Wrinkle-seed Nut Rush | O |
| POACEAE | *Setaria sphacelata v sericea* * | Sth African Pigeon grass | O |
| MALVACEAE | *Sida rhombifolia* * | Sida | U |
| SMILACACEAE | *Smilax australis* | Austral Smilax | O/C |
| PHYTOLACCACEAE | *Phytolacca octandra* * | Ink Weed | U |
| MYRTACEAE | *Pilidiostigma rhytispermum* | Small Leaf Plum Myrtle | C |
| PINACEAE | *Pinus elliottii* * | Slash Pine | U/O |
| PIPERACEAE | *Piper hederaceum* | New Holland Pepper | O |
| PITTOSPORACEAE | *Pittosporum ferrugineum* | Brown Pittosporum | U |
| PITTOSPORACEAE | *Pittosporum revolutum* | Yellow Pittosporum | C |
| POLYPODIACEAE | *Platycerium bifurcatum* | Elkhorn Fern | U |
| COMMELINACEAE | *Pollia crispata* | Pollia | U |

| Family | Scientific Name | Common Name | Abund |
|---|---|---|---|
| ARALIACEAE | *Polyscias elegans* | Celery Wood | U |
| RUBIACEAE | *Pomax umbellata* | Pomax | C |
| SAPOTACEAE | *Pouteria chartacea* | Thin-leaved Coondoo | C |
| ACANTHACEAE | *Pseuderanthemum variable* | Love Flower | U |
| PSILOTACEAE | *Psilotum nudum* | Skeleton or Fork Fern | O |
| RUBIACEAE | *Psychotria loniceroides* | Rusty Psychotria | O |
| DENNSTAEDTIACEAE | *Pteridium esculentum* | Common Bracken Fern | C |
| FABACEAE | *Pultenaea villosa* | Bronze Bush Pea | U |
| POLYPODIACEAE | *Pyrrosia confluens* | Robber Fern | U |
| RANUNCULACEAE | *Ranunculus inundatus* | | O |
| ROSACEAE | *Rhaphiolepis indica* * | Indian Hawthorn | R |
| MYRTACEAE | *Rhodomyrtus psidioides* | Native Guava | O |
| CYPERACEAE | *Rhynchospora corymbosa* | Corymbed Beak-sedge | O |
| RIPOGANACEAE | *Ripogonum album* | White Supplejack | O/C |
| ROSACEAE | *Rubus moluccanus v. moluccanus* | Molucca Bramble | U |
| POACEAE | *Sacciolepis indica* | India cupscale-grass | A |
| MENISPERMACEAE | *Sarcopetalum harveyanum* | Big-leaf Vine, Pearl Vine | U |
| ARALIACEAE | *Schefflera actinophylla #* | Umbrella Tree | O/C |
| SCHIZAEACEAE | *Schizaea dichotoma* | Branched Comb Fern | O |
| CYPERACEAE | *Schoenus melanostachys* | Black Bog Rush | O |
| CYPERACEAE | *Scleria rugosa* | Wrinkle-seed Nut Rush | O |
| POACEAE | *Setaria sphacelata v sericea* * | Sth African Pigeon grass | O |
| MALVACEAE | *Sida rhombifolia* * | Sida | U |
| SMILACACEAE | *Smilax australis* | Austral Smilax | O/C |

## Appendix 5 Fauna Species List

Doonan Creek Environmental Reserve Fauna Species Checklist

Combined records from O2 Ecology (2014) Barden (2014), and Meyer (2015)

* = introduced pest species; VU = Vulnerable Qld NC(W)R 2006

| Common Name | Scientific Name | O2 ECOL 2014 | Barden 2014 | Meyer 2015 |
|---|---|---|---|---|
| **Amphibians** | | | | |
| Common Sedgefrog | *Litoria fallax* | | | X |
| Graceful Treefrog | *Litoria gracilenta* | | | X |
| Striped Marshfrog | *Limnodynastes peronii* | | | X |
| Green Treefrog | *Litoria caerulea* | | | X |
| Striped Rocketfrog | *Litoria nasuta* | | | X |
| Ruddy Treefrog | *Litoria rubella* | X | | X |
| Laughing Treefrog | *Litoria tyleri* | | | X |
| Beeping Froglet | *Crinia parinsignifera* | | | X |
| Wallum Froglet VU | *Crinia tinnula* | | X | X |
| Copper-backed Broodfrog | *Pseudophryne raveni* | X | | |
| Cane Toad * | *Rhinella marina* | X | X | X |
| **Reptiles** | *11* | | | |
| Eastern Water Dragon | *Intellagama lesueurii* | X | X | X |
| Bearded Dragon | *Pogona barbata* | X | | |
| Southern Spotted Velvet Gecko | *Oedura tryoni* | X | | |
| Bar-sided Skink | *Eulamprus tenuis* | X | | |
| Eastern Water Skink | *Eulamprus quoyii* | X | X | |
| Garden Skink | *Lampropholis delicata* | X | | X |
| Elegant Snake-eyed Skink | *Cryptoblepharus pulcher* | X | | |
| Three-dawed Worm-skink | *Anomalopus verreauxii* | X | | |
| Pink-tongued Lizard | *Cyclodomorphus gerrardii* | X | | |
| Lace Monitor | *Varanus varius* | X | X | X |
| Golden-crowned Snake | *Cacophis squamulosus* | X | | |
| Common Tree Snake | *Dendrelaphis punctulata* | X | X | |
| Proximus Blind Snake | *Ramphotyphlops proximus* | X | | |
| **Birds** | *13* | | | |
| Australian Brush-turkey | *Alectura lathami* | X | X | X |
| King Quail | *Excalfactoria chinensis* | | X | |
| Brown Quail | *Coturnix ypsilophora* | | X | |
| Plumed Whistling-Duck | *Dendrocygna eytoni* | | | X |
| Black Swan | *Cygnus atratus* | X | | |
| Australian Wood Duck | *Chenonetta jubata* | X | X | X |
| Pacific Black Duck | *Anas superciliosa* | X | X | X |
| White-headed Pigeon | *Columba leucomela* | | X | |
| Brown Cuckoo-Dove | *Macropygia amboinensis* | X | X | X |
| Crested Pigeon | *Ocyphaps lophotes* | X | X | |

| Common Name | Scientific Name | O2 ECOL 2014 | Barden 2014 | Meyer 2015 |
|---|---|---|---|---|
| Peaceful Dove | *Geopelia striata* | | X | |
| Bar-shouldered Dove | *Geopelia humeralis* | X | X | X |
| Rose-crowned Fruit-Dove | *Ptilinopus regina* | X | X | |
| Tawny Frogmouth | *Podargus strigoides* | X | X | |
| White-throated Nightjar | *Eurostopodus mystacalis* | | X | X |
| Australian Owlet-nightjar | *Aegotheles cristatus* | X | X | |
| White-throated Needletail | *Hirundapus caudacutus* | | X | |
| Little Black Cormorant | *Phalacrocorax sulcirostris* | X | X | |
| Pied Cormorant | *Phalacrocorax varius* | X | | |
| Little Pied Cormorant | *Microcarbo melanoleucos* | | X | |
| Black-necked Stork | *Ephippiorhynchus asiaticus* | | | X |
| White-necked Heron | *Ardea pacifica* | X | X | X |
| White-faced Heron | *Egretta novaehollandiae* | X | X | X |
| Cattle Egret | *Ardea ibis* | X | X | X |
| Nankeen Night-Heron | *Nycticorax caledonicus* | | X | |
| Australian White Ibis | *Threskiornis molucca* | | X | |
| Straw-necked Ibis | *Threskiornis spinicollis* | X | X | |
| Whistling Kite | *Haliastur sphenurus* | | X | |
| White-bellied Sea-Eagle | *Haliaeetus leucogaster* | X | X | |
| Spotted Harrier | *Circus assimilis* | X | X | |
| Swamp Harrier | *Circus approximans* | | X | |
| Brown Goshawk | *Accipiter fasciatus* | | X | X |
| Grey Goshawk | *Accipiter novaehollandiae* | X | | |
| Collared Sparrowhawk | *Accipiter cirrhocephalus* | | X | |
| Pacific Baza | *Aviceda subcristata* | | X | X |
| Wedge-tailed Eagle | *Aquila audax* | | X | |
| Black-shouldered Kite | *Elanus axillaris* | | | X |
| Masked Lapwing | *Vanellus miles* | X | X | X |
| Yellow-tailed Black-Cockatoo | *Calyptorhynchus funereus* | X | X | X |
| Galah | *Eolophus roseicapillus* | | X | |
| Little Corella | *Cacatua sanguinea* | | X | |
| Sulphur-crested Cockatoo | *Cacatua galerita* | X | X | X |
| Rainbow Lorikeet | *Trichoglossus haematodus* | X | X | X |
| Scaly-breasted Lorikeet | *Trichoglossus chlorolepidotus* | X | X | |
| Little Lorikeet | *Glossopsitta pusilla* | X | X | |
| Australian King-Parrot | *Alisterus scapularis* | | | X |
| Pale-headed Rosella | *Platycercus adscitus* | X | X | X |
| Brush Cuckoo | *Cacomantis variolosus* | | X | X |
| Fan-tailed Cuckoo | *Cacomantis flabelliformis* | | X | |
| Southern Boobook | *Ninox novaeseelandiae* | | | X |
| Eastern Grass Owl | *Tyto longimembris* | | | X |
| Pheasant Coucal | *Centropus phasianinus* | | X | X |
| Shining Bronze-Cuckoo | *Chalcites lucidus* | | X | |
| Little Bronze-Cuckoo | *Chalcites minutillus* | | X | |

| Common Name | Scientific Name | O2 ECOL 2014 | Barden 2014 | Meyer 2015 |
|---|---|---|---|---|
| Eastern Koel | *Eudynamys orientalis* | X | X | |
| Channel-billed Cuckoo | *Scythrops novaehollandiae* | X | X | |
| Azure Kingfisher | *Ceyx azurea* | X | X | X |
| Laughing Kookaburra | *Dacelo novaeguineae* | X | X | X |
| Forest Kingfisher | *Todiramphus macleayii* | X | X | X |
| Sacred Kingfisher | *Todiramphus sanctus* | X | X | |
| Rainbow Bee-eater | *Merops ornatus* | X | X | X |
| Dollarbird | *Eurystomus orientalis* | X | X | |
| Noisy Pitta | *Pitta versicolor* | | X | X |
| White-throated Treecreeper | *Cormobates leucophaeus* | X | X | X |
| Green Catbird | *Ailuroedus crassirostris* | X | X | X |
| Satin Bowerbird | *Ptilonorhynchus violaceus* | | X | |
| Red-backed Fairy-wren | *Malurus melanocephalus* | X | X | X |
| Variegated Fairy-wren | *Malurus lamberti* | | X | |
| White-browed Scrubwren | *Sericornis frontalis* | X | X | |
| Large-billed Scrubwren | *Sericornis magnirostra* | | X | |
| Brown Thornbill | *Acanthiza pusilla* | | X | X |
| Striated Thornbill | *Acanthiza lineata* | | X | |
| Fairy Gerygone | *Gerygone palpebrosa* | | X | |
| White-throated Gerygone | *Gerygone albogularis* | | X | |
| Brown Gerygone | *Gerygone mouki* | | X | |
| Spotted Pardalote | *Pardalotus punctatus* | | X | |
| Striated Pardalote | *Pardalotus striatus* | | X | |
| Brown Honeyeater | *Lichmera indistincta* | | X | X |
| Dusky Honeyeater | *Myzomela obscura* | X | X | |
| Scarlet Honeyeater | *Myzomela sanguinolenta* | X | X | |
| Lewin's Honeyeater | *Meliphaga lewinii* | X | X | X |
| Yellow-faced Honeyeater | *Caligavis chrysops* | | X | |
| White-throated Honeyeater | *Melithreptus albogularis* | | X | |
| Little Friarbird | *Philemon citreogularis* | | X | |
| Noisy Friarbird | *Philemon corniculatus* | X | X | X |
| White-cheeked Honeyeater | *Phylidonyris niger* | | X | |
| Eastern Spinebill | *Acanthorhynchus tenuirostris* | | X | |
| Blue-faced Honeyeater | *Entomyzon cyanotis* | | X | |
| Noisy Miner | *Manorina melanocephala* | X | X | X |
| Little Wattlebird | *Anthochaera chrysoptera* | | X | |
| Eastern Whipbird | *Psophodes olivaceus* | X | X | X |
| Black-faced Cuckoo-shrike | *Coracina novaehollandiae* | | X | X |
| Cicadabird | *Coracina tenuirostris* | | X | X |
| Varied Triller | *Lalage leucomela* | X | X | X |
| Golden Whistler | *Pachycephala pectoralis* | X | X | X |
| Rufous Whistler | *Pachycephala rufiventris* | X | X | X |
| Little Shrike-thrush | *Colluricincla megarhyncha* | X | X | X |
| Grey Shrike-thrush | *Colluricincla harmonica* | X | X | X |

| Common Name | Scientific Name | O2 ECOL 2014 | Barden 2014 | Meyer 2015 |
|---|---|---|---|---|
| Olive-backed Oriole | *Oriolus sagittatus* | X | X | |
| Australasian Figbird | *Sphecotheres vieilloti* | X | X | |
| Grey Butcherbird | *Cracticus torquatus* | X | X | X |
| Pied Butcherbird | *Cracticus nigrogularis* | X | X | X |
| Australian Magpie | *Cracticus tibicen* | X | X | |
| Pied Currawong | *Strepera graculina* | X | X | X |
| Spangled Drongo | *Dicrurus bracteatus* | X | X | X |
| Willie Wagtail | *Rhipidura leucophrys* | | X | X |
| Grey Fantail | *Rhipidura albiscapa* | X | X | X |
| Rufous Fantail | *Rhipidura rufifrons* | X | X | X |
| Torresian Crow | *Corvus orru* | X | X | X |
| Magpie-lark | *Grallina cyanoleuca* | X | X | X |
| White-eared Monarch | *Carterornis leucotis* | | X | |
| Spectacled Monarch | *Symposiarchus trivirgatus* | X | X | X |
| Restless Flycatcher | *Myiagra inquieta* | X | | |
| Leaden Flycatcher | *Myiagra rubecula* | | X | X |
| Rose Robin | *Petroica rosea* | | X | |
| Eastern Yellow Robin | *Eopsaltria australis* | X | X | X |
| Golden-headed Cisticola | *Cisticola exilis* | | X | X |
| Tawny Grassbird | *Megalurus timoriensis* | | X | |
| Silvereye | *Zosterops lateralis* | X | X | |
| Welcome Swallow | *Hirundo neoxena* | X | X | X |
| Fairy Martin | *Petrochelidon ariel* | | X | |
| Mistletoebird | *Dicaeum hirundinaceum* | X | X | X |
| Double-barred Finch | *Taeniopygia bichenovii* | | X | X |
| Australasian Pipit | *Anthus novaeseelandiae* | X | X | X |
| Russet-tailed Thrush | *Zoothera heinei* | | | X |
| **Mammals** | *125* | | | |
| Yellow-footed Antechinus | *Antechinus flavipes* | X | | |
| Common Planigale | *Planigale maculata* | X | | |
| Long-nosed Bandicoot | *Perameles nasuta* | X | | |
| Northern Brown Bandicoot | *Isoodon macrourus* | | X | |
| Common Brush-tailed Possum | *Trichosurus vulpecula* | X | | |
| Short-eared Brushtail Possum | *Trichosurus caninus* | | X | |
| Koala VU | *Phascolarctos cinereus* | X | | |
| Sugar Glider | *Petaurus breviceps* | X | | |
| Squirrel Glider | *Petaurus norfolcensis* | X | | |
| Eastern Grey Kangaroo | *Macropus giganteus* | X | X | X |
| Swamp Wallaby | *Wallabia bicolor* | | X | X |
| Little Red Flying-fox | *Pteropus alecto* | X | | |
| White-striped Freetail-bat | *Austronomus australis* | X | | |
| Northern Free-tailed Bat | *Mormopterus lumsdenae* | X | | |
| Little Bent-winged Bat | *Miniopterus australis* | X | | |
| Gould's Wattled Bat | *Chalinolobus gouldii* | X | | |

| Common Name | Scientific Name | O2 ECOL 2014 | Barden 2014 | Meyer 2015 |
|---|---|---|---|---|
| Large-footed Myotis | *Myotis macropus* | X | | |
| Eastern Long-eared Bat | *Nyctophilus bifax* | X | | |
| Eastern Broad-nosed Bat | *Scotorepens orion* | X | | |
| Fawn-footed Melomys | *Melomys cervinipes* | X | | |
| Water Rat | *Hydromys chrysogaster* | X | X | |
| Bush Rat | *Rattus fuscipes* | X | | |
| Swamp Rat | *Rattus lutreolus* | X | | |
| Red Fox * | *Vulpes vulpes* | X | X | |
| Dingo/Dog | *Canis dingo/familiaris* | X | X | |
| Cattle * | *Bos sp* | X | X | X |
| **Freshwater Fishes** | *26* | | | |
| Mosquitofish * | *Gambusia holbrooki* | | | X |
| Fly-specked Hardyhead | *Craterocephalus stercusmuscarum* | | | X |
| Empire Gudgeon | *Hypseleotris compressa* | | | X |
| Firetail Gudgeon | *Hypseleotris galii* | | | X |
| Striped Gudgeon | *Gobiomorphus australis* | | | X |
| Ornate Rainbowfish | *Rhadinocentrus ornatus* | | | X |
| Agassiz's Glassfish | *Ambassis agassizii* | | | X |
| Crimson-spotted Rainbowfish | *Melanotaenia duboulayi* | | | X |
| Platy * | *Xiphophorus maculatus* | | | X |

Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*

| | |
|---|---|
| CD | Conservation Dependent |
| CE | Critically Endangered |
| E | Endangered |
| EX | Extinct |
| XW | Extinct in the Wild |
| V | Vulnerable |
| M | Migratory |

Queensland conservation status of each taxon under the *Nature Conservation Act 1992*

| | |
|---|---|
| PE | Extinct in the Wild |
| E | Endangered |
| V | Vulnerable |
| NT | Near Threatened |
| C | Least Concern |
| | Not Protected |

Sunshine Coast Biodiversity Strategy 2010-2020

| | |
|---|---|
| E | endangered |
| V | vulnerable |
| R | rare |
| N | northern limit |
| S | southern limit |
| EPBC | Environment Protection and Biodiversity Conservation Act (2000) |
| NCA | Nature Conservation Act (1992) |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| BONN | Convention on the Conservation of Migratory Species of Wild Animals |
| JAMBA | Japan - Australia Migratory Bird Agreement |
| CAMBA | China - Australia Migratory Bird Agreement |
| ROKAMBA | Republic of Korea - Australia Migratory Bird Agreement |

## Appendix 6: Reserve category assessment

| Opportunities | Risks |
|---|---|
| **Bushland Reserve (for multi-use or shared use recreational activities such as walking, mountain bikes, and horse trails)** | |
| • Provide economic benefit to the local community<br>• Increased public surveillance of illegal activities<br>• Recreational trails used simultaneously as fire breaks to facilitate prescribed mosaic burns<br>• Opportunities to involve the local community in site-based management of trails and weeds<br>• Provide recreational opportunities to cater for expected population growth in locality and adjacent localities<br>• Opportunities to engage with community over trail proposal and design<br>• More opportunity tpo accommodate communitys different requests for acess.<br>• DCER has been purchased and established through the environment levy and forms an important part of Council's environment reserve network which assists to protect regional biodiversity, enhance ecological connectivity and increase biodiversity resilience to the anticipated impacts of climate change. Therfore any recreational use must not compromise the ecological core values of the site. | • Moderate to high potential for weed entry via recreational trails<br>• Feral and domestic animals are known to utilise recreational trails to increase activity/access to bushland areas<br>• High risk of increased access for domestic dogs which may in turn impact wildlife directly or indirectly (Banks and Bryant 2007), including listed 'threatened' species such as koala (*Phascolarctos cinereus*).<br>• Increase potential for illegal access by trail bikes using multi-use recreational trails<br>• Moderate to high potential for erosion along mulyiuse trails where heavieier use occurs<br>• Potential to impact on important habitat areas and EVNT species if trails are expanded to accommodate greater use.<br>• Increased risk of unplanned fire ignition, presenting a significant risk to sensitive habitats and listed 'threatened' species.<br>• Potential spread of pathogens that may impact habitats and listed 'threatened' species (e.g. myrtle rust)<br>• Unvaccinated horses not compatible with Flying-fox roosting potential due to Hendra risks.<br>• Trails and increased traffic to create potential barriers for sensitive fauna<br>• Financial costs associated *with the installation and* maintenance of high impact recreational infrastructure. NB. Lowland floodplain sites within the reserve are likely to require regular maintenance and upgrading due to potential for flood damage<br>• Expanded car parking footprint to accommodate trailers and potential increased use.<br>• Potential barrier to obtaining perpetual protection of values through a legally binding mechanism such as a Nature Refuge under the NCA however this can be mitigated through design plans.<br>• Doonan Creek Environmental Reserve is not identified under the Recreational Trails Plan 2012 for this purpose. |

| Opportunities | Risks |
|---|---|
| **Bushland Reserve (for low impact walking trails only)** | |
| • Provide economic benefit to the local community<br>• Enables appreciation and awareness of natural landscape values and provides incentives for preservation<br>• Increased public surveillance of illegal activities<br>• Recreational trails used simultaneously as fire breaks to facilitate prescribed mosaic burns<br>• Opportunities to engage with community over trail proposal and design<br>• Opportunities to involve the local community in site-based management of trails and weeds<br>• Meets community expectations to provide more trails in natural areas<br>• Opportunities for education and interpretive signage<br>• Single use trails provide safety for bush walkers and other low impact recreational users<br>• Provide recreational opportunities to cater for expected population growth in locality and adjacent localities<br>• The Recreational Trails Plan 2012 identifies that there is distinct lack of trails for local users.<br>• Currently there are no reserves designated for low impact recreation in close proximity<br>• Walking has the highest participation rate of all physical activities Australia wide and in Southeast Queensland (Recreational Trail Plan 2012)<br>• Address the suggestion by walkers, bird watchers and environmentalists to be separated from mountain bike riders (Sunshine Coast Recreation Trail Plan 2012) | • Potential for weed entry via recreational trails<br>• Feral and domestic animals are known to utilise recreational trails to increase activity/access to bushland areas<br>• High risk of increased access for domestic dogs which may in turn impact wildlife directly or indirectly (Banks and Bryant 2007), including listed 'threatened' species such as koala (*Phascolarctos cinereus*).<br>• Increase potential for illegal access via recreational trails<br>• Some potential for erosion along trails<br>• Increased risk of unplanned fire ignition, presenting a significant risk to sensitive habitats and listed 'threatened' species.<br>• Potential spread of pathogens that may impact habitats and listed 'threatened' species (e.g. myrtle rust)<br>• Trails and increased traffic to create potential barriers for sensitive fauna species<br>• Financial costs associated with the installation and maintenance of recreational infrastructure. NB. Lowland floodplain sites within the reserve are likely to require regular maintenance and upgrading due to potential for flood damage |

| Opportunities | Risks |
|---|---|
| **Nature Reserve - controlled access, maintain existing trails** | |
| • Increased opportunities for monitoring, data collection and research<br>• Facilitate partnerships with research institutions<br>• Provide an outdoor study area for students<br>• Research to contribute to conservation at this site and similar sites<br>• Facilitate partnerships with community groups such as Birdlife Sunshine Coast<br>• Opportunities to conduct educational seminars and guided interpretive walks for local residents and wildlife enthusiasts<br>• No net increase to existing trail infrastructure | • Financial costs associated with the installation and maintenance of educational infrastructure |
| **Conservation Reserve - fire trails only** | |
| • No financial costs associated with installation and maintenance of educational infrastructure<br>• No negative impacts associated with trails and increased traffic<br>• Protect areas of high environmental value from human impact<br>• Provides control sites for monitoring reserve impacts | • Limits opportunities for recreational and educational usage and associated benefits<br>• Limits contribution towards local tourism and associated economic benefits |

## Appendix 7. Restricted Matter invasive plants and Locally Significant plant pests

Extract from Doonan Creek Environmental Reserve Plant Species Checklist
Amended May 2014 (Thomas 2014)

| Scientific Name | Common Name | Biosecurity Act status | SCPMP |
|---|---|---|---|
| *Ageratina riparia* * | Mist Flower | | |
| *Ageratum houstonianum* * | Blue Top | | LoC |
| *Ardisia elliptica* * | Low Shoebutton | | |
| *Asparagus aethiopicus* * | Asparagus fern | R3 | LoC |
| *Axonopus compressus* * | Broad leaf carpet grass | | GEP |
| *Baccharis halimifolia* * | Groundsel | R3 | SM |
| *Cinnamomum camphora* * | Camphor Laurel | R3 | LoC |
| *Cirsium vulgare* * | Scotch Thistle | | GEP |
| *Cuphea carthagenensis* * | Common waxweed | | |
| *Cyperus brevifolius* * | Mullumbimby Couch | | GEP |
| *Dietes bicolor* * | | | GEP |
| *Echinochloa crus-galli* * | Barn yard grass | | GEP |
| *Hypochaeris radicata* * | Cat's Ears | | |
| *Lantana camara* * | Lantana | R3 | LoC |
| *Ludwigia longifolia* * | | | |
| *Ludwigia peploides ssp montevidensis* * | Water Primrose | | |
| *Nymphaea capensis* * | Cape Blue Waterlilly | | |
| *Panicum repens* * | | | |
| *Paspalum conjugatum* * | Sour grass | | GEP |
| *Phytolacca octandra* * | Ink Weed | | GEP |
| *Pinus elliottii* * | Slash Pine | | LoC |
| *Rhaphiolepis indica* * | Indian Hawthorn | | GEP |
| *Setaria sphacelata v sericea* * | Sth African Pigeon grass | | |
| *Sida rhombifolia* * | Sida | | |
| *Phytolacca octandra* * | Ink Weed | | |
| *Pinus elliottii* * | Slash Pine | | |
| *Rhaphiolepis indica* * | Indian Hawthorn | | |
| *Setaria sphacelata v sericea* * | Sth African Pigeon grass | | LoC |
| *Sida rhombifolia* * | Sida | | GEP |

*R3 = Resticted Matter (Category 3) invasive plant species under the Biosecurity Act 2014; SM = Strategic Management LoC = Local Control GEP = General Environmental Pests under the Sunshine Coast Local Government Area Pest Management Plan 2012-2016*

# Glossary and Abbreviations

## AHD
Australian Height Datum

## ASS
Acid Sulphate Soils

## BOA
Bushland Operational Assessment

## BPA
Biodiversity Planning and Assessment

## CAR system:
***Comprehensive*:** examples of all types of regional-scale ecosystems in each IBRA region should be included in 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.

## DEE
Department of Environment and Energy (Auistralian Government)

## DEHP
Department of Environment and Heritage Protection (QLD)

## EPA
Environmental Protection Agency (QLD Govt. department prior to 2009 election)

## EPBC Act
Environment Protection and Biodiversity Conservation Act 1999

## EVNT
Flora and fauna species listed as 'endangered', 'vulnerable' or 'near threatened' under the Nature Conservation Act 1992

## FMP
Fire Management Plan.

## IBRA
Interim Biogeographic Regionalisation of Australia

## IUCN
International Union for the Conservation of Nature

## JAMBA
Japan – Australia Migratory Bird Agreement

## Listed 'threatened'
Flora and fauna listed as 'extinct', 'extinct in the wild', 'critically endangered', 'endangered', 'vulnerable' or 'conservation dependent' under the EPBC Act or flora and fauna listed as 'endangered' or 'vulnerable' under the NC Act

## Listed 'near threatened'
Under the Nature Conservation Act 1992

MERI
Monitoring, Evaluation, Reporting, and Improvement

MMP
Natural Areas Master Management Plan 2016 - 2026

NC Act
Nature Conservation Act 1992

NC(W)R
Nature Conservation (Wildlife) Regulation 2006

NRS
National reserve System

RE
Regional ecosystem

SCLGA
Sunshine Coast Local Government Area

SCPMP
Sunshine Coast Local Government Area Pest Management Plan 2012-2016

SEQ
South East Queensland

SMI
Statement of Management Intent

VM Act
Queensland Vegetation Management Act 1999

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