



*Environmental Approval & Compliance Solutions*

# **Cairns Flying-fox Relocation Management Plan**

Cairns Regional Council








# Document Control Summary

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Report Summary	
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<b>Abstract</b>	The Commonwealth Department of the Environment and Energy has requested additional information regarding the Flying-fox Relocation Management Plan submitted as part of the EPBC Act referral application prepared by CRC (EPBC 2019/8424). The additional information is provided in this revised Flying-fox Relocation Management Plan.

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# 1. Introduction

Cairns Regional Council (CRC) proposes to relocate a roosting colony of Spectacled Flying-fox (*Pteropus conspicillatus*) (SFF)<sup>1</sup> currently at the Cairns City Library (Cairns City flying-fox colony 658, hereafter referred to as the Cairns City FF colony (DoEE 2019)). The objective is to relocate the Cairns City FF colony to a suitable alternative site.

CRC prepared a referral (EPBC 2019/8424) to the Commonwealth Department of the Environment and Energy (DoEE) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for a planned relocation the Cairns City FF colony from the Cairns Central Business District (Cairns CBD). The DoEE decision notice dated 24 May 2019 advised that the proposed action was a *controlled action* and that the assessment approach would be by *preliminary documentation*.

CRC engaged NRA Environmental Consultants (NRA) to assist in the preparation of information to address the requirements of the *preliminary documentation*. DoEE noted that the draft Flying-fox Relocation Management Plan provided in the referral did not include all the requirements listed in the EPBC Act *Referral guideline for management actions in Grey-headed and Spectacled flying-fox camps* (DoE 2015).

In response to these additional information requirements of DoEE, NRA has prepared this revised Flying-fox Relocation Management Plan, which, upon review and acceptance by the relevant regularly authority, will be adopted by CRC. This Flying-fox Relocation Management Plan does not repeat the information in the EPBC Act referral documentation; rather, it fulfils information gaps and provides the necessary clarity to inform the DoEE decision making process.

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<sup>1</sup> Spectacled Flying-fox is currently listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and is a Matter of National Environmental Significance.

## 2. Existing Situation

In recent years, CRC has sought to manage the Cairns City FF colony to mitigate public concerns whilst preserving the aesthetic and conservation values of the site. CRC funds a third-party contractor to use accepted methods<sup>2</sup> to deter flying-foxes across the Cairns CBD and to contain roosting within the Cairns City FF colony location (**Figure 1**).

Historically, SFFs have formed roosting colonies on the Barron River (in 1920 and again in the 1980s), Cairns Inlet (prior to 1948), Charles Street, Cairns City (1952), Alligator Creek (1952), Cairns Central Swamp (1980s) and Admiralty Island (1980s) (Garnett *et al.* 1999, Westcott 2013). Information is sparse, and the reasons for the observed movements are not known. Westcott and McKeown (2014) concluded SFFs are becoming increasingly urbanised; the reasons are unknown, though based on their review of the literature, they reported explanations could include attraction of fruiting or flowering events near urban areas, disturbance events such as droughts, fires, cyclones and human disturbance or culling at non-urban roosts or orchards.

Cohen (2017) reported a population estimate in April 2017 of *ca* 3,000-4,500 SFF within the CBD, with the majority of the animals recorded in the four fig trees and a single Golden Penda (*Xanthostemon chrysanthus*) surrounding the Cairns library, which remained the preferred site for the species' daytime camp<sup>3</sup>. NRA recorded observations during CRC maintenance activities at the Cairns library location between 2017 and 2019, with SFF estimates varying between 14,000 in January 2017 and 380 in August 2018 ( $\mu=3,545$ ,  $\sigma=3,537$ ; **Appendix A**). Due to natural causes, the Golden Penda suffered irreparable decay and was removed in April 2019 (*pers. comm.* CRC Environment Officer, 8-10 April, 2019; **Appendix B**).

CRC intends to retain the remaining trees at the library site that support the Cairns City FF colony in the CBD (all trees at the library site (*ie* roost and 'spillover' trees) are heritage listed (DES 2016)). The progressive loss of roost trees from surrounding areas of the CBD has increased the reliance on a small number of roost trees around the Cairns City library; there being four trees, one of which has received structural support interventions on two occasions, one in the past six months (*pers. comm.* CRC Arborist, 2 August 2019).

There has been a loss of available roosting habitat in the developing city landscape surrounding the library (Cohen 2017, NRA 2017). The reduction in available 'spillover' trees has resulted in a more intensive and persistent use of the primary roost trees surrounding the library. This increase in roost tree use at the library is causing more frequent and sustained damage to the trees. Over time, this reduces the available canopy area that can be used by the flying-foxes. Further, the damage is reducing the health of the trees, which has devolved risks to public safety (*eg* falling branches).

The high usage of the limited number of trees by SFF is progressively decreasing the health of the trees and contributing to the further loss of roosting space. This deterioration in tree

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<sup>2</sup> In accordance with the *Code of Practice – Ecologically sustainable management of flying-fox roosts Queensland Nature Conservation Act 1992* (DES 2013) between 0400 and 0700 hours each morning, flying-foxes are dispersed from trees within Cairns CBD towards the Cairns City FF colony location (centred on the Cairns City Library).

<sup>3</sup> Cohen (2017) survey followed the same methods and techniques as performed by Cohen in October 2012, March 2014, March 2015, December 2015 and December 2016.

health/roost quality will likely continue unless the demand on the roost trees is reduced (by the SFF population reducing or more roost trees becoming available) and the trees are permitted adequate time to recover.

Local bat carers reported high rates of SFF pup mortality at the Cairns City FF colony during the 2014-2015, 2015-2016, 2016-2017 and 2017-2018 birthing seasons (*pers. comm.* CRC Environmental Officer, 13 August 2018, 29 November 2018 and 29 August 2019); available records of mortality for each of these birthing seasons are included in **Appendix C**. After comparing a subset of this data with available mortality data from other flying-fox colonies across the Wet Tropics bioregion, the Bats and Trees Society of Cairns Inc. reported disproportionately high rates of mortality (and juvenile bat abandonment) associated with the Cairns City FF colony in 2017 (**Appendix C**). The reasons for the high rates of pup mortality are not known; however, the high mortality rates may, at least in part, be due to the diminishing quality of the roost site. Construction activities around the roost may also have contributed to the mortality rates. Cohen (2017) reported that it was apparent that removing and significantly altering the canopy of numerous trees in the area over the past few years had reduced the total flying-fox [SFF] population in the Cairns CBD.

Severe weather poses an additional threat to SFF. For example, heat wave conditions occurred in Cairns during late November to early December 2018 (BOM 2019), causing a heat stress event that led to the recorded death of >23,000 SFF within CRC's management area (*pers. comm.* CRC Environmental Officer, 15 January 2019). CRC initiated actions, such as a water sprinkler cooling system, collection and disposal of dead animals and support to local bat carers<sup>4</sup> in response.

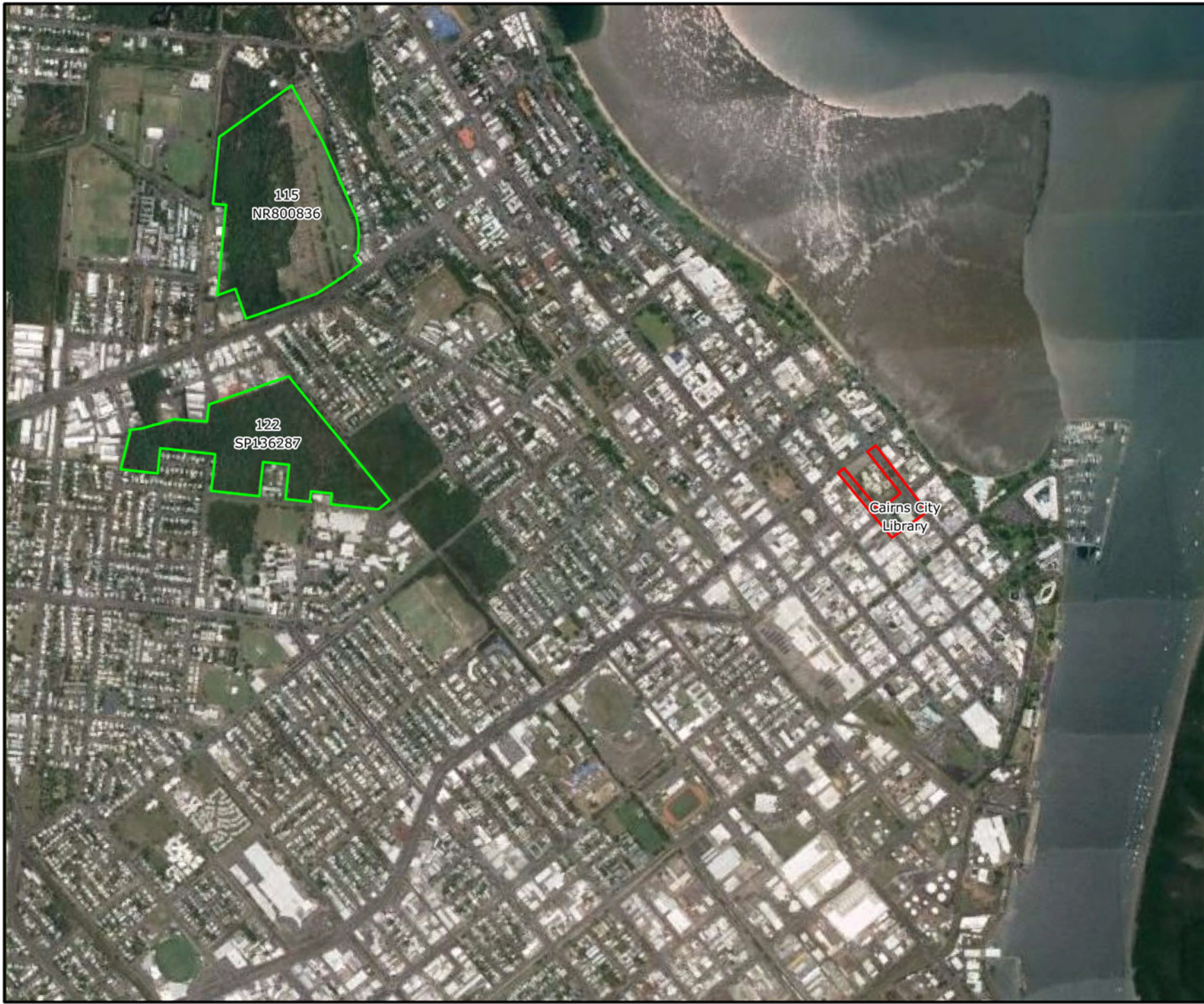
The health of roost trees at the library site, and therefore viability of the site as a SFF roost, is diminishing. The continuation of periodic SFF pup mortality events is a risk. In the absence of information to the contrary, the current situation involving high rates of pup mortality is considered likely to be interfering with the recovery of SFF. In response to these circumstances, CRC seeks to change its strategy of managing the Cairns City FF colony to active management that encourages the flying-foxes to move from the Cairns City FF colony to a suitable location outside of the Cairns CBD (**Figure 1**). The relocation of the colony to a more suitable location will seek to reduce pup mortality<sup>5</sup> and thereby contribute to the objective of avoiding a long-term decline in the national population of the species.

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<sup>4</sup> CRC Meeting Minutes: Flying-fox Advisory Committee Quarterly Report, 27 June 2019.



<sup>5</sup> Through applying a criterion of no increasing trend in pup mortality relative to estimated population.

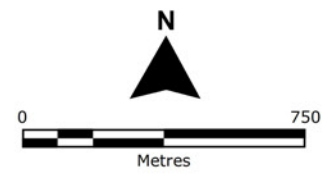




**Figure 1:** Current site and proposed relocation site for the Cairns City Flying-fox colony

Project: Cairns Flying-fox Relocation Management Plan

- Flying-fox management areas
-  Current flying-fox roost area
  -  Proposed relocation site



Source: © DNRME 2018, Google Earth

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## 3. Relocation

### 3.1 Relocation site

SFF roosting colonies occur in a variety of vegetation types, including riparian forest, rainforest tracts, mangroves, paperbark swamps and more rarely in tall eucalypts or wattles (Richards 1990). They typically occupy dense vegetation and have a propensity to form colonies where there is suitable habitat within parkland or along streets in close proximity to towns or urban areas (Tait *et al.* 2014).

A desk-based assessment was undertaken to evaluate the suitability of potential relocation sites within 5 km to the west, south and east of the current location of the Cairns City FF Colony<sup>6</sup>. The following attributes were considered:

- relocation distance
- presence of suitable habitat
- area of relevant vegetation community
- evidence of past use by SFF as a roost site
- zoning of relevant land parcels
- zoning of adjacent land parcels (to assess likelihood of land use conflicts)
- location relative to air traffic
- on-ground access for relocation management, contingency planning and post-relocation monitoring.

The results of this assessment are presented in **Table 1**.

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<sup>6</sup> Potential relocation sites to the north were disregarded due to their proximity to Cairns Airport.

**Table 1: Assessment of potential relocation sites for the Cairns City FF Colony**

Site	Relocation distance (km)	Presence of suitable habitat <sup>1</sup>	Area of relevant vegetation community (ha)	Evidence of past use by SFF <sup>2</sup>	Zoning of relevant land parcels <sup>3</sup>	Other zoning of adjacent land parcels <sup>3</sup>	Location relative to air traffic <sup>4</sup>	On-ground access for relocation management, contingency planning and post relocation monitoring	Overall suitability	
									Habitat <sup>5</sup>	Proposed action
Lot 32, NR3051 (Admiralty Island)	3.5	Yes (RE 7.1.1)	600	Yes	Conservation	-	Within typical flight path; within 3-8 km wildlife hazard corridor	No (surrounded by water)	✓	X
Lot 158, NR5877 (East Trinity)	1.7	Yes (RE 7.1.1)	30	No	Rural	Conservation, Special Purpose	Outside typical flight path; within 3-8 km wildlife hazard zone	No (on other side of Cairns inlet)	✓	X
Lots 16 and 17, SP155099, Cairns Esplanade	0.3	Yes (planted trees)	0.8	Yes	Open Space	Strategic Port Land	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 775, CP903631, Cairns Esplanade	0.2	Yes (planted trees)	0.8	Yes	Open Space	Open Space	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 4, SP160326, Cairns Esplanade	0.3	Yes (planted trees)	0.8	Yes	Open Space	Open Space	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 10, SP214821, Cairns Wharf	0.6	Yes (planted trees)	0.4	No	Strategic Port Land	Principal Centre	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	X	✓
Lot 9, SP113632, Cairns Wharf	0.9	Yes (planted trees)	0.2	No	Strategic Port Land	Principal Centre	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	X	✓
Lot 10, SP296225, Portsmith	2.6	Yes (RE 7.2.8)	4.5	No	Conservation	Medium Impact Industry, Special Purpose	Outside typical flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 113, SP310121, Portsmith	3.1	Yes (RE 7.2.1, 7.2.3 and 7.2.8)	8.8	No	Conservation	Community Facilities, Special Purpose	Outside typical flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 384, SP310122, Portsmith	3.5	Yes (RE 7.1.1)	4.4	No	Conservation	Community Facilities, Special Purpose	Outside typical flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lots 1 and 2, AP3439, Woree	3.7	Yes (RE 7.1.1)	8.0	No	Conservation	Open Space, Special Purpose	Outside typical flight path; within 3-8 km wildlife hazard zone	No (limited nearby road access)	✓	X
Lot 1, SP284128 (Munro Martin Park)	0.4	Yes (planted trees)	1	Yes	Open Space	Mixed Use, Tourist Accommodation, Community Facilities	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 813, C1987 (McLeod St Pioneer Cemetery)	1.2	Yes (planted trees)	1.6	No	Community Facilities	Special Purpose, Medium Density Residential, Tourist Accommodation	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 115 on NR800836 (Cairns Central Swamp)	2.8	Yes (RE 7.2.9)	7.0	Yes	Conservation, Community Facilities	Medium Density Residential, Special Purpose, Commercial, Sport and Recreation	Edge of typical flight path; partially within 3 km wildlife hazard zone	Yes	✓	✓
Lot 122 on SP136287 (Cairns Central Swamp)	2.0	Yes (REs 7.2.1 and 7.2.9)	23.2	Yes	Conservation	Low Impact Industry, Low-Medium Density Residential, Community Facilities, Medium Density Residential	Outside typical flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 3, RP707561 (Cannon Park Racecourse)	3.9	Yes (7.1.1, 7.2.8, 7.2.9, 7.2.4)	4.2	Yes	Sport and recreation	Medium Density Residential, Special Purpose, Commercial	Outside typical flight path; within 3-8 km wildlife hazard zone	Yes	X	✓
Lot 4, SP218291, Portsmith	3.5	Yes (RE 7.1.1)	9.4	No	Conservation	High Impact Industry, Special Purpose	Outside typical flight path; within 3-8 km wildlife hazard zone	No (limited nearby road access)	✓	X
Lot 3, SP218291, Portsmith	3.2	Yes (RE 7.1.1)	0.8	No	High Impact Industry	Strategic Port Land, Conservation	Edge of typical flight path; within 3-8 km wildlife hazard zone	Yes	X	✓
Lot 7, USL9986, White Rock	4.7	Yes (RE 7.1.1)	442	No	Conservation	Open Space, Special Purpose	Outside typical flight path; within 8-13 km wildlife hazard zone	Yes	✓	✓
Lot 3, USL9877, East Trinity	4.1	Yes (RE 7.1.1 and 7.2.8)	16.3	No	Conservation	Rural	Outside typical flight path; within 8-13 km wildlife hazard zone	No (on other side of Cairns inlet)	✓	X
Lot 34, USL9876, East Trinity	3.3	Yes (RE 7.1.1 and 7.2.8)	53.3	No	Conservation	Rural	Outside typical flight path; within 3-8 km wildlife hazard zone	No (on other side of Cairns inlet)	✓	X

Site	Relocation distance (km)	Presence of suitable habitat <sup>1</sup>	Area of relevant vegetation community (ha)	Evidence of past use by SFF <sup>2</sup>	Zoning of relevant land parcels <sup>3</sup>	Other zoning of adjacent land parcels <sup>3</sup>	Location relative to air traffic <sup>4</sup>	On-ground access for relocation management, contingency planning and post relocation monitoring	Overall suitability	
									Habitat <sup>5</sup>	Proposed action
Lot 1, AP11292, East Trinity	4.6	Yes (RE7.1.1)	31.3	No	Rural	Conservation	Outside typical flight path; within 8-13 km wildlife hazard zone	No (on other side of Cairns inlet)	✓	X
Lot 36, RP749582, East Trinity	4.3	Yes (RE 7.1.1 and 7.2.8)	50	No	Rural	Conservation	Outside typical flight path; within 8-13 km wildlife hazard zone	No (on other side of Cairns inlet)	✓	X
Lot 102, SP153989, Parramatta Park	1.1	Yes (planted trees)	0.6	No	Open Space	Medium Density Residential, Low Density Residential	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 14, SP165248, Parramatta Park	0.9	Yes (planted trees)	0.5	No	Open Space	Tourist Accommodation, Mixed Use, Medium Density Residential	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 766, NR6566, Parramatta Park	1.2	Yes (planted trees)	0.5	No	Open Space	Low Density Residential, Community Facilities	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 3, RP701078, Cairns North	1.5	Yes (planted trees)	0.5	No	Open Space	Medium Density Residential, Community Facilities, Special Purpose	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 3, RP701079, Cairns North	1.4	Yes (planted trees)	0.6	No	Open Space	Medium Density Residential, Community Facilities, Special Purpose	Within typical flight path; within 3-8 km wildlife hazard corridor	Yes	✓	✓
Lot 71, SP136285 (Lily Street Environmental Reserve)	2.6	Yes (RE 7.1.1 and 7.2.1)	4.1	No	Conservation	Open Space	Within typical flight path; partially within 3 km wildlife hazard zone	Yes	✓	✓
Lot 123, SP261205 (Endeavour Park)	3.4	Yes (RE 7.2.3, 7.2.8 and 7.2.9)	11.1	Yes	Conservation	Medium Density Residential, Special Purpose, Low Impact Industry	Within secondary flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 1, RP725844 (Woodward Park)	3.8	Yes (RE 7.2.1, 7.2.9 and 7.3.5)	5.5	Yes	Conservation	District Centre, Medium Density Residential, Special Purpose	Within secondary flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 119, SP136287, Westcourt	1.5	Yes (RE 7.2.1 and 7.1.1)	3.3	No	Conservation	Medium Density Residential, Sports and Recreation	Edge of typical flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 120, SP136287, Parramatta Park	1.6	Yes (RE 7.2.1)	1.0	No	Conservation	Medium Density Residential, Low Density Residential, Community Facilities	Edge of typical flight path; within 3-8 km wildlife hazard zone	Yes	✓	✓
Lot 123, SP136287, Parramatta Park	1.7	No (RE 7.1.3)	0	No	Conservation	Medium Density Residential, Low Density Residential	Edge of typical flight path; within 3-8 km wildlife hazard zone	Yes	X	✓
Lot 401, SP201236 (Centenary Lakes)	3.8	Yes (RE 7.2.8, 7.2.9, 7.2.4 and 7.3.3)	17.3	No	Open Space	Tourist Accommodation, Medium Density Residential, Community Facilities	Edge of typical flight path; within 3 km wildlife hazard zone	No; logistically challenging due to proximity to airport	✓	X

<sup>1</sup> Includes assessment against Regional Ecosystem (RE) descriptions (DES 2018); (where relevant) against habitat attributes documented for Spectacled Flying-fox in Richards (1990) and Tait et al. (2014).

<sup>2</sup> As reported in Garnett *et al* (1999) or by DoEE (2019). Also includes areas within 0.5 km of the Cairns City FF colony where SFF may seek roosting opportunities.

<sup>3</sup> Zones identified with reference to CRC (2019).

<sup>4</sup> Assessed with reference to **Appendix F**.

<sup>5</sup> A construct of habitat and land use zoning.

Cairns Central Swamp was determined to be a suitable relocation site. This site is primarily composed of the following two land parcels:

- Lot 115 on NR800836 (which also contains Cairns Cemetery)
- Lot 122 on SP136287.

In terms of suitability as a relocation site, Cairns Central Swamp:

1. is a former roost site for SFF (Garnett *et al.* 1999)
2. contains approximately 30 ha of remnant rainforest and paperbark swamp that is suitable habitat for the SFF, and was determined to be as suitable for the establishment of a flying-fox release enclosure (**Appendix D**; WPSQ 1978-1993, NRA 2005)
3. has been recently surveyed to confirm habitat is suitable for SFF<sup>7</sup>
4. is located between 0.4 and 1.6 km from a permanent source of fresh water (at lot 401, SP201235, Centenary Lakes)
5. is a suitable relocation site on account of its proximity to the current location of the Cairns City FF colony (**Figure 1**)
6. has appropriate land zoning (**Appendix E**)
7. is within the same or near same bird/bat strike hazard zone as the current Cairns City FF colony location with respect to the CRC Planning Scheme 2009 (CRC 2009) and 2019 (CRC 2019) respectively, yet it has a far lower frequency of flight path intersects compared to the Cairns CBD (**Appendix F**)
8. in summary, the Cairns Central Swamp is a suitable relocation site on account of its habitat, location, current and previous land use, and zoning.

### 3.2 Alternatives to planned action

A plethora of alternatives can be suggested; those that are reasonable and practical alternatives to the proposed relocation of the Cairns City FF colony follow.

- Do nothing. The ‘do nothing approach’ (*ie* cease all actions), is likely to culminate in the loss of roost trees at the Cairns City Library site, reducing the aesthetic qualities of the area and the value of the area as habitat, and perpetuate the risk of potential negative human interaction with flying-foxes. The viability of the Cairns City FF colony will rely on its capacity to occupy a suitable habitat.
- Maintain the current approach. The current approach is not sustainable (*ie* the Cairns City FF colony is causing damage to the roost trees).
- Heavily pruning the trees and reducing them temporarily to a height that would render them undesirable for SFFs to roost in. Pruning is already undertaken to the maximum permitted<sup>8</sup>.
- Removing and replacing the trees around the library with trees that are too small to be used as roosts for SFFs. Removing heritage listed trees is not permitted, is undesirable, and will reduce the aesthetic qualities of the area.

<sup>7</sup> In 2019, the vegetation within Cairns Central Swamp has been calculated to have an average tree cover (combination of all tree layers) of 94 (±3)% (NRA in prep.), which is comparable to other sites occupied by SFF in the Cairns region. The vegetation also has 3-4 layers of strata, which may reduce the extent of temperature maximums relative to surrounding environments during heat stress events.

<sup>8</sup> In accordance with DES (2017), pruning beyond 20% is not permitted at a heritage listed site.

- Installing netting for at least the medium-term (*ie* 12-24 months) to deter SFFs from breeding and roosting at the site. CRC has determined that the costs to install and maintain the netting are materially significant.
- An alternative relocation site.

CRC has recently constructed a flying-fox release enclosure (for care and release of rehabilitated flying-foxes) in Arthur Strike Park, Edmonton (approximately 8.6 km south of Cairns City Library). Based on anecdotal evidence of adult SFF being attracted to roost near a temporary enclosure by the presence of juvenile bats at the enclosure<sup>9</sup>, CRC hopes that the permanent enclosure will act as a similar passive attractant to establish a roost site in Arthur Strike Park. However, the release enclosure is too far from the Cairns City FF colony to be a suitable target location for the relocation action. A further consideration is the limitation provided in Commonwealth statutory guidelines on the maximum time for dispersal activity – *2.5 hours in any 12 hour period* (DoE 2015).

A summary of potential alternative relocation sites is provided as follows.

- Lot 123, SP261205 (Endeavour Park)
- Lot 7, USL9986 (White Rock).
- Lot 1, RP725844 (Woodward Park).
  - Potential intermediate sites:
    - Lots 16 and 17, SP155099, Cairns Esplanade
    - Lot 775, CP903631, Cairns Esplanade
    - Lot 4, SP160326, Cairns Esplanade
    - Lot 10, SP296225, Portsmith
    - Lot 113, SP310121, Portsmith
    - Lot 384, SP310122, Portsmith
    - Lot 119, SP136287, Westcourt
    - Lot 120, SP136287, Parramatta Park
    - Lot 102, SP153989, Parramatta Park
    - Lot 14, SP165248, Parramatta Park
    - Lot 766, NR6566, Parramatta Park
    - Lot 3, RP701078, Cairns North
    - Lot 3 RP701079, Cairns North
    - Lot 71, SP136285 (Lily Street Environmental Reserve).
  - Non-preferred intermediate sites:
    - Lot 1, SP284128 (Munro Martin Park)
    - Lot 813, C1987 (McLeod St Pioneer Cemetery).

In comparison to the proposed relocation site, the potential alternative relocation sites are unfavourable because of longer flight distances and/or more limited areas of available habitat (**Table 1**).

### 3.3 Likelihood of relocation success

Flying-fox colony relocations are costly and have a poor track record of success (Roberts *et al.* 2011). Westcott and McKeown (2014) revealed two traits in SFFs, in particular, that are

<sup>9</sup> CRC Meeting Minutes: Flying-fox Advisory Committee Quarterly Report, 25 July 2018.



likely to complicate attempts to relocate the Cairns City FF colony. Firstly, SFF colonies have a tendency to remain static, *ie* SFFs maintain their demographic presence for long periods. There are records of SFF colony presence in and around Cairns City dating back to at least 1915 (Westcott 2013). Secondly, SFF individuals have been observed to frequently move between colonies. In summary, preferred colony locations persist through time, yet individuals move freely between those locations. Therefore, under a best-case scenario, the proposed action is likely only to succeed in relocating the individual SFFs present at the time of the action.

There is also a high likelihood that the dispersed individual flying-foxes will move to occupy other established flying-fox colonies in the broader landscape (*eg* Mount Sheridan and Gordonvale) or other new locations rather than the target site(s). This will cause SFF numbers to increase in these colonies, which may proliferate management issues more broadly within CRC's jurisdiction. Further, SFFs that are present at these other colonies at the time of the action are still likely to return to roost at the Cairns City FF colony site at some stage following the relocation action.

Given consideration of the above, it is clear that the only way to remove the Cairns City FF colony with permanent effect would be to remove the habitat that supports the species (*ie* tall leafy trees in parks and in the streetscape) and to prohibit the replacement of such trees. The removal of the trees is not permitted under the heritage status of the site. It is also unfavourable because the trees confer significant benefits to the urban landscape by providing natural cover, habitat for other fauna and visual amenity. Nevertheless, while the habitat remains in place and while a population of SFFs persists in the broader landscape, the need for management of SFFs in Cairns City is highly likely to persist in perpetuity. CRC will undertake management and deterrent activities until the current site occupied by the Cairns City FF colony has been abandoned.

### 3.4 Impact assessment

The proposed relocation action has two broad components, the first is relocation and the second is deterrence<sup>10</sup>. There is little evidence that past attempts to move urban camps have been successful or cost effective (Roberts *et al.* 2011). Since listing under EPBC Act, a relocation of the Cairns City FF colony has not been attempted. CRC has site-specific knowledge of the deterrence component, for which the action has been effective and nil deaths of SFF recorded.

DoE (2013) advises that an action is likely to have a significant impact on an endangered species if the impact on the habitat is likely to:

- a) *lead to a long-term decrease in the size of a population, or*
- b) *reduce the area of occupancy of the species, or*
- c) *fragment an existing population into two or more populations, or*
- d) *adversely affect habitat critical to the survival of a species, or*
- e) *disrupt the breeding cycle of a population, or*
- f) *modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or*

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<sup>10</sup> Inherent in relocation and deterrence is 'dispersal' (*ie* the active dispersal of flying-foxes), which is a term that is used routinely in Commonwealth and State guidelines (*eg* DEHP 2013, DES 2013, DoE 2015).

- g) *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat, or*
- h) *introduce disease that may cause the species to decline, or*
- i) *interfere with the recovery of the species.*

To avoid causing significant impact to SFF, the following measures will be taken.

- The proposed action is to occur over three to five years, with continuation determined by the demonstrated achievement of agreed performance outcomes. Establishing a term of the action, which is reliant on demonstrated performance, is an important factor in the assessment of potential risk of causing environmental harm. The monitoring results of the action will dictate its continuation within the three to five year period and will provide the evidence for cessation or continuation of the action.
- The proposed action will only occur between May and September (*ie* outside of the SFF pup rearing season in accordance with DoE (2015)). This will specifically aim to avoid a disruption to the species' breeding cycle.
- The proposed action will cease if dependant pups are present.
- The proposed action will cease if an SFF death caused by the action is recorded.
- For the deterrence component, the success criterion is nil SFF deaths due to the action recorded at Cairns City FF colony.
- For the relocation component, the success criterion is nil SFF deaths due to the action recorded at Cairns City FF colony.
- For the relocation component, relating to Cairns Central Swamp, the success criterion is no increasing trend in pup mortality relative to estimated population, as measured against the available data for the available breeding seasons from 2014 onwards recorded at Cairns City FF colony, due to the action.

The implementation of these measures is expected to achieve a low risk of significant impacts to SFF.

### 3.5 Recovery objectives

Recovery objectives for SFF are outlined in the *National recovery plan for the spectacled flying fox Pteropus conspicillatus* (DERM 2010). This plan states that *the overall objectives of recovery are to secure the long-term protection of the spectacled flying fox through a reduction in the impact of threats to species' survival and to improve the standard of information available to guide recovery.*

CRC will satisfy the overall objectives of recovery in two ways.

1. Through relocation of a nationally significant flying-fox colony from a site where the viability of the colony is diminishing to a suitable relocation site.
2. By commissioning a pilot study into the management of flying-fox roosting behaviour (including improved deterrent methods).

The pilot study will:

1. document the current procedures for local dispersal to serve as the initial management protocol for flying-foxes that roost in the Cairns CBD
2. undertake a review on flying-fox management/deterrents, including:
  - a. literature review
  - b. collation and summary of observations on responses of flying-foxes to disturbance

3. develop experiment(s) to test novel approaches for encouraging flying-fox movement from unfavourable roosting locations to favourable roosting locations
4. conduct experiments at prescribed locations within the roost during fly-in time and/or fly-out times outside of the pup rearing season
5. prepare and develop a flying-fox management protocol for the Cairns City FF colony in the CBD, incorporating the results of the experiments encouraging flying-fox movement, and in light of relocation plans
6. test the efficacy of the management protocol within the Cairns City FF colony and more broadly within Cairns CBD
7. following relocation, implement the flying-fox management protocol.

### 3.6 Method

The proposed action is to achieve relocation of the Cairns City FF colony to the Cairns Central Swamp and will be undertaken in accordance with an Implementation Plan prepared prior to commencement of the proposed action; the content detail is presented in **Appendix H**.

The method to be deployed has two broad components, the first is relocation and the second is deterrence. Intrinsic to the components are periodic monitoring and the reporting of results during the action to provide the mechanism to validate performance against the performance measure of not causing harm, and to provide the surety of timely intervention to prevent environmental harm. Interactions with the SFFs will be limited to May – September each year<sup>11</sup> and will not occur during or immediately following extreme weather events or the like.

It is proposed that the action occur over three to five years, with continuation determined by the demonstrated achievement of agreed performance outcomes. Establishing a term of the action, which is reliant on demonstrated performance, is an important factor in the assessment of potential risk of causing environmental harm. The monitoring results of the action will dictate its continuation within the three to five year period and will provide the evidence for cessation or continuation of the action.

Prior to undertaking the proposed action, roles and responsibilities of all personnel will be articulated.

Roles and responsibilities of personnel will vary depending on a range of factors; in general, the following personnel will be involved.

- Project Manager – The Project Manager will be responsible for coordinating, planning and overseeing management activities, including engaging contractors. The Project Manager will be responsible for implementing the action and ensuring that activities comply with legislative obligations. The Project Manager will liaise with CRC's Chief Executive Officer or delegate and other relevant department heads.
- Suitably Qualified Person – The Suitably Qualified Person(s) will provide advice about the behaviour and ecology of flying-foxes, and associated environmental matters. The

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<sup>11</sup> The SFF birthing and pup rearing season occurs between October and April each year (Van Dyck & Strahan 2008). Actions in SFF colonies during this time pose a significant risk of disrupting the breeding cycle of the species (DoE 2015). In accordance with relevant guidelines (DoE 2015, DEHP 2013), relocation actions will take place outside of the pup-rearing season (*ie* between May and September).

Suitably Qualified Person(s) will work closely with the Project Manager, and other personnel to ensure that activities comply with legislative obligations, and will provide advice to facilitate effective management.

- The Relocation Supervisor – The Relocation Supervisor will be responsible for managing the on-the-ground activities and will liaise with the Project Manager daily and other relevant entities as necessary.
- Contractors – Suitably qualified contractors will undertake components of the activity, for example, relocation, deterrence and monitoring.
- Wildlife Care Personnel – The Project Manager will facilitate the involvement of appropriate qualified Wildlife Carers in the proposed action. Existing procedures on how to deal with injured flying-foxes, and who to contact, will be used.
- Council Education/Media Officers – Education/Media Officers will be responsible for communicating information about the planned activity.
- Additional Human Resources – Additional resources may be deployed to assist with management activities and subsequent activities. They will be trained in aspects of flying-fox management relevant to their role.

### 3.6.1 Responsible entity

CRC is responsible for the action and will engage suitably qualified individuals to undertake relevant tasks. The local community has devoted considerable resources to the Cairns City FF colony, and, as the responsible entity accountable for achieving an acceptable outcome, CRC has to date contributed a level of resource allocation commensurate with its importance and inherent complexity. CRC has also contributed *ca.* \$0.87M to the management of the Cairns City FF colony in the period 2015–2019. The culmination of which is knowledge and experience that affords CRC the necessary attributes to lead the action.

### 3.6.2 Relocation

Relocation will be undertaken through established methods using tools and procedures best suited to the task<sup>12</sup>. The method involves planning and logistics, including the consideration of staged relocation events and intermediate relocation sites, stakeholder consultation, risk assessment and associated management response, mobilisation and conduct of relocation, monitoring and response inclusive of corrective actions. The risk that the established method is not suited to the relocation of the Cairns City FF colony has been addressed herein (refer to **Section 3.6.6**). The detailed relocation method will be presented in an Implementation Plan (see **Appendix H** for implementation framework).

### 3.6.3 Deterrence

The existing deterrence method and associated procedures and tools<sup>13</sup> (deployed by a third-party contractor engaged by CRC since 2017 to current) work as intended. During this period, no animal deaths due to the deterrence method have been recorded<sup>14</sup>. The method

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<sup>12</sup> The tools and procedures undertaken are to be within the bounds of current legislation that addresses the management of flying-fox roosts in general (DEHP 2013, DES 2013), and SFF in particular (DoE 2015); and be granted animal ethics approval; and cause the least disturbance to non-target receptors.

<sup>13</sup> The tools and procedures undertaken are to be within the bounds of current legislation that addresses the management of flying-fox roosts in general (DEHP 2013, DES 2013), and SFF in particular (DoE 2015); and be granted animal ethics approval; and cause the least disturbance to non-target receptors.

<sup>14</sup> CRC records of deterrence, 29 April 2017 – 2 August 2019.

involves planning and logistics, stakeholder consultation, risk assessment and associated management response, mobilisation and conduct of deterrence, monitoring and response inclusive of corrective actions. The risk that the established method is not suited to the deterrence of the Cairns City FF colony has been addressed herein (refer to **Section 3.6.6**).

### 3.6.4 Monitoring and reporting

Monitoring is required to validate success and to allow for timely intervention to avoid impacts. The overarching objective of the action is to achieve relocation and avoid harm. The success criteria for the objective are presented in **Table 2**.

**Table 2: Success criteria for deterrence and relocation components of the action**

Component	Success criterion	
	Cairns City FF colony current site	Relocation site (Cairns Central Swamp)
Deterrence	Nil SFF deaths	Not applicable
Relocation	Nil SFF deaths	No increasing trend in SFF pup mortality relative to estimated population <sup>1</sup>

<sup>1</sup> No increasing trend as measured against the available data for the breeding seasons from 2014 recorded at Cairns City FF colony, due to the action (**Appendix C**).

### Monitoring

Monitoring of SFF, their habitat and non-target environmental values (*ie* other flora and fauna<sup>15</sup>) at the current site of the Cairns City FF colony and Cairns Central Swamp will occur, where appropriate. This will be undertaken by a suitably qualified and experienced person(s) as follows.

- Pre-relocation:
  - baseline monitoring for the purpose of habitat assessment at Cairns Central Swamp, which will include BioCondition monitoring in accordance with DEHP (2017)
  - baseline monitoring at Cairns Central Swamp for the purpose of assessing unintended consequences to other flora and fauna, which is to be undertaken cognisant of accepted methods (*eg* Eyre *et al.* 2018)
  - preliminary monitoring of SFF (monthly counts) at known roost sites in the Cairns region<sup>16</sup>, in accordance with methods used by DoEE for the national monitoring program (DoEE 2019), including at least one survey for the presence of dependant pups at the Cairns City FF colony on the day prior to commencement of the relocation action.
- During relocation:
  - daily monitoring of SFF at the current site of the Cairns City FF colony
  - daily monitoring of SSF at Cairns Central Swamp
  - daily monitoring of SFF at intermediate sites should these occur as a component of the relocation action to Cairns Central Swamp.

<sup>15</sup> Including threatened species, such as *Myrmecodia beccarii* (Vulnerable, EPBC Act and Queensland *Nature Conservation Act* 1992), which is known to occur at Cairns Central Swamp (**Appendix D**).

<sup>16</sup> In accordance with the research of Westcott and McKeown (2014), SFFs move regularly between colonies and numbers can fluctuate strongly on a daily basis. Therefore, regular monitoring of SFF in the Cairns region will be completed (commencing October 2019) on a single day each month prior to relocation to provide a snapshot of the overall SFF population within the region.



- Following relocation (and to continue for three years):
  - annual monitoring of SFF habitat condition at Cairns Central Swamp
  - periodic monitoring at Cairns Central Swamp (*ie* once in the wet season and once in the dry season)<sup>17</sup> to assess unintended consequences to other flora and fauna, which is to be undertaken cognisant of accepted methods (*eg* Eyre *et al.* 2018).
  - annual monitoring at the current site of the Cairns City FF colony site undertaken following the wet season to evaluate tree condition
  - regular monitoring of SFF (monthly counts) at known roost sites in the Cairns region, including (but not limited to) the current site of the Cairns City FF colony and the relocation site at Cairns Central Swamp.

The monitoring program will be subject to annual review and any revisions agreed in writing with DoEE.

### Reporting

During the relocation, reporting will be undertaken on a daily basis and uploaded to the CRC website. Post the relocation, annual reports will be provided to DoEE and made available to the public on the CRC website. A complaints register will be maintained. All complaints received will be recorded, including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information will be made available for inspection by DoEE and, if permissible under relevant legislation, will be published on the CRC website.

All records will be kept of all complaints received during the conduct of the relocation action, including the following details:

- name, address and contact number for complainant (if not available, record *not identified*)
- time and date of complaint
- reasons for the complaint
- investigations undertaken
- conclusions formed
- actions taken to resolve complaint
- any abatement measures implemented
- CRC position responsible for resolving the complaint.

CRC will, within a reasonable and practicable timeframe, investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of CRC) and notify DoEE of the outcome of the investigation within 14 days of the completion of the investigation.

### 3.6.5 Contingency plan

Contingency planning seeks to identify incipient failures in the proposed action and, where failure has occurred, to minimise environmental harm by mitigating impacts through a timely response.

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<sup>17</sup> The dry season and the wet season are nominally from 1 April to 31 October and 1 November to 31 March, respectively.

Contingency planning provides a framework for responding to a failure as opposed to itemising all possible failure events (and the magnitude of failure). The monitoring program serves to provide warning of pending failure.

Failure to achieve direct relocation may occur and is accounted for in the relocation method through the use of intermediate sites.

However, response to significant failure events needs to be handled in consultation with relevant stakeholders. The following mechanisms for avoiding significant impacts will be implemented.

- During pre-relocation, the relocation action is to be rescheduled when:
  - one or more dependant pups are detected and verified by a suitably qualified person(s)<sup>18</sup>.
- During relocation, stop works when:
  - the action has resulted in the death of an SFF as determined by a suitably qualified person(s)
  - one or more dependant pups are detected and verified by a suitably qualified person(s).

### 3.6.6 Change management

It is possible that some tools or procedures will require modification as the action is implemented. The modifications may be considered minor, moderate or significant. Moderate and minor changes will occur, and it is expected that significant modifications will be the exception. To accommodate the range of circumstances likely to occur, a change management decision matrix is presented in **Table 3**.

**Table 3: Change management decision matrix**

Authority required	Minor	Moderate		Significant
	Switch between accepted dispersal methods <sup>1</sup>	Confirm suitability and timeframe of interim relocation sites	Implement new dispersal method	Change final relocation destination
The Relocation Supervisor	✓	✗	✗	✗
Project Manager	-	✓	✗	✗
Suitably Qualified Person	✓	-	✗	✗
DES	-	-	✓	✗
DoEE	-	✓	✓	✓

✓ Authorised to undertake.

✗ Not authorised to undertake.

- Denotes that authority level is not required.

<sup>1</sup> In accordance with DoE (2015) and DES (2013), accepted dispersal methods include use of smoke, noise, light, water (*ie* foggers), BirdFrite (Long Range Acoustic Device) and 'scarecrow' type devices.

<sup>18</sup> The relocation action is to be rescheduled to occur when no dependant pups can be detected by a suitably qualified person(s) at the current site of the Cairns City FF colony.

### 3.6.7 Risk management

Risk of environmental harm is minimised through a combination of measures, as follows.

- Relocation site selection.
- Deterrence and relocation methods will be undertaken under the direction of a suitably qualified person(s), ensuring the relevant statutory controls will be applied by practitioners with appropriate skills and experience.
- CRC work procedures will be adopted, and modified as relevant, for the proposed action. These procedures include *CRC Flying-fox Colony Management Policy*, *CRC Flying Fox Assessment Matrix*, and *Site Specific Job Safety Analysis (Appendix G)*.
- Application of site-specific deterrence methods that are permissible, the cost of which are known and have been accommodated in CRC budgets, and proven to be effective.
- Application of a relocation method used in other locales.
- Stakeholder consultation program.
- Publicly available reporting.
- Complaints register.
- Change management mechanism.
- Contingency planning.

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Appendix A:  
NRA Cairns Library Spectacled  
Flying-fox Abundance Estimates

Date	Site	SFF estimate	File path
30/11/2017	Library	4200	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\171130_KL_Field notes_Lib Maintenance\KL_Field notes_171130.pdf
25/01/2017	Library	13430	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\9. KL_field notes_170125.docx
23/02/2017	Library	400	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\12. DM_field notes_170223.pdf
9/03/2017	Library	14000	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170309_KL_field_notes_Lib Maintenance\KL Field notes 170309.pdf
23/03/2017	Library	6900	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170323_KL_Field notes_Lib Maintenacne\KL Field notes 170323.pdf
29/06/2017	Library	4700	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170629_KL_field notes_Lib Maintencance.pdf
6/07/2017	Library	8500	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170706_KL_Field notes_Lib Maintenance.pdf
11/07/2017	Library	2150	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170724_DM_field notes_Library tree pruning.pdf
13/07/2017	Library	2150	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170724_DM_field notes_Library tree pruning.pdf
17/07/2017	Library	1420	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170724_DM_field notes_Library tree pruning.pdf
19/07/2017	Library	2350	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170724_DM_field notes_Library tree pruning.pdf
24/07/2017	Library	1850	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170724_DM_field notes_Library tree pruning.pdf
28/07/2017	Library	970	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170728_KL_field notes_Library tree pruning.pdf
3/08/2017	Library	1000	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\170803_KL field notes_Lib Maintenance.pdf
14/12/2017	Library	1650	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\171214_KL Field Notes_Lib Maintenance\171214_KL Field notes_Lib Maintenance.pdf
4/01/2018	Library	1650	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180104_KL Field Notes_Lib Maintenance.pdf
11/01/2018	Library	1700	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180111_KL_Field Notes_Lib Maintenance\180111_KL_Field Notes_Lib Maintenance.pdf
18/01/2018	Library	2800	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180118_KL Field notes_Lib Maintenance\180118_KL Field notes_Lib Maintenance.pdf
8/02/2018	Library	2870	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180208_KL&LP Field Notes_Lib Maintenance and Tree Pruning\180208_KL&LP Field Notes_Lib Maintenance and Tree Pruning.pdf
15/03/2018	Library	2720	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180305_LP_field_notes.pdf
22/03/2018	Library	5000	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\182203_LP_field_notes.pdf
14/05/2018	Library	1300	F:\AAA\154_CRC\154037_Tree Removal at Library\Data\180514_site_notes.pdf
28/06/2018	Library	1970	F:\AAA\154_CRC\154037_Tree Removal at Library\Data\180628_Field notes tree plant_WL.pdf
28/08/2018	Library	380	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180928 MG field notes.pdf
8/03/2019	Library	3000	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180308 LP Field Notes Lib Maintenance\180308 LP Field Notes Lib Maintenance1.pdf
15/03/2019	Library	3100	F:\AAA\154_CRC\154025-Ecol Services SFF\data\Field notes\180315 LP Field Notes Lib Maintenance\180315 LP Field Notes Lib Maintenance.pdf
	<b>Maximum</b>	14000	
	<b>Minimum</b>	380	
	<b>Mean</b>	3545	
	<b>Standard deviation</b>	3537	

Appendix B:  
CRC Arborist Report on Golden  
Penda at Cairns Library



# Vegetation Removal/Retention Assessment

**Completed on**  
21/12/18, 8:51 am








**Assessor:**  
Chris Keatley

**Role:**  
Central Works Arborist

**Conducted:**  
21/12/18

**Location:**  
Cairns Library Abbott St Cairns

## Assessment Details

Question	Response	Details
<b>ASSESSMENT DETAILS</b>		
Assessment as per Admin Instruction 02:03:09 - Dealing with vegetation matters on Council Controlled Land This decision tool must only be used once a condition assessment of the vegetation has been completed! All vegetation is to be retained unless meeting the removal criteria.		
Vegetation Ownership	Cairns Regional Council	
Vegetation Management Responsibility	Cairns Regional Council	
Reason for Assessment	Request	
Requested by:	Management	
Description:	D Parsons requesting updated assessment.	
Photos:		
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Appendix 1</p> </div> <div style="text-align: center;">  <p>Appendix 2</p> </div> <div style="text-align: center;">  <p>Appendix 3</p> </div> <div style="text-align: center;">  <p>Appendix 4</p> </div> <div style="text-align: center;">  <p>Appendix 5</p> </div> <div style="text-align: center;">  <p>Appendix 6</p> </div> </div> <div style="margin-top: 10px; text-align: center;">  <p>Appendix 7</p> </div>		
<b>TREE 1</b>		
Genus/Species/Common Name	Xanthostemon chrysanthus (F.Muell.) Benth. Golden Penda	
Photo of relevant vegetation		
D: Is the vegetation dangerous?	Yes	
Reason for classification:	D2: Severely damaged or structurally defective with a high potential of failure	

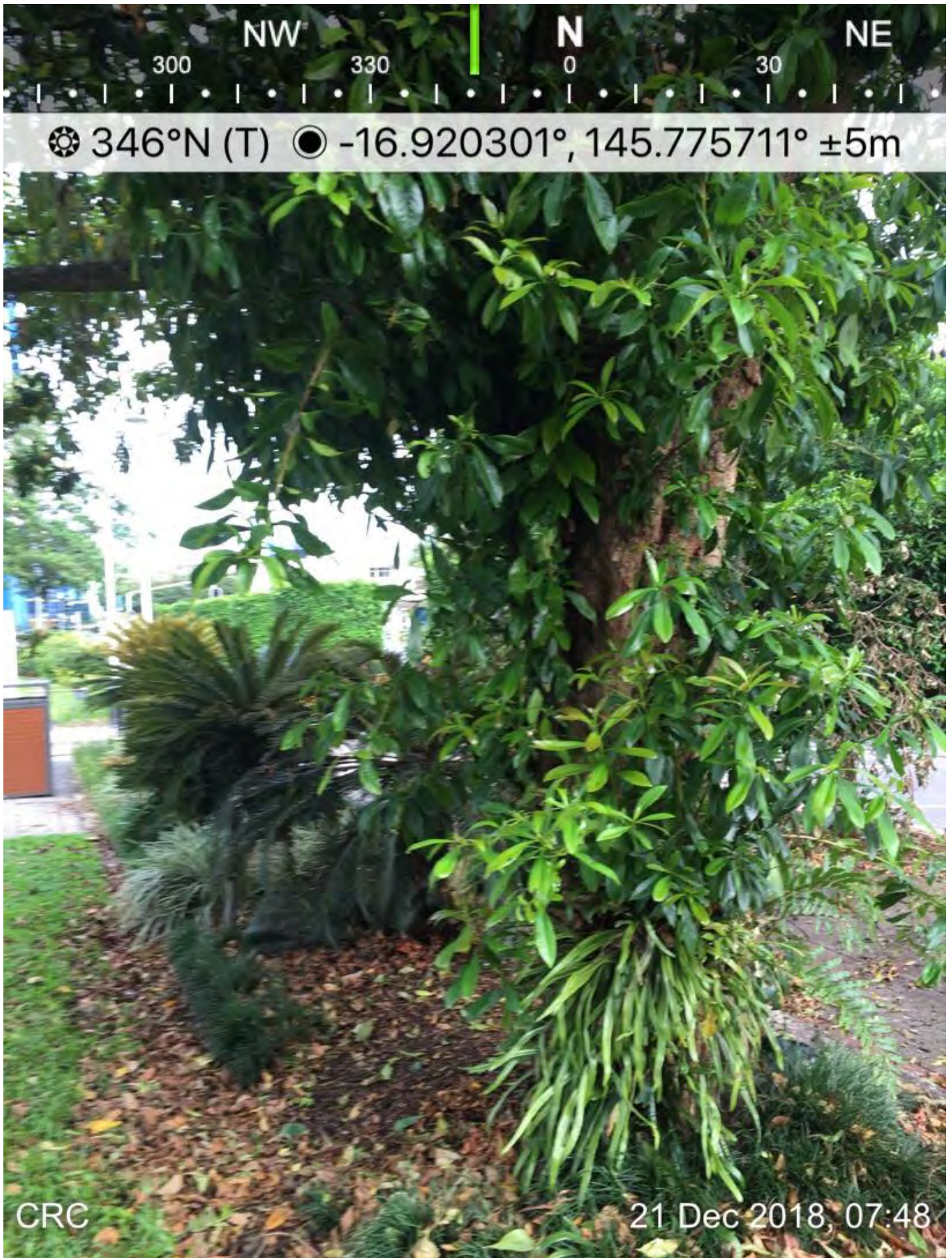


Obtain management advice or contact Council's Arborist or Environmental officer, as needed.	
Can remedial work be done to solve the issue?	No
<p>~ Where a decision is made to remove vegetation, prior to removal, contact the relevant Councillor and advise accordingly.</p> <p>~ If the assessment relates to a request for removal, follow the Councillor Consultation Process at the end of this assessment.</p> <p>~ Remove the vegetation in consideration of the relevant permits/permissions required, along with appropriate public consultation/notification.</p> <p>~ Carry out replacement plantings as required.</p>	
Comments/Discussion	The Tree's mortality spiral has progressed predisposing it to further mechanical failure. Symplast and apoplast pathways (translocation of water and nutrients utilised for transpiration, photosynthesis and respiration) have decreased in their functionality, apparent by adaptive traumatic reiteration ( growth of previously suppressed latent buds on the main stem) which will lead to further collapse of scaffold limbs.
Recommended Actions:	Remove tree.

## Councillor Consultation Process

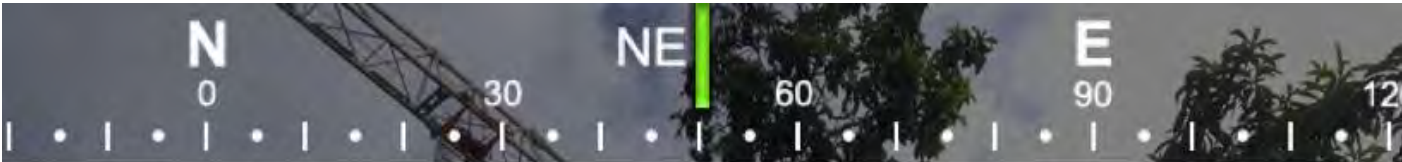
Question	Response	Details
Where the removal of the vegetation is proposed, forward the assessment report to the relevant Councillor for assessment.		
Show Flow Chart ?		
Relevant Councillor	D5 - Cr Richie Bates	
Date forwarded to Councillor.		
Councillor agreement with assessment (Please sign):		
<p>Councillor disagreement with assessment outcome:</p> <p>Reasons for disagreeing:</p> <p>Proposed alternative:</p>		
<p>Final instruction to action officer, from Branch Manager:</p> <p>Instruction:</p> <p>Date:</p> <p>Signature:</p> <p>Name:</p> <p>Designation:</p>		

# Media



Appendix 1





51°NE (T) -16.920315°, 145.775726° ±10m



CRC

21 Dec 2018, 07:49

Appendix 2





Appendix 3



SW 240 W 270 NW 330 N 0

☀ 294°NW (T) 📍 -16.920301°, 145.775726° ±5m



Appendix 4





☀ 73°E (T) ☉ -16.920279°, 145.775635° ±5m



CRC

21 Dec 2018, 07:51

Appendix 5





📶 239°SW (T) 📍 -16.920212°, 145.775894° ±5m

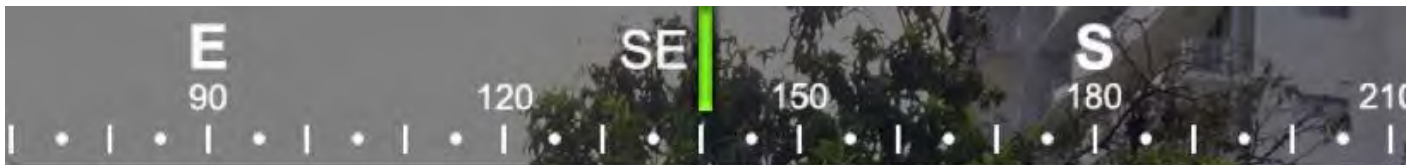


CRC

21 Dec 2018, 07:52

Appendix 6





☀ 141°SE (T) ● -16.920160°, 145.775681° ±5m



CRC

21 Dec 2018, 07:48

Appendix 7



Appendix C:  
CRC SFF Mortality Data and  
Summary Report

Cairns Library Mortality Data 2014-2018

Bats and Trees Society of Cairns Inc.  
Summary Report 2014-2019

Cairns Library Mortality Data  
2014-2018

Combined stats for 2014/15 bat birthing season:					from H's updates					
date	DOA #	live #	baby? adult?	Lib/tree5/Oasis/Vac/L/Median?	Notes:	Gaby's	DOA ft, premmie	c.p.+ euth	live - care	Others
Sept 27th							30	5	1	
sept 29th							1	2		plus 1 adult doa
Sept 30th								2		healthy: 1 PD, 1 Tol, 1 Freshw.
Oct 1st:										1 injured w/ R/Wild
Oct 2nd							4	1		1 Kur, 1 Carvon.
Oct 4th:							3	1		1 healthy PD
Oct 5th:								1		2 cp Tol
on Oct 5th, 7th:										says 70 total library; 25+ cp's but only get 50 total + 11cp above
Oct 6th:										1 cp Tol + 1 healthy Tol
Oct 9th							2	4	2	plus 1 healthy McLeod; 1 doa adult; 2 doa adults TrinB + 1 healthy baby;
Oct 11th										5 cp Tol; 2 cp Paron;
Oct 12th							1	4		1 severe malformations - vet didn't preserve
Oct 13th							1	3		1 Whitf. cp
Oct 13th:										says summary: 52 dead; 22 cp; 8 healthy (above: 42 / 23 / 3)
Oct 16th							3		1	
Oct 21st:							2	1	3	plus 1 cp Clifton; doa adult
Oct 22nd							2		1	"several" dead (no #); doa adult, 1 adult Gord. doa
							49	24	8	
Oct 4th	1									
Oct 10th	1				fig #2					powder on body
Oct 14th:	1				Vac					
Nov 3rd	1				1 Vac					
Nov 4th	3				1 Pre, B					
Nov 7th	1				2 Oas, 1 Lib					
Nov 13th	9				1 Med					
Nov 14th	2				5 Vac, 2 Med					2 babies tangled together died
Nov 15th	11				1 Vac, 1 tree5					
Nov 20th	1									A w/ baby run over by car Abbott
Nov 21st	3				1 A rest B					
Nov 24th	3				B					
Nov 26th	3				1 O, 1 Vac?, 1 Lib					
Nov 27th	4				B					
Nov 28th	3				B					
Nov 29th	2				B					
Dec 1st	7	1			B					
					1 Lib, 2 Oas, 1 Vac, 3 Med					
Dec 3rd	21									* Med: a very small dead baby found under a lg baby or very small adult; * Vac: 12 dead were counted but only 1 could be pulled thru fence - this reflected the fact that the hotel wouldn't let anybody in from the prev Sat
Dec 5th	13				2 Lib, 4 Med, 2 Oas, 1 tree5, rest Vac					
Dec 6th					6 Vac, 3 Oas, 1 Med		8 dead (4 tree5)			cleared all dead from Vac
Dec 8th	8				2 tree5, 1 Lib, 3 Vac, 1 med, 1 Aq		2 live, 5 dead			severe Tstorm 8th; Jamie said "LOTS of dead" but nobody else knows - did H collect and not record???
Dec 11th	1	1			2 Vac, 2 Aq, 3 Lib, 2 Oasis, 1 inter.		7 dead			2 live (Jamie) intersection of Apln and Abbott
Dec 12th	12				2 roadk, 2 med, 1 tree5, 5 Aq, 2 other					w/ Gaby, M
Dec 13th	7				1 Aq, 3 Lib, 1 med, 1 tree5		4 live, 3 dead			there were at least 5 in Vac but started raining so didn't collect
Dec 14th					1 Lib, 6 med		3 live, 7 dead			
Dec 15th:	4				2 Aq, 2 med					
Dec 19th:	12									Chonie's finds in this column below
Dec 19th:	10				vacant lot only					most long dead
Dec 27th:	18				4 med, 2 Aq, 3 tree5, 1 lib vac 9, Aq 4, tree5 1, lib 3, Oas 1					
late Dec:							3 live (1 died), 2 dead			
Jan 2nd:	5	1			3 Vac, 1 med, 1 Oasis		7 dead			baby collected by Chonie
Jan 6th:	3				1 Vac, 1 med, 1 library		4 dead			
Jan 9th:	2				1 tree5, 1 library					didn't finish patrol - needed to rush to vet and also get baby TS pigeon to WR
Jan 19th:	2				2 Vac					
mid Jan:							1 dead			on fence vacant lot
mid/end Jan:							3 dead (1 Apl, 2 Oas)			
Jan 31st:	2				1 tree5, 1 other					1 road kill down the Esp. end of Apln
Jan 31st:							2 live			
Feb 20th:										1 live A - Lib
Feb 24th:							2 dead A - bigfig1			
Feb 25th:							1 dead B - Lib			
Feb 27th:							1 dead/ 2 live B - Oas bottlebr			both babies died in care
Feb 28th:	6	2			1 Lib, 2 Aq, 3 Oasis, ?					
March 2nd	3				2 A, 1B					collected 2 adults
March 3rd:					1 Lake, 1 med, ?					
March 3rd:							1 dead A Oas, 1 dead A Aq			
March 6th:	3	1			3 Oasis, 1 Apln					live one escaped before rescue but retrieved next day
March 7th:	1				1 oasis					via Choie to Annabelle for PM (bruising on puma)
March 8th:	5	1			3 Lib, 2 Oas, 1 med					live one treated but was DOA when Connie arrived home
march 27th:	4				1 oas, 1tree5, 2 med/Lake					collected tree5 - elec?
sub totals	198	7								
Gaby: 47 dead; 14 live										
Hannah: 49 dead; 24 cp; 8 healthy (up to Oct 22nd)										
Deborah: 198 dead; 7 rescued										
Chonie: 6 dead; 3 live										
WHAT IS MISSING FROM THIS SPREADSHEET ARE THE LIVE ONES RESCUED BETWEEN Oct 22nd and the end of the season										
What is also missing are the cleft palates found since Oct 22nd (which word of mouth says was one a week since, on average - right up into mid January)										
total dead accounted for: 300 minimum										
total rescued: 40 (as of Jan 31st + 6 in Feb/Mar, Hannah says 110 up to mid Jan)										
cleft p's: 24 (as of Oct 22nd plus 1 per wk avg since so est. 44 total)										
300 + 110 + 6 + 44 = 460 approx total (plus more dead that couldn't be found in bushes)										

## 2015/16 bat birthing season Cairns CBD colony

date	who found	Qty Ad	Qty Ba/Juv	Qty fetus	D / live?	location	forearm	body condition	transferred to	comments
Aug 25th	DP			1	D	big fig #2	X	very small	cfh-2015-48	
Aug 25th	DP			1	D	big fig #1			cfh-2015-49	
Aug 26th	DP			1	D	big fig #2	47m	not far off full term	cfh-2015-52	
Aug 27th	DP, Megan	1			D	big fig #3	182m	on back under branches, freshly dead female	cfh-2015-51	
Aug 27th	Chonie			1	D	big fig #3	X	full term aborted	?	
Aug 30th	Gaby	1			D	big fig #2		female; not fresh and tangled in roots	left there	tick?
Aug 31st	Phil	1			D	big fig #3		male	buried	
Sept 1st	DP			1	D	under fig, vac lot - abbott			cfh-2015-53	
Sept 2nd	Maree, DP	1			D	big fig #2	173m	male died after 2:30p - found 6:00p; green ants, sharp white teeth	buried	est. weight 700g; no evidence of elec, ticks
Sept 6th	Gaby	1			D	big fig #1		adult Little Red	left there	bats vacated colony on Thurs due to smoke which has continued. 150 reds on Friday. None on Sunday when this bat found.
Sept 8th	DP		1		D	in hedges, under figs median strip, Abbott St	42mm	Dessicated when found but died in the position of trying to suck on its forearm	CFH-2015-60	full term, but very small. Poss alive when fallen to ground but dead when found. probably fell on Thurs when SFF last in the colony but missed on subsequent patrols
Sept 10th	Jess	1	1		D	big fig #1		ad was Little Red; baby speccie dessicated	buried	
Sept 10th								colony cleared out due to smoke from fire across inlet		
Sept 23rd	Diane		2		D	big fig #1		no details - Ad? baby?	left there	bats were present for one day only
Oct 3rd								bats finally returned to the colony today		
Oct 5th	Sam	1			D	by library		left there for collection	who took?	
Oct 6th	DP	1			D	under big fig 3	65m	curled up on side	CFH-2015-66	kept because wings looked funny
Oct 7th	Sam			1	D	big fig #3		died right after finding	who took?	
Oct 7th	Chonie			1	D	somewhere in colony		died after it got home	Chonie	
Oct 8th								council mowed today		
Oct 8th	Chonie			1	D	tree no 5			buried	
Oct 8th	Sam	1	1		D	under tree 5			who took?	
Oct 8th	MCW	1			L	baby fig T3		very young; on footpath	to Connie	umbilical still attached; special care
Oct 8th	MCW	1			D	under T5		seen but not checked	buried	by Gaby and Chonie
Oct 9th	DP	1			D	median st Abbott		hit by car? hole in abdomen	buried	
Oct 12th	MCW	1			L	under median st Abbott	80m		to Adele	
Oct 12th	DP	1			D	under tree 5	89m	trying to crawl	CFH-	very limp and only just died; mum screamed for hours
Oct 13th	Jess	1			D	fig in vacant lot		about 3wks old	buried?	
Oct 15th	MCW	1			L	between T2 and T3	90m	male rescued with pole - 137g	to Jess	
Oct 15th	MCW	1			L	big fig 2	88m	female - 125g	to Jess	
Oct 15th	Adele	1			L	fig in vacant lot			Adele has	
Oct 16th	Sam	1			L	courthouse		adele will fetch		
Oct 16th	MCW	1			D	median str Abbott		bacterial abscess on chest?	CFH-2015-	back to DP for lab work
Oct 16th	MCW, DP	1			D	fig in vacant lot	86m	body completely floppy; broken neck?	CFH-2015-	
Oct 16th	DP, MCW	1			L	fig in vacant lot		alone 24 hrs in tree; Jess gave IP	Jess has in care	
Oct 17th	MCW	1			L	big fig 2		pole rescue	Jess?	
Oct 18th	Jess	1			L	big fig #3		on ground	to Sharlene	
Oct 18th	MCW	1			L	big fig #3	80m	female on trunk of tree	to Connie	
Oct 18th	MCW	1			D	fig in vacant lot	83-86	male; blood in mouth	Connie took	
Oct 19th	MCW	1			L	big fig #1	98m	140g, male clinging to ground shrub	to Jess	
Oct 19th	Jess	1	1		D	in Abbott street		flattened in middle of street	buried	
Oct 20th	MCW	1			D	fig in vacant lot	91m	footpath close to fence; no cleft p	buried	
Oct 21st	MCW	1			D	next to vacant lot	84m	died while hanging in branch, no cleft	buried	
Oct 21st	?	1			D			one double counted plus new one?		
Oct 22nd	Adele	1			L	penda front of library		male; bubbles out of nose	Jess	
Oct 22nd	Jamie	1			L	Abbott behind novotel	94m	male; treated by MC vet	to Adele	
Oct 22nd								council mowed grass today		
Oct 23rd	MCW	1			D	under tree 5	92m	no cleft	buried	
Oct 23rd	MCW	1	1		D	big fig #1	53m	aborted foetus	buried	
Oct 23rd	MCW	1			L	tree no 5		pole rescue, IP, female	Jess	
Oct 24th								spring arrived today - temps now over 31 and has been bone dry for two weeks+		
Oct 24th	MCW	1			D	tree no 1	92m	thin female, no cleft	buried	
Oct 24th	MCW	1			D	median str Abbott		fallen out of tree, run over on road	buried	
Oct 26th	MCW, DP	1			D	tree no 5	95m	dead about a day, thin		
Oct 25th	MCW	1			L	median str Abbott	91m	boy, thin	to Brigitta	
Oct 26th	MCW	1			L	tree no 5	5w	male	to Jess	
Oct 26th	MCW	1			L	tree no 5	5w	female	to Pam	
Oct 26th	MCW	1			L	tree no 5	4w	male; mouth injury, died o/n	to Pam	
Oct 26th	DP, Heath	1			D	tree no 5	100m	alopecia, scabs all over	CFH-2015-71	
Oct 26th	MCW	1			D	tree no 5	106m	healthy, no cleft, male	buried	
Oct 26th	MCW	1			D	tree no 5		sprawled over branch high up	still in tree	
Oct 26th	MCW	1			D	tree no 5	93m	male, skinny, no cleft	buried	
Oct 26th	MCW	1			D	big fig 3	101m	female, no cleft	buried	
Oct 26th	mcw, dp	1			D	tree no 5	95-100	thin; fell since earlier patrol	buried	
Oct 26th	MCW, DP	1			D	tree no 5	95+m	dead a day but fell within hour	buried	
Oct 26th	MCW, DP	1			D	tree no 5		hanging in branch high up	still in tree	
Oct 26th	MCW, DP	1			D	big fig 1		hanging in branch high up	still in tree	
Oct 27th	MCW, Jess	1			L	big fig 1	96m	female, pole rescue, noisy!	to Jess	
Oct 27th	Sam	1			D	big fig 2		sprawled over branch high up	still in tree	
Oct 27th	MCW	1			L	median str Abbott	6w	boy, thin	to Jess	
Oct 27th	MCW	1			L, then D	median str Abbott		died in care; dead green ants attached	Jess buried	
Oct 27th	MCW	1			D	big fig 3	92m	emaciated	buried	
Oct 28th	MCW	1			D	big fig 1 footpath	89m	no cleft, exposed skull, skinny, male	buried	vacant lot grass cut today
Oct 28th	MCW	1			D	T2 footpath next to library	101m	skinny female	buried	
Oct 28th	MCW, Adel	1			L	fig in vacant lot	100m	pole rescue, female	Adele took	
Oct 28th	MCW, Adel	1			L	fig in vacant lot	112m	pole rescue	to Sera	
Oct 29th	MCW	1			L	under tree 3	106m	female	to Brigitta	
Oct 29th	Jamie	1			D	median str Abbott	98m	freshly dead fem, emaciated	buried	
Oct 29th	DP	1			D	tree no 5	92m	dead in tree before falling, emaciated	buried	
Oct 30th	MCW	1			L	median str Abbott	112m	female	to Vicki	
Oct 30th	Sam	1			L	library lawn near T1		dead in tree before falling	disappeared	
Oct 30th	MCW	1			L	median str Abbott	95m	female, very weak	to Vicki	
Oct 31st	DP	1			D	vacant lot near fig	115m	female, died on ground, on back w/ wings open	collected	
Nov 1st	Gaby	1			L	big fig #2	91m	male, thin, pole rescue	event to Connie	
Nov 2nd	Sam	1			L	tree no 5		no details provided	to Renee	
Nov 3rd	MCW	1			D	big fig #3	113m	female, emaciated	buried	
Nov 3rd	MCW	1			D	tree no 5	103m	male, skinny, grass	buried	
Nov 3rd	MCW	1			L	big fig #1	116m	male, low branch	Vicki	
Nov 3rd	MCW	1			L	big fig #2	91m	male, underweight	Vicki	
Nov 3rd	MCW	1			L	tree no 5	101m	male, 158g, pole rescue	Vicki	
Nov 3rd	mcw, sam	1			L	big fig #3	98m	male, pole rescue	to Pam, then Sera	
Nov 3rd	mcw, sam	1			L	median str Abbott	98m	male, pole rescue	to Pam, then Sera	
Nov 3rd	mcw	1			D	big fig #3		crushed, too damaged to get stats	buried	
Nov 4th	MC	2			L	big fig #3		no details provided	1 to Adele, 1 to mcw	
Nov 4th	Sam, MCW	1			L			male	to Heather	
Nov 4th	mcw	1			D	tree no 5	99m	female skinny	buried	

Nov 4th	mcw		1		D	big fig #2	95m	female, skinny	buried
Nov 4th	mcw		1		D	big fig #2	109m	female; perfectly health - why died?	buried
Nov 4th	sam		1		D	big fig #3		on back, thin	buried
Nov 4th	chonie		1	1	D	big fig 3		male 100m+ and foetus	buried
Nov 5th								council mowed grass today	
Nov 5th	Sam, DP			1	D	big fig #2	X 64m	umbilical attached, on back	collected
Nov 5th	DP		1		D	tree no 5	106m	on back, lots of holes in wings, splayed	collected
Nov 5th	jamie		1		D	big fig 1		on back, skinny	buried
Nov 6th	jamie		1		L, then D	vacant lot near fig	100m	on back, good weight, stringy white saliva, breathing difficulties, died straight awy	to Dot
Nov 7th	jamie			1	L, then D			male, placenta, umbilical attached, removed by vet	to Julie
Nov 7th	jamie		1		L			male	Julie?
Nov 8th	gaby		1		D	road in Abbott		crushed on road	buried
Nov 8th	Jess		1		L	big fig #3	107m	Female, 156grams	?
Nov 8th	Jess		1		L	tree no 5			
Nov 8th	Jess			1	L	T1	X 53m	malformed	
Nov 8th	Jess		1		D	big fig #3	113m	Female; 189grams, crushed head	CFH-2015-
Nov 8th	Jess		1		D	big fig #3	116m	Female; 181g; gash on shoulder	CFH-2015-
Nov 8th	Jess		1		D	big fig #3	113m	Female, 145grams	buried?
Nov 8th	Jess		1		D	big fig #3	105m	Male, 165grams, crushed head	
Nov 8th	Jess		1		D	big fig #3	110m	Male, 121grams	buried?
Nov 8th	Jess		1		D	big fig #3	114m	Male, 126grams	buried?
Nov 8th	Jess		1		D	big fig #3	112m	Male, 183grams, crushed head	CFH-2015-
Nov 8th	gaby	1			D	footpath, aplin & lake		skinny	left under T3
Nov 9th								footpaths being pressure cleaned today	
Nov 9th	MC		4		L			no details provided!	sharlene took
Nov 10th	chonie		1		D	tree no 5	110m	male	buried
Nov 10th	sam		1		D	med st abbott		at base of trunk w/ green ants	buried
Nov 10th	mcw		1		L	big fig 1		pole rescue	to Julie
Nov 11th									
Nov 12th	mcw		1		D	mango Lake St	100m+-	male, underweight	buried
Nov 12th	mcw		1		L	tree no 5	110m+-	male pole rescue	to Adele
Nov 12th	mcw		1		L	T1	90+-	male, on ground	cto Adele
Nov 12th	MC		1		L	??	110+-	female on ground, dead green ants on it!	to adele
Nov 12th	mcw			1		tree no 5			buried
Nov 12th	mcw		1		D	shrubs in front library		headless	buried
Nov 17th	sam		1		L	?		male	to Renee
Nov 17th	mcw		1		D	vacant lot	110+-	thin female	buried
Nov 17th	mcw		1		D	med st abbott		flattened on road	buried
Nov 17th	mcw		1		L	vacant lot abbott side		male	who took?
Nov 17th	mcw		1		L	med st abbott	7wks?	pole rescue, female	who took?
Nov 17th	adele		1		D	footpath, big fig 3		long dead	buried
Nov 19th	gaby		2		D	mango Lake St			buried
Nov 19th	adele		2		D	?	5wks?	both fem and starved	buried
Nov 19th	mcw		1		D	vacant lot Lake side			buried
Nov 20th	mcw		1		L	med st abbott	7wks?	male	to MCW for trans
Nov 20th	heather		1		D	mango Lake St		fem, crawling but died	buried
Nov 20th	Adele	1			D	big fig 3		skinny adult	buried
Nov 20th	mcw		1		D	xanthostemon library			buried
Nov 20th	mcw		1		L		9wks?	male	Jamie -> Adele
Nov 20th	mcw		1		L	Aplin on machinery	7wks?	male	who took?
Nov 21st	mcw		1		L	med st abbott	8wks?	pole rescue thin male	who took?
Nov 21st	mcs		1		L	big fig 3	2wks?	fem, thin	
Dec 1st	dp		1		D	med st abbott		flattened on road	buried
Dec 1st	dp		1		D	Novotel driveway	120+-	face down, dead awhile	buried
Dec 1st	dp		1		D	big fig 1	110+-	slaters eating wings	buried
Dec 1st	vicki		1		D	big fig 3			buried
Dec 1st	vicki		2		D	xanthostemon library			buried
Dec 1st	dp		1		D	vacant lot abbott side	114m	dead couple days	buried
Dec 1st	vicki		4		D	tree no 5			buried
Dec 2nd	sam		1		L	not provided			to Sharlene
Dec 3rd	vicki		1		L	xanthostemon library			Vicki took?
Dec 3rd	vicki		1		L	med st abbott			Vicki took?
Dec 12th	dp		1		D	vacant lot Lake side			buried
Dec 12th	dp		5		D	under mango, Lake st			buried
Dec 12th	dp		1		D	vacant lot Abbott side			buried
Dec 12th	dp		2		D	med st abbott		under shrubs, 1 flattened in road	buried
Dec 12th	dp		1		D	big fig 1		hanging in shrub	buried
Dec 12th	dp		1		D	big fig 1		face down, powder on face?	buried
Dec 12th	dp		1		D	big fig 1	126m	hanging on tree trunk	buried
Dec 12th	dp		1		D	big fig 1	130m	hanging in tree roots	buried
Dec 12th	dp	1 Lred			D	big fig 3			buried
Dec 12th	dp		2		D	big fig 2		long dead	buried
Dec 12th	dp		1		D	big fig 2	122m	on back; spat up something	CFH-2015-77
Dec 12th	dp		1		D	tree no 5		parts of a baby	buried
Dec 12th	dp		3		D	big fig 3		all same size	buried
Dec 12th	dp		1		D	fem, med st Abbott	139m	dead today	buried
Dec 12th	dp		1		D	ixora, med st abbott	125m	head smashed in, crawled into shrub and died, emaciated	buried
Dec 18th	mcw, dp		1		L	vacant lot Abbott side		broken wing - needs euth	to vet for E
Dec 18th	mcw, dp		1		D	vacant lot Abbott side		long dead	buried
Dec 18th	mcw, dp		1		D	big fig 1		dead couple days	buried
Jan 2nd, 16	dp		1		D	med st Abbott		flattened on road	buried
Jan 2nd, 16	dp		2		D	big fig 2	140+-	dead too long	buried
Jan 2nd, 16	dp		1		D	tree no 5	145m	looked perfectly normal - why dead?	buried
TOTALS		9	168	15					

Others:  
Oct 28th 1 dead baby male - green ants died instantly after biting into wings, found Murray St park, collected and sent to Dot for PM  
Oct 26th 1 dead adult male speccie on power lines Mann St Edmonton  
early Oct dead LR adult on Bruce Hwy near Robert Road intersection  
Oct 29th Murray St - aborted foetus (old)  
Oct 29th Murray St - dead adult (old) still hanging on aerial roots of fig tree, male, fa. 160mm - residents reports 3 dead adults and 5 or 6 dead babies in past week

2016/17 bat birthing season Cairns CBD colony							
date	Library live at rescue Total	Library DOA Total	Size	Sex	location	Fate <sup>D</sup> (ied) x d(ays),w(ee ks)	comments
8 - 10 Sept 2016		2	prem -miscarriage	F	Library	DOA	
8 - 10 Sept 2016		1	prem	f	Library	died	
8 - 10 Sept 2016	1		prem	f	Library	died (<1week)	
15-Sep-16	1		Adult	F	Library	DOA	pregnant?
15-Sep-16		3	prem -miscarriage	f	Library	DOA	
15-Sep-16		2	prem -miscarriage	f	Library	DOA	
16-Sep-16		3		f	Library		one had been there for a while
16-Sep-16	1		prem	f	Library		
18-Sep-16		1		f	Library		
22-Sep-16	1		prem		Library		
22-Sep-16		1	prem		Library		
23-Sep-16		1			library (lawn)		
22-Sep-16		1	prem		library (lawn)		
23-Sep-16	1				Library	died	2nd pup died 22 Sep
27-Sep-16	1				Library	died	pup died 23 Sep - possibly Kewarra pup
29-Sep-16		1	prem		T5		
30-Sep-16		1	prem		Library Aplin St		
02-Oct-16		1			Library		increase in ppulation obseved morning 30 Sep
02-Oct-16		1	prem		Library		
02-Oct-16	1		prem	M	nr T1 on path nr library	D24	MOP climbing T3 disturbing ff
04-Oct-16		1	prem		Library		
05-Oct-16			prem		T5		
06-Oct-16		1			nr T3		
07-Oct-16		1	furred		Library		
07-Oct-16		1	prem		T5		
09-Oct-16		1	prem		T5		buried on site
09-Oct-16	1	1	few days old	F	Library		
10-Oct-16		1			Library		
10-Oct-16	1		newborn	M	Abbott/Aplin Lib	died	
11-Oct-16		1	SA	M	T2		Bats now back in Penda and Fig on vacant lot.
11-Oct-16	1		pup	M	Mondo grass lib Abbot St	euth	
13-Oct-16	1		Adult		Aplin St Library		
14-Oct-16	1		prem		Library		
16-Oct-16	1		pup	M	library	died	
16-Oct-16	1		pup		library	died	
17-Oct-16		2	prem		T1		
17-Oct-16	2		pup	M/F	library	died (boy)	Autopsies for ones that died with these difficulties breathing and swallowing
17-Oct-16	1		newborn	M	lib		babies heard T1 and T5
18-Oct-16	1		pup	M	T5	euth	
19-Oct-16		1	prem	F	T1/T2		
19-Oct-16	1		1-2 days	M	lib	died	fell down in front of Sharlene
20-Oct-16		1	newborn	M	lib		
20-Oct-16	1		newborn	M	Lib	died	
21-Oct-16		1	1-2 days	F	Penda		
21-Oct-16		2	pup		Road / T3		
21-Oct-16		1	pup		T3		
21-Oct-16		1	pup		T3		
21-Oct-16	1		newborn	M	T3		
21-Oct-16	1		small pup		lib		
22-Oct-16	1		pup		lib	died	Two more pups in trees heard but couldn't find
23-Oct-16		2	prem		T1		



2016/17 bat birthing season Cairns CBD colony						
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23-Oct-16	1	2	2 prem / 1 pup		T1	
23-Oct-16		1	prem		T1	One pup calling T1
24-Oct-16	2	1	pup	M	T1	
24-Oct-16	1	1	1 prem/ 1 small pup		lib	live pup furred, small and a screamer
25-Oct-16		1	older pup		T1	refrigerated
25-Oct-17	1		pup		lib	Taken to Boongarry vet. Received fluids. Maggots removed.
26-Oct-17		1	pup		T5	
28-Oct-16	1	1	1 adult and pup		Lib	dead female for autopsy. Pup taken to BatReach by Julie
29-Oct-16	2		pup		Lib	Very sick bat to BatReach
29-Oct-16	1		pup	F	Lib	Named Daisy
29-Oct-16	1		prem		Lib	
30-Oct-16		1	pup		T1	dead
31-Oct-16	1		pup	M	lib	covered and tangled in roots
01-Nov-17	1		pup		lib	Abandoned pup T1 not rescued
01-Nov-16			pup		lib	Reunited with mum
02-Nov-16	1		pup	M	lib	died Taken to vet
02-Nov-16		2	pup		lib	dead
03-Nov-16	1		pup	M	Driveway library	care Named Bruce
04-Nov-16	1		pup		lib	
05-Nov-16	1	1	pup		lib	1 euth.
05-Nov-16	2		pup		lib	1 x died
06-Nov-16	1		juv		Penda	Suspected Pole rescue but vrying last season's juv. Not baby
06-Nov-16	3		pup		lib	Transported by Kim to Annie in Port
06-Nov-16		2	pup		T1, T5	
07-Nov-16		1	pup	F	T3	died
08-Nov-16	6		pup		lib	Third pup put back in tree for mum which was calling
09-Nov-16	2		pup	M	lib	Another pup in T3 but can fly.
09-Nov-16	8		pup		lib	
10-Nov-16	1		pup		lib	
10-Nov-16	8		pup		lib	
10-Nov-16			Adult		lib	
11-Nov-16		5	pup		lib	
12-Nov-16	1		pup		T2/T3	
12-Nov-16	4		pup		lib	
12-Nov-16	1	2	pup		lib	
13-Nov-16	1		pup	M	lib	
13-Nov-16	5	2	pup		Abbot St, T5, T3	1 x euth
14-Nov-16		3	pup		lib	
14-Nov-16	4		pup		lib	
14-Nov-16	2		1 x Adult with baby		Vacant block, fig tree	
15-Nov-16	1	3	pup		Lib	
15-Nov-16	5	10	pup		T3 footpath tree, Lib unspecified	Most dead pups new, not there a long time
16-Nov-16	1		pup	M	lib	
16-Nov-16	1		pup		road nr library	reported 3.35am
16-Nov-16			adult		library	
16-Nov-16	4		pup		lib	
16-Nov-16			adult		lib	
16-Nov-16	1		pup		T3	
17-Nov-16	1		pup		Median strip tree Abbott	
17-Nov-16	2		pup		lib	one pup died
17-Nov-16	1		pup		lib	found by Deb in patrol for dead
17-Nov-16	1		pup		lib at front	died taken to WR then to vet for fluids IV. Died on arrival
18-Nov-16		7	pup	3F; 4M	lib/ Novatel driveway/ Median A	buried
18-Nov-16	1		pup		library	

2016/17 bat birthing season Cairns CBD colony						
date	Library live at rescue Total	Library DOA Total	Size	Sex	location	Fate D (ied) x d(ays), w(ee ks) comments
18-Nov-16	1	1	pup		library	
20-Nov-16		4	pup		T1, Novatel nre driveway; Media	3 buried. O Regular patrol for dead by Deb Pergolotti under scientific licence
20-Nov-16	1	3	pup		library	babies heard crying in trees
20-Nov-16	1	1	pup		library	lone pup in T3
21-Nov-16	1		pup		Vacant block, fig tree	crying pups in trees in vacant block and Novatel
21-Nov-16	1		pup		Abbot St, on road	pup still in Penda
22-Nov-16	8		pup		library	
22-Nov-16		2	pup		T1, Novatel	
22-Nov-16	1		pup		T5	
24-Nov-16	4		pup		Library	
24-Nov-16	1		newborn		T1	
24-Nov-16	1		pup		Lake St bus station	euth
24-Nov-16	1		pup		Lake St bus station	
25-Nov-16	1		prem and pups		Library	Pups calling in trees
25-Nov-16			pup		Library	Big kerfuffle atm as people in vacant block all mums going every which way. May be worth checking later if anyone able.
25-Nov-16		10	10 SFF pups and 1 Ad LRF		T5, T1, T3, Vacant lot.	most burie Two long dead in vacant block may already be counted. Also one dead forfew days T! may already be counted.
26-Nov-16	2		pup		T5, T1	Pup calling in T1
26-Nov-16		10	pup		Vacant lot and library	buried Two pups calling vacant lot
27-Nov-16	1	1	1 adult and pup		Library	
27-Nov-16	1	2	1x Adult and 2 pups		T1 (adult), front of library near book return	(live pup; Abbot St median strip (dead pup)
27-Nov-16	1		pup	M	T1	Named Freddy by tourists
28-Nov-16		3	pup	F	T5 and general Library	3 Pups calling in trees plus 2 calling vacant lot
28-Nov-16		1	pup	M	Median strip tree Abbott	long dead- may already be counted
29-Nov-16		2	LRF adult. 2 SFF pups		T5 LRF; T1 and Vacant lot fig	
29-Nov-16			pup		T3	
29-Nov-16	1		pup	M	T5	Pole rescue
30-Nov-16	1		pup		Library	Drilling on vacant block
01-Dec-16	2	1	pup		Library	Drilling on vacant block
02-Dec-16		8	2 Adult LRF (one dead); 8 pups	both	T2, T5, Vacant lot, Novatel drive	Buried (exceot live LRF)
03-Dec-16	4	2	pup		Novatel and Library and T3	
03-Dec-16			juv	F	Cairns city	euth
04-Dec-16	1		pup		Library	
04-Dec-16	1		pup		Library	
04-Dec-16		18	pup		T2, T1, T5, Lake St (runover), Me	buried Deaths increasing.
05-Dec-16		5	pup		Library	
05-Dec-16	1		pup		T2	
05-Dec-16	1		pup		library	Wrapped in towel by MOP
06-Dec-16		4	pup		T5, median strip Lake St	
06-Dec-16		3	pup		Lake St median, Abbot St media, Vacant block fig.	
07-Dec-16	1		pup		Library	pups calling T1
07-Dec-16	2		pup		Library footpath	
08-Dec-16		3	pup		library	pup calling T3. low down
08-Dec-16		2	2 SFF pups, ! Adult LRF		library and Abbott St road	
09-Dec-16	1		pup		library on ground	
09-Dec-16	1		pup		T1 on path	
09-Dec-16	1		pup		Library	

DATE	DAY	LIVE	DEAD	LOCATION	SIZE	SEX	STATUS
15/09/2017	fri	1	1 T1	P	M		live pup died in care. bat chats start
16/09/2017	sat		colony not checked				
17/09/2017	sun	0	1 T1	P	?		
18/09/2017	mon	0	1 T1	P	?		
19/09/2017	tues	0	0 -	-	-	-	
20/09/2017	wed	0	2 T1-5	P	?		
21/09/2017	thurs		colony not checked				council garden maintenance
22/09/2017	fri		colony not checked				
23/09/2017	sat		colony not checked				
24/09/2017	sun	0	7 T5	P	?		
25/09/2017	mon	2	0 T5	P	M		
26/09/2017	tues	3	2 T1-2	P	M		
27/09/2017	wed	2	4 T1-2	P	M		
28/09/2017	thurs	0	1 T2	P	?		council garden maintenance
29/09/2017	fri	0	1 T1	P	?		
30/09/2017	sat	3	6 T3	ADULT	2xM,2xF		adult was non lactating female
1/10/2017	sun	0	2 T5	P	1xM		
2/10/2017	mon	0	1 T1	P	?		
3/10/2017	tues	1	0 ?	P	M		placenta attached, pup died in care
4/10/2017	wed		colony not checked				solar panel installation on library
5/10/2017	thurs	0	4 T1-5	P	?		workers removed rubbish from library roof
6/10/2017	fri	0	2 T3	P	?		
7/10/2017	sat	4	2 T1-5	P	2xM		all live pups died in care
8/10/2017	sun		colony not checked				
9/10/2017	mon	0	3 PENDA	Px2,Nx1	?		
10/10/2017	tues		3 T5	P	?		
11/10/2017	wed		colony not checked				
12/10/2017	thurs	3	9 T1-5	P	3xM		1 pup had cleft palate, 1 live pup was DOA, council garden maintenance
13/10/2017	fri	0	1 APLIN ST	P	?		FFAC meeting-stats discussed
14/10/2017	sat	1	1 T1-3	Px1,Nx1	?		newborn died in care
15/10/2017	sun	3	3 T1-2	Px2,Nx4	3xM		
16/10/2017	mon	3	3 T1	1XADULT	M		ADULT LITTLE RED DEAD, SPINAL INJURY OR TICK
17/10/2017	tues	0	1 T1	ADULT	F		ADULT SFF DEAD
18/10/2017	wed	0	2 PENDA	P	1XF		
19/10/2017	thurs	1	2 T2-5	P	1XM		live pup died in care, council garden maintenance
20/10/2017	fri	7	1 T5	P	2xF,1xM		
21/10/2017	sat	10	3 T1-5	1xN	4xF,4xM		
22/10/2017	sun	3	3 T1,2,5	Px1,Nx1	2xf,1xM		
23/10/2017	mon	4	5 T1,2,3	1XADULT	5XF		DEAD ADULT FEMALE SFF
24/10/2017	tues	13	5 T1,2,3,5	2xADULT	3XF		1XADULT FEMALE DEAD IN PENDA, 1XADULT FEMALE SFF LIVE PREGNANT, PUP STILLBORN, 1 LIVE BROKEN BACK-EU-crane moved into abbott street
25/10/2017	wed	6	2 T1,2,3	N	?		1 pup died in care
26/10/2017	thurs	9	0 ?	N	M		council garden maintenance
27/10/2017	fri	3	4 T1-5	ADULTx1	1xF		DEAD ADULT SFF WITH LIVE PUP
28/10/2017	sat	1	1 ABBOTT	N	?		DEAD ON ROAD-additional 3 cranes added on building site
29/10/2017	sun	5	6 T1	Px1,Ax1	?		1XADULT SFF DEAD
30/10/2017	mon	8	1 T1,2,3,5	N	?		
31/10/2017	tues	9	4 T3,5	N	4xM,2xF		1Xdead pup on grassed area, met with cameron slack, mel torkite, council at library. Lynda arrived.
1/11/2017	wed	4	4 T1,2,5	N	?		1xadult sff with pup-tick, 3 live pups died
2/11/2017	thurs	6	0 T1,2,5	N	?		council garden maintenance
3/11/2017	fri	8	2 T1,2,5	N,Ax1	?		1xadult sff with pup
4/11/2017	sat	8	2 T1-3	N	?		
5/11/2017	sun	6	6 T1-5	N	?		3 dead run over near novotel
6/11/2017	mon	8	3 T1-5	N	?		
7/11/2017	tues	18	11 T1,3,5	N	?		street sweeper hit 2 pups, died
8/11/2017	wed	12	0 T3	N	?		blower at bus stop
9/11/2017	thurs	5	3 T1	N	?		colony disturbed-source unknown, council garden maintenance
10/11/2017	fri	5	2 T1,2,3	N	?		one pup had burnt feet and thumbs-191gm F/A 113mm
11/11/2017	sat	8	2 T1-2	N	?		(1 pup already in my care started flying-noted to carers some in colony may now be at that stage)
12/11/2017	sun	5	5 T1,3,5	N	?		street sweeper disturbance, baby fig bird found too
13/11/2017	mon	21	2 T1,2,3	N	?		17 pups went to Tolga, one dead pup on rd-abbott st. Lynda left, 6 pups found at T1
14/11/2017	tues	13	7 T1-2	N	?		1 dead abbott st footpath, 1 large pup live dirty with holes in wings
15/11/2017	wed	5	14 T1,3,5	Px1	?		5 dead under T5, 4 pups put in trees previous night all amongst the dead-1 premmie found alive
16/11/2017	thurs	21	9 T1	N	?		Byron arrives. 1 pup reunited with mum. council garden maintenance
17/11/2017	fri	20	7 T3	N	?		5 out of 14 pups found together died, no construction in morning, morning check only found 2 live 0 dead, pm check additional found
18/11/2017	sat	8	11 T1-5,penda	N	?		crane arm over colony-prime ecologist not present. 2 pups scalped-ethanised (abc filmed in colony) gardeners seen working in colony??
19/11/2017	sun	10	8 T1,2,3,5	N	?		5 dead at T5 covered in blood, 1 with missing leg. 1 pup run over
20/11/2017	mon	11	1 T1,2,3	N	?		1 dead on road. ABC leaves with 100 pups for Brisbane
21/11/2017	tues	3	1 T1	N	?		prime media statement, lfff increase
22/11/2017	wed	7	3 T1,2,3	N	?		ABC arrives in brisbane with pups
23/11/2017	thurs	8	1 T1,2,5	N	?		council garden maintenance
24/11/2017	fri	8	4 T1,2,3,5	N	?		additional crane noted on Lake street, all dead at T3
25/11/2017	sat	5	8 ?	N	?		3 dead emaciated
26/11/2017	sun	1	6 T1-5	N	?		2 dead at T5, 1 squashed on road
27/11/2017	mon	8	5 T1,2,3,5	N	?		1 live pup was trodden on, 2 live pups died within 30mins, 1 dead hanging in T5
28/11/2017	tues	6	4 T1-2	N	?		i live pup missing thumb, 1 live pup bad wing scrape. 3 dead at T1-2
29/11/2017	wed	3	4 T1,2,3,5	1xA.1xP	?		1 adult sff squashed on road near fallen live pup, another pup also killed on road. pidgeon also found, 1 dead pup mutilated
30/11/2017	thurs	13	9 T1,2,3,5	N	?		colony unsettled, 2 cement trucks operating from 5.30am. council garden maintenance-council informed colony unsettled before they arrived-cameron slack informed
1/12/2017	fri	10	2 T1-prime site	1xA	?		2 live wing fractures-ethanised. 1 pup on steel pole in construction site covered in cement dust, 1 adult run over 1mtr from fallen pup
2/12/2017	sat	4	3 T1-5	N	?		1 live broken wing-ethanised. colony quiet-noted construction was quiet also
3/12/2017	sun	3	8 T2	N	?		sff spotted in trees anderson/pearse st, 2 dead on road, 1 dead pup scalped
4/12/2017	mon	4	0 ?	N	?		1 live had suspect broken back-ethanised. enquire with council about gutter guard for tree base
5/12/2017	tues	7	10 all trees	N	?		pile drivers in use, crane arm over colony, all trees contained dead. f noted hanging low in trees. Deborah (frog hospital) found 3 dead and contacted me
6/12/2017	wed	3	8 ?	N	?		1 live on traffic light, 1 squashed on road
7/12/2017	thurs	8	7 T1,3,5	N	?		2 found by ecologist, 1 from prime construction, smallest living pup 91gm, 1 live green ant bite to eye, 1 live broken wing on footpath, council hosing paths. 1x4wk old pup has cloudy eye
8/12/2017	fri	6	12 t2-5,penda	N	?		pup on car grill, pile drivers in use

DATE	DAY	LIVE	DEAD	LOCATION	SIZE	SEX	STATUS
9/12/2017	sat	4	21	all trees	N	?	1 live damaged wing, died in care. 13 dead hanging in trees mantra, T2,3,5. bat chats start (bats hanging dead may have died earlier) piles drivers in use.
10/12/2017	sun	2	5	T2,3,5	N	1XF	2 run over mantra tree, female pup large-eye problem. live pup T5 sore eyes
11/12/2017	mon	5	8	T1,2,3,5	N,Ax1	1XF	live mum and pup, mum huge hole in wing and back damage, i live pup cloudy left eye, 2 dead on road, 1 dead T5 missing skin, crane opp abbot st site, pile drivers moved to esplanade end of site, one dead pup had skin missing on arm and chest, hit by car head crushed
12/12/2017	tues	3	8	t2-3	N	?	4 dead on road, 1 live t2 96mm F/A, 6.30-7.30am colony quiet no construction
13/12/2017	wed	1	1	T2-prime site	N	?	pup at construction site, wing damaged, broken thumb. blue net placed around construction site
14/12/2017	thurs	2	7	T1-3	J	1xF	council garden maintenance
15/12/2017	fri	4	15	T1,2,3,5	J	?	street closed between aplin and lake street, kim met steve at colony re:mesh on trees. pup at bus stop-huge hole in wing. pile driver back at abbot st. 1 dead under T1 hole under armpit. 1 live found on road. 7 dead found by deborah-frog hospital, noted ff in trees up to aquarium
16/12/2017	sat	0	5	T1	J	?	street sweepers. pile drivers in use-stopped at 2pm, crane unloaded on site. report at midnight of intoxicated person harrasing bat picking up and attempting to board bus, police called, bat disappeared up tree as suspect left area
17/12/2017	sun	5	2	T1-5	J	?	1 live fractured wing-eu found on lake st island
18/12/2017	mon	6	2	T2,3,5	J	?	1 very young on footpath, 1 live severe neck injuries. pile driver working on abbot st end. Called cameron slack re building site closure (22/12-2/1) Brian collier to arrange search for pups during that period with Kim, 1 live (<4wks) died in care, i live Juvi- fractured wing-eu
19/12/2017	tues	3	3	T1,2,3	j	?	FFAC meeting-stats agenda item, 1 live from abbot st construction site-died in care,
20/12/2017	wed	5	3	T1	jx2,nx2	?	injured torris strait pidgeon, 1xjuvi fractured wing-eu. 1 dead missing skin, 3 live -eu
21/12/2017	thurs	0	11	T1,3,5	Ax1	?	adult dead-electrution, 2x pidgeons T1, council garden maintenance. Amanda returned to Rockhampton
22/12/2017	fri	1	6	T1,3,5	N	M	1 live pup on dead adult male. construction site closes for christmas break
23/12/2017	sat	1	8	T1,3,5	1xN	?	1 dead at mango tree novotel, 1 live newborn chocking on fig, obstruction removed, 1 dead aplin st centre tree
24/12/2017	sun	1	0	T1-2	J	1XF	morning check 0 found,
25/12/2017	mon	2	0	library grounds	J	?	broken wing-eu,
26/12/2017	tues	1	3	T2-3	1xA	1XF	adult female sff, partially paralysed- no ticks- died in care
27/12/2017	wed	1	2	T1-2	J	1xM	1 live found at library ground MOP took and posted on fb (person observed warning signs about handling bats, used towel was not scratched or bitten), collected by Kim. am check-0. pm check 3 dead, 1 run over
28/12/2017	thurs	2	8	T1,2,3	Nx1,Jx9	?	1 dead on road, council garden maintenance. 1 live with broken wing. 2 dead at novotel mango tree-1 old.
29/12/2017	fri	1	8	T1,3,5	Nx2,Ax1	1xM	2 dead on road (1xabbott st,1xtrilogy), pm check 1xAdult male sff dead
30/12/2017	sat	2	2	T1-5,road	j	1xM	one dead on road-am check. 1 live library footpath
31/12/2017	sun	1	2	T1,penda	j	1xM	am check-0 dead or orphaned. pm check 1 dead, wings crispy huge twist in membrane, 1 live from novotel. NYE fireworks in area
1/01/2018	mon	0	1	novotel mango	J	?	1 dead at novotel mango tree, pm check 0 live/dead
2/01/2018	tues	4	1	prime site	J	?	2 pups from prime site, 1 with severe wing fracture-eu, 1 live abbot st balcony-severe blood loss. All construction sites open.
3/01/2018	wed	2	3	T3-prime site	j	?	construction sites resume operation. 1 live has fractured humerus. pm check found all 3 dead, ff hanging lower than usual 38 degrees 3.30pm. ff noted in park on Murray St, Manoora and anderson St Cairns
4/01/2018	thurs	1	7	T2,5,penda	Nx1	?	council garden maintenance, am check before 9am 2 dead, colony peaceful. 9.30am check found live under 3wks old, 4 dead, construction noisy. ! squashed on crn abbot/alpin
5/01/2018	fri	0	1	T3	J	?	1 dead at midday. pm check clear, colony quiet no cranes or pile drivers in operation, heavy rain
6/01/2018	sat	1	0	novotel.	J	1XF	2 calls at 9am for pups down, 1 located in bushes. pm check clear, colony quiet, no construction operations. call for ff down at midnight, none located.
7/01/2018	sun	0	0	-	-	-	am check clear. pm check clear
8/01/2018	mon	1	4	T1,2,3	jx2,nx1	?	live pup very thin.
9/01/2018	tues	0	6	T1,T5,novotel	J	?	novotel pup in tree. pm check clear
10/01/2018	wed	1	3	t5,mantra	J	?	2 dead in mantra trees at 6pm check
11/01/2018	thurs	0	2	T5	jx1,px1	?	notified by karen (R2G) 2 dead at T5 1xjuvi, 1x foetus) during garden maintenance monitoring, notified colony at murray st, local kids seen stoning and killing pups with sticks (council notified) 201 lake steet-trees being removed with chainsaws-ff present in area 1 collected with broken wing
12/01/2018	fri	2	2	T1,novotel	Nx1	1xM	live at pm check-pole rescue 5-6wk, 1x juvi
13/01/2018	sat	1	2	T1,novotel	Px1	1xM	premmie found, furred, eyes closed. pm check clear
14/01/2018	sun	0	4	T3	Ax1	?	am check- 2 squashed abbot st, 1 dead adult sff novotel.
15/01/2018	mon	1	2	T3-T5	Nx3		am check, 1 live, 1 dead both 1-2 wks old, midday check 1 live 2wks old, pm check clear. storm activity overnight
16/01/2018	tues	2	1	T3	Nx1	Mx1	am check- 3wk old live pup, colony unsettled, juvi squashed-mantra tree. pm check- 3 dead (2 old-not added in count) met with Chris Oates dept of environment, compliance division
17/01/2018	wed	0	2	prime,car park	Jx2	?	am check-prime called 1x juvi on fence (eu ob 18/1). 1x in carpark (heavy rain)
18/01/2018	thurs	0	2	trilogy,T3	J	?	council garden maintenance, Karen found 2 at T5 badly decomposed-not added to count
19/01/2018	fri	0	1	novotel.	J	?	novotel pup-eu compound fracture. cement trucks operating-ff left trees at 5.30pm, 2nd flyout at 7pm
20/01/2018	sat	1	4	T1,3	Ax1	Fx1	Adult non lactating female-partial paralysis-live taken to vet
21/01/2018	sun	2	6	T3,road	J	?	1 adult squashed on road 9novotel)-am check, pm check-1 juvi, 1 adult squashed on road (milky pine) 2nd live pup fractured foot
22/01/2018	mon	1	0	prime site	J	?	1 live pup at construction site, checked and released into T3
23/01/2018	tues	0	0	-	-	-	colony checked-reported quiet and clear
24/01/2018	wed	0	3	T5	Ax1	?	
25/01/2018	thurs	3	3	t5,mantra	Ax1	Mx1	1 live at prime site, assessed and released at T5. council garden maintenance. 1 dead adult male, injured T5-cysts on neck flyout 6.10pm
26/01/2018	fri	1	3	T3,5 penda	Ax1	Fx1	1 live neck wounds-infected and cloudy eye. flyout 5.10pm
27/01/2018	sat	0	1	T1	J	?	
28/01/2018	sun	0	4	abbott st road	J	?	3 dead on road
29/01/2018	mon	0	1	novotel.	J	?	found live but died minutes later
30/01/2018	tues	2	1	t5,mantra	J	?	am check-colony distressed, pm call for live at novotel- arm through wing membrane
31/01/2018	wed	1	0	?	J	?	afterhours person from FNQWR collected and brought to vet-died details to come
1/02/2018	thurs	3	5	T1,2,5, prime	J	Mx1	call for pup down near penda,MOP put in in tree (not added to count), Prime called pup in basement covered in cement dust (died friday night). Gary-FNQWR brought live pup to pam-newborn unfurred belly and noted 2 dead in colony, 2nd live pup collected but died
2/02/2018	fri	2	2	T3	Nx1	Mx1	4pm crane arms swinging over trees causing huge disturbance, pup put in tree by MOP on thursday stillthere-fractured wing, unable to rescue. live pup was newborn(97gm 85f/a), 1 live adult male-died in 24hrs
3/02/2018	sat	2	6	T2,3,5,penda	J	?	pup from penda found dead on path, live juvi injured leg, another dead in penda-covered in green ants, pm check-premmie dead at T5. additional cranes noted on both sites
4/02/2018	sun	1	2	esplanade	J	Fx1	2 dead on powerlines toward esplanade
5/02/2018	mon	0	0	-	-	-	am check clear. pm check clear-heavy rain
6/02/2018	tues	0	0	-	-	-	am not checked- pm check clear
7/02/2018	wed	1	4	T1,3,5,footpath	J	Fx1	am check clear. pm check 1 live-died within 15mins of arrival to carer
8/02/2018	thurs	0	1	T5	J	?	council garden maintenance-karen found dead under T5
9/02/2018	fri	2	0	prime,cycad T1	J	Mx1	one live male found in cycad at midnight-severe wing injury missing bone and membrane-euthanised
10/02/2018	sat			colony not checked			
11/02/2018	sun	2	5	T1,2,3,5	j	Mx2	live male-shoulder injury, fungus on wings, 2nd live outside aquarium-holes in wings
12/02/2018	mon	0	2	T2,3	J	?	
13/02/2018	tues	1	1	T2	J	?	



DATE	DAY	LIVE	DEAD	LOCATION	SIZE	SEX	STATUS
14/02/2018	wed	0	4	T5,mantra	J	?	informed council workers were witnessed picking up dead bats and disposing of them, live at mantra. crane arm over T3 at pm check
15/02/2018	thurs	1	0	road	J	?	council garden maintenance
16/02/2018	fri	2	1	T1-5	Nx1	Fx1	pup at T1 4wk old pup
17/02/2018	sat	1	3	T1,novotel	Ax2	Mx1	ff noted to have left anderson st site. storm causing major power outage
18/02/2018	sun	1	2	T5-road	Ax2,Jx1	Mx2,Fx1	juvi-T5, Adult run over on abbott st, live adult male DOA-noted missing thumb abrasions on wing and chin
19/02/2018	mon	0	0	-	-	-	noted colony increased-suspected due to breeding season start
20/02/2018	tues			colony not checked			
21/02/2018	wed	4	3	T3,5,road	N,Ax2	Mx3	live-adult male,fractured wing, mouth damage-lg juvi male leg damage windy, storms-crane arms unhinged swinging rapidly over roost trees
22/02/2018	thurs	0	2	T3,5	Ax2	?	council garden maintenance, megan from NRG noted two adult dead colony unsettled, crane arm over T3
23/02/2018	fri	2	2	trilogy,novotel	Jx2	Fx2	both live underweight, dead lawn under penda, T3
24/02/2018	sat	1	4	T1,2,3	jx4	mx1	live juvenile put back in T2 to check on later
25/02/2018	sun	1	5	T1,2,3,road	j	Mx1	live juvenile from saturday put back in tree found dead, 1 live wing fracture-eu.
26/02/2018	mon	2	1	T5, abbott st	Ax1,Nx1	Fx1	both mum and pup died at boongary vets.
27/02/2018	tues	1	0	carpark	J	?	ff on car wheel, called in by prime and note placed on car to warn owner, contractor for crane arm company (brisbane) approached ff and was scratched-had not been inducted or warned about ff from prime occurred 12pm (advise given to wash for 10mins with soap-not scrub and attend hospital from vicki-fnqwr)
28/02/2018	wed	1	3	T3,lake st	Ax3	Mx3	3 dead adult males at T3 pm check. live on pot plant lake street
1/03/2018	thurs	1	0		J	Mx1	council garden maintenance, ecologist found 1 decomposed dead-not added to count. 2nd dead was live when call came in-dead when carer got to colony
2/03/2018	fri	1	0	grass	J	?	live put back in T3 by vaccinated tourist
3/03/2018	Sat	1	0	T2	J	?	
4/03/2018	Sun	1	2	T5, abbott st	Ax1,Jx1	Mx1	adult male run over on abbott st, juvi fallen from T5, 1 live female newborn-brought to batreach by gary
5/03/2018	Mon	3	4	T2	J	2xF,1xM	small juvi-stiff wing, missing skin to the bone on leg-suspected rats. dead at T2 Aplin St, live male 220gm-broken thumb large hole in wing. 2nd live found at night female-holes throughout wings
6/03/2018	tues	1	1	T5	Ax1,Jx1	M	live wing damage-called in by work men at colony, dead adult male
7/03/2018	Wed	1	1	penda,aplin st	Ax1,Jx1	Fx1,Mx1	dead male under penda tree, juvi female fracture, lower radius torn off, malnourished-Eu
8/03/2018	Thurs	0	2				council garden maintenance- huge rain storm, power out across region
9/03/2018	fri	0	2	abbott st road	Jx2		dead on road
10/03/2018	sat	1	4	T5,rd,novotel	Nx2,Ax1	Fx1	live T5-leg injury 7wks old. dead-adult run over abbott st, baby T1, Juvi abbott st, Juvi novotel mango
11/03/2018	sun	0	0				colony clear
12/03/2018	mon			colony not checked			
13/03/2018	tues	0	2	T1,aplin st	Ax1,Jx1	Mx1,Fx1	
14/03/2018	wed			colony not checked			
15/03/2018	thurs	0	1	T1	Jx1		council garden maintenance
16/03/2018	fri	0	4	street x3,novo	1xN,3xJ	Fx1	dead-baby novotel mango, juvi aplin st carpark, juvi abbott st, juvi milky pine
17/03/2018	sat	0	3	T1,5,milky pine	Jx3		colony nervous
18/03/2018	sun	0	2	milky pine			aplin/lake street island-milky pine
19/03/2018	mon	1	1	T2	Ax1		dead T2, live adult male-severe cloudy eye in both eyes, cuts and abrasions, infection in leg
20/03/2018	tues			colony not checked			Mareeba dispersed
21/03/2018	wed	0	2	T1,5			
22/03/2018	thurs			colony not checked			council garden maintenance
23/03/2018	fri	1	1	prime,T5	Jx1	Fx1	prime rescue was live juvi female aspirating, was euthanised at vets
24/03/2018	sat	1	2	novotel, road	jx3	Fx1	1st release, live female juvi-novotel broken shoulder (localised flooding), 2 dead on road abbott
25/03/2018	sun			colony not checked			
26/03/2018	mon			colony not checked			
27/03/2018	tues	0	1	T5	?	?	
28/03/2018	wed	0	3	novotel,milk p	Nx1, Jx2		2 extra cranes added to aplin st site. Dead: newborn-bottlebrush novotel, 2 at milky pine
29/03/2018	thurs	1	1	lake st, penda	Jx2	Mx1	council garden maintenance, 1 dead on Lake street, 1 live-penda, unable to rescue
30/03/2018	fri	0	1	penda	jx1	Mx1	juvi dead at penda (possibly rescue from day before)- bat chats start
31/03/2018	sat	0	4	T2,5,islands	Jx4		dead- T5, lake/aplin st island, Aplin st footpath near T2, abbott st island
1/04/2018	sun			colony not checked			
2/04/2018	mon	1	0	abbott st	Jx1	Fx1	juvi female-live possible head trauma
3/04/2018	tues			colony not checked			
4/04/2018	wed	1	0	vets	Jx1	Fx1	vets phoned-found on tarmac previous vet-concussed
5/04/2018	thurs			colony not checked			
6/04/2018	fri	0	1	grass T1	Ax1	Fx1	non lactating adult female dead on grass area near T1-pm
7/04/2018	sat	0	0				colony clear
8/04/2018	sun	0	1	lake st	Jx1		juvi dead on lake st island (rescue of adult female at manunda-DOA puncture to neck-not added to count)
9/04/2018	mon	0	0				colony clear
10/04/2018	tues	0	1	abbott st	Jx1		dead intersection of abbott and grafton street
11/04/2018	wed	0	0				65 pups returned from Brisbane-being held in Tolga until 3rd release
12/04/2018	thurs	0	0				2nd release of orphans
13/04/2018	fri	0	0				murray street colony noted to be half of previous size
14/04/2018	sat	0	0				colony clear
15/04/2018	sun	1	0	scott street	Jx1	Fx1	final bat chat for easter holidays, live barbed wire rescue, juvi female scott street
16/04/2018	mon	0	0				
17/04/2018	tues	0	0				
18/04/2018	wed	0	0				
19/04/2018	thurs	0	0				
20/04/2018	fri	0	0				
21/04/2018	sat	0	0				bat festival
22/04/2018	sun	0	0				
numbers slowed- rescues put in for dates found, regular colony searches ceased							
28/04/2018		1	0		ADULT	M	broken back-eu
1/05/2018		1	0	T3	J	F	juvenile 11-12wks FA130mm detached retina in one eye, cataract in second eye
4/05/2018		0	1	PENDA	J	?	DOA
5/05/2018		0	1	T1	ADULT	M	
19/05/2018		2	0	APLIN ST	ADULT	Fx1,Mx1	Adult male, Aplin st concussion, female emaciated-euthanised
22/05/2018		0	0				training
23/05/2018		0	0				training
24/05/2018		1	0	esplanade	J	F	compound fracture shoulder-euthanised
29/05/2018		1	1	T1,aplin st	Ax1,Jx1	M	Dead under car at T1, adult male concussion crn aplin and abbott st
30/05/2018		1	0	lagoon	ADULT	M	compound fracture wing euthanised
11/06/2018		0	1		ADULT	M	multiple injuries- euthanised
14/06/2018		1	0		ADULT	M	dislocated shoulder, leg compound fracture died in care-kidney failure possible electrocution
16/06/2018		1	0		ADULT	M	multiple injuries- euthanised
9/07/2018	mon	1	0		ADULT	?	compound fracture wing euthanised
		552	603				total-1154

Source: provided by Cairns Regional Council.

**Bats and Trees Society of Cairns  
Inc. Summary Report 2014-2019**





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## Bat birthing and rearing season: Mortality and rescues, 2014-15 until 2018-19

### Bat Stats 2016-17 compared to 2017-18 birthing and rearing season.

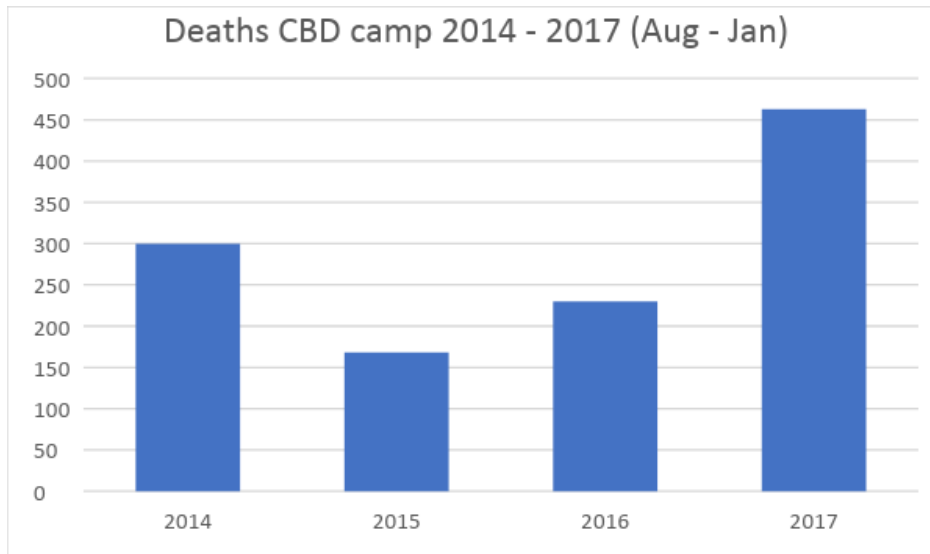
**Graph 1: Totals dead and live (abandoned) spectacled flying-fox pups**  
 September to December 2016 and 2017\*

Library colony 8 Sept – 10 Dec	2016	2017												
Total	366	738												
<p style="text-align: center;">Number of Spectacled flying-foxes at Cairns Library colony</p> <table border="1"> <caption>Data for Graph 1</caption> <thead> <tr> <th>Year</th> <th>Total</th> <th>Dead at rescue</th> <th>Live at rescue</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>366</td> <td>193</td> <td>173</td> </tr> <tr> <td>2017</td> <td>738</td> <td>320</td> <td>418</td> </tr> </tbody> </table>			Year	Total	Dead at rescue	Live at rescue	2016	366	193	173	2017	738	320	418
Year	Total	Dead at rescue	Live at rescue											
2016	366	193	173											
2017	738	320	418											
Dead at rescue	193	320												
Live at rescue	173	418												

\* First pup 2016: 8 Sept.  
 First pup 2017: 15 Sept

## Comparison CBD camp mortality birthing and rearing season 2014-2017

**Graph 2: Deaths of Spectacled flying-foxes Cairns CBD camp 2014 – 2017 (August to January)**



**Notes:**

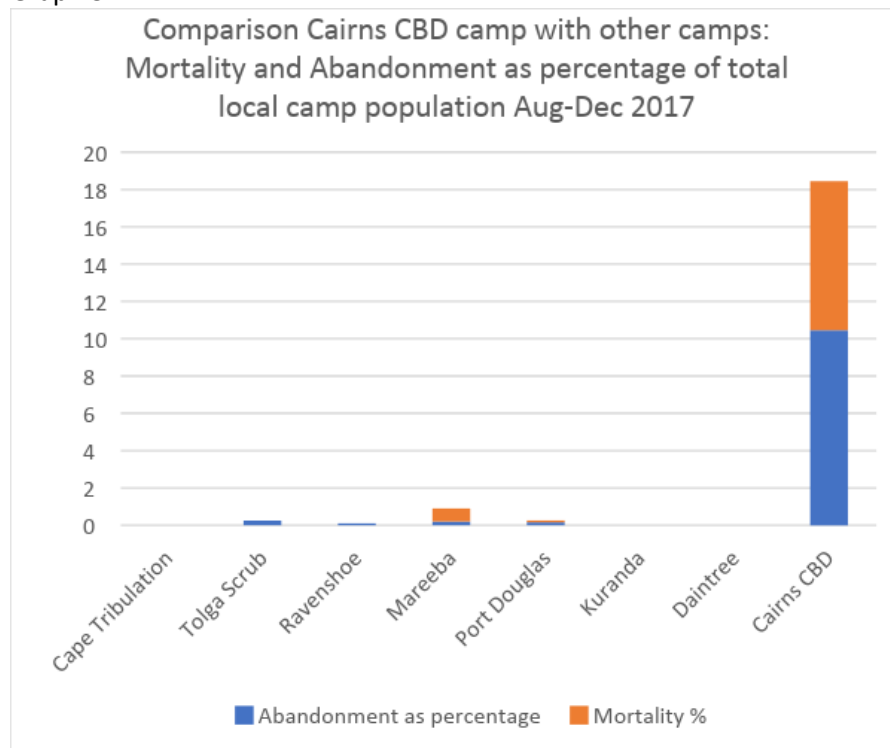
1. 2014/15 was a particularly bad cleft palate year.
2. 2014/15 & 2015/16 figures rough estimates only
3. 2016/17 and 2017/18 figures were assessed by the same methodology. Camp was patrolled a number of times per day and all deaths and rescues recorded.
4. Neither 2016 and 2017 were bad years for cleft palate, tick paralysis or food shortages. No cyclones impacted on bats in these years.
5. Roosting trees were removed during 2014, 2015, 2016 and 2017 prior to birthing. This led to overcrowding of library trees and increased use of street trees over time.
6. Two hotels adjacent to the CBD library camp were constructed during 2017/18 season. Pile driving of Aplin/Abbott/Lake St hotel was conducted prior to birthing season. Pile driving of the other hotel (Abbot St facing the front of the library) was conducted during birthing season without referral under EPBC Act and without mitigation measures. Cranes from both hotels regularly hung over roosting trees during rearing season.
7. No other disturbances were observed beyond those normal to the camp (traffic, maintenance, human disturbance, collisions with building and other city pressures etc) during 2017/18 season than previous years, besides construction of the two hotels.

**Comparison CBD camp to other camps 2017/18 rearing season**

**Table 1: Comparison of Cairns CBD camp to nearby camps 2017/18 rearing season: Mortality and Abandonment August - December**

Camp	Population	Abandoned pups (% of pop'n)	Mortality (% of pop'n)
Cape Tribulation	2,000	0	None seen
Tolga Scrub	20,000	50 (0.25%)	negligible
Ravenshoe	30,000	30 (0.1%)	negligible
Mareeba	3,000	6 (0.2%)	21 (0.7%)
Port Douglas	6 – 8,000	11 (0.16%)	7 (0.1%)
Kuranda	1,000	0	None seen
Daintree	4 – 6,000	0	None seen
Cairns CBD	4,000	418 (10.45%)	329 (8%)

Graph 3



Notes:

1. Only Tolga Scrub and Cairns CBD colonies were regularly checked for deaths and abandoned young. Not all deaths were recorded at Tolga Scrub but large numbers of deaths were not observed.
2. Mareeba colony was subject to stress due to harassment during the birthing season
3. Flying-foxes were not subject to food stress this season and it was not a bad tick or cleft palate season.

**2018/19 birthing and rearing season prior to Heat Stress Event (HSE) 26 Nov 2018****Table 2: Bat Stats 2018 (prior to Heat Stress Event beginning 26 Nov 2018)**

30 August - 17 November (79 days)

Camp	Approximate Population	Abandoned pups live at rescue (surviving in care)	Mortality Dead at rescue	Total Abandoned & dead	2017 Total Abandoned & dead 15 Sep-10 Dec 86 days (79 days) [Till 17 Nov]
Cairns CBD	4,000	286 (202)	214	<b>500</b>	738 (643) [457]
Murray St, Cairns	1,500	20 (11)	103	<b>123</b>	N/A
Cairns (other- not colony checks)*	All camps- unknown	61 (36)	18	<b>79</b>	<10 **
<b>Total Cairns</b>	"	<b>367 (249)</b>	<b>335</b>	<b>702</b>	<b>738 (643) [457]</b>
Tolga Scrub	20,000	(200 +)	Not recorded		50 (in care)
Cape Tribulation	3,000	60	Not recorded <sup>#</sup>		0 (no dead noticed, no pups)

\* Calls to FNQ Wildlife Rescue Cairns area only.

\*\* This number had negligible effect on total numbers from Cairns in 2017.

<sup>#</sup> While dead not recorded, the number of dead pups at Cape Tribulation was not obviously noticeable. Only one section of camp could be patrolled without disturbing bats. This is in contrast to Tolga Scrub where mortality rate is much higher. Dead are buried at site, but much of scrub is impenetrable.

Notes:

1. Bats coming into care were in poor condition throughout the region. This was attributed to food shortage due to the extreme dryness of the dry season. Post-mortems testify to maternal nutritional stress.
2. Many camps cannot be patrolled due to risk of disturbance of flying-foxes.
3. 2017 column:
  - Numbers in round brackets give comparisons for same number of days (79 days) from first pup rescued. In 2017, there were 643 rescued (dead and alive) in first 79 days compared to 500 in the first 79 days in 2018 at CBD camp.
  - First pup, 2017: 15 Sept. First pup, 2018: 30 Aug.
  - Numbers in square brackets gives a comparison for 2017 against 2018 to the same date (17 Nov) regardless of date of first rescue. In 2017, 457 animals were found dead or alive at CBD camp as at 17 November compared to 500 in 2018. 2017 season began two weeks earlier than 2018 season.
4. Population of camp is an estimate only based on observations of volunteers patrolling sites of number of trees occupied using information of historical records of counts. Population varied throughout season, so numbers are the most common occupation rates throughout the period. No methodical count was undertaken however.

**Acknowledgements:** Data used in collation of tables and graphs was compiled by volunteers in the Cairns bat community including the rescuers and carers, and in particular, Rebecca Koller, Deborah Pergolotti, Kim Sandford, Tina MCardly, Gaby Schierenbeck, Fiona Coulston, Jenny Maclean, Hugh Spencer, David White, Pam Tully, Sharlene Kemp, Ari Drummond, Amanda and Jessie Milligan, Connie Kerr, David White, Jess Denz, Annie Schoenberger and Vicki Shepherd.



Appendix D:  
Cairns Central Swamp Habitat  
Suitability

Land Management Plan

Contemporary Report

# Land Management Plan

# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

## REPORT ON PROTECTED PLANTS FLORA SURVEY FOR LOT 115 NR800836 CAIRNS CEMETERY



Fig. 1 Aerial view of Lot 115 NR800836 with red dot indicating approx position of structure.

### INTRODUCTION

Cairns Regional Council proposes to construct a small structure to house juvenile flying foxes on cleared land on Lot 115 NR800836 adjacent to the Cairns Cemetery. This structure, which will have a footprint of 50 m<sup>2</sup>, is proposed for a small cleared area adjacent to an area mapped as remnant vegetation under the *Vegetation Management Act 1999* that is also covered by the Protected Plants Flora Survey Trigger mapping under the *Nature Conservation Act 1992*.

### REMNANT VEGETATION

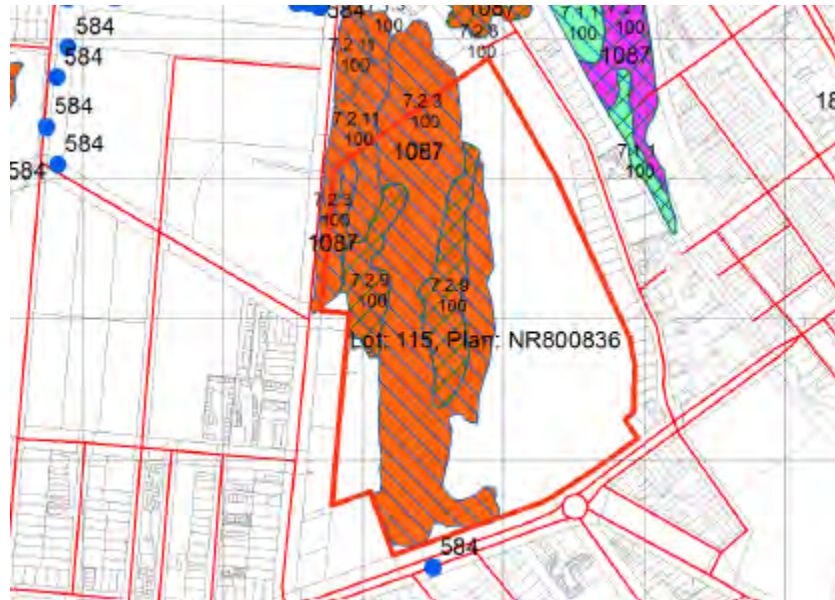
A large part of the Protected Plants Flora Survey area is mapped as remnant vegetation under the *Vegetation Management Act 1999*. The regional ecosystems mapped are:

RE 7.2.3 "*Corymbia tessellaris* (Moreton Bay Ash) and/or *Acacia crassicaarpa* and/or *Corymbia intermedia* and/or *C. clarksoniana* woodland to closed forest on beach ridges." This regional ecosystem has an of concern status. This RE is not represented with the Protected Plants Flora Survey area apart for a very narrow band a few metres wide along the western boundary of the cemetery.

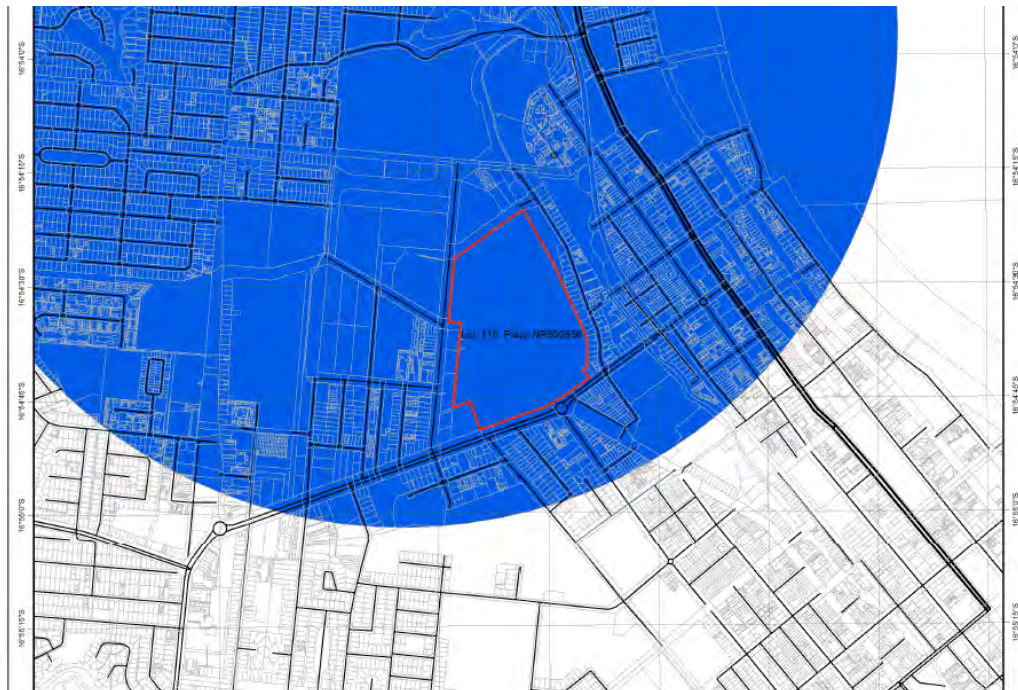


# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

RE 7.2.9 " *Melaleuca quinquenervia* shrubland to closed forest, or *Lepironia articulata* open to closed sedgeland. Dune swales and swampy sandplains of beach origin." This regional ecosystem, which has an of concern status is not represented within the Protected Plants Flora Survey area but may be present to the west of the study area.



**Fig. 2 Regional ecosystem mapping for the study area**



**Fig. 3 Protected Plants Flora Survey Trigger Mapping that covers the survey area.**

# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

## METHODOLOGY

The vegetation within 100 metres of the proposed site was surveyed in accordance with Section 6.2.2 of the Protected Plants Flora Survey Guidelines on the 29 June 2018. A checklist of all vascular plant species observed with this area is attached. No EVNT plants occur within the footprint of the proposed structure but numerous Ant Plants *Myrmecodia beccarii* occur on many of the large Tea Trees (*Melaleuca sp.*) within the Protected Plants Flora Survey area. *Myrmecodia beccarii* is listed as Vulnerable under the *Nature Conservation Act 1992*.



Fig. 4 Blue line indicates area traversed during Protected Plants Flora Survey

## PROTECTED PLANTS FLORA SURVEY

The Protected Plants Flora Survey was undertaken over two and a half hours on the 29<sup>th</sup> June 2018. The area surveyed is highly modified with the ground and shrub layer dominated by introduced exotic weed species. The canopy which is open with large gaps consists of large specimens of Tea Trees; *Melaleuca leucadendra* and *Melaleuca dealbata* to 20 metres tall with stem diameter to 80 cm dbh. These trees along with many smaller specimens are host to numerous specimens of the vulnerable Ant Plant (*Myrmecodia beccarii*). Many of the smaller exotic and native trees present in the survey area appear to have been planted and several of these cultivated native species are outside of their natural range.





**Fig. 5** View of open weedy ground layer.



**Fig. 6** View of small tree covered with the introduced *\*Syngonium apodophyllum*

## PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

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### **SUMMARY**

Spectacled Flying Foxes are attracted to the flowers of all four species of *Melaleuca* present in the Protected Plants Flora Survey area and there are many large trees that could provide suitable roosting sites. The use of this area as a roosting site may however have an adverse impact on the numerous large specimens of Ant Plant (*Myrmecodia beccarii*) present on many of the trees.

# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

## Cairns Cemetery Flora Survey

Family	Code	Taxon	Common Name
<b>FERNS &amp; ALLIES</b>			
<b>Polypodiaceae</b>		Drynaria rigidula	Basket Fern
		Platycterium hillii	Northern Elkhorn Fern
		Pyrrosia longifolia	
<b>GYMNOSPERMS</b>			
<b>Cycadaceae</b>		Cycas media subsp. banksii	Cycad Palm
<b>FLOWERING PLANTS-DICOTYLEDONS</b>			
<b>Acanthaceae</b>	*	Asystasia gangetica subsp. gangetica	Chinese Violet
<b>Amaranthaceae</b>	*	Alternanthera brasiliana	Brazilian Joyweed
	*	Alternanthera ficoidea	Joseph's Coat
<b>Anacardiaceae</b>		Blepharocarya involucrigera	Rose Butternut
		Euroschinus falcatus var. falcatus	Blush Cudgerie
<b>Apiaceae</b>		Centella asiatica	Pennywort
<b>Apocynaceae</b>	*	Allamanda cathartica	Yellow Allamanda
		Dischidia nummularia	Button Orchid
		Gymnanthera oblonga	Harpoon Bud
		Ichnocarpus frutescens	
		Ochrosia elliptica	Northern Ochrosia
		Tabernaemontana orientalis	Eastern Gondola Bush
<b>Araliaceae</b>		Polyscias australiana	Ivory Basswood
		Polyscias elegans	Celerywood
		Schefflera actinophylla	Umbrella Tree
<b>Asteraceae</b>	*	Ageratum conyzoides var. conyzoides	Blue Top; Billygoat Weed
	*	Cyanthillium cinereum var. cinereum	Purple Fleabane
	*	Sphagneticola trilobata	Singapore Daisy
	*	Synedrella nodiflora	Cinderella Weed
<b>Bignoniaceae</b>	*	Spathodea campanulata subsp. nilotica	African Tulip Tree
<b>Boraginaceae</b>		Cordia dichotoma	
<b>Burseraceae</b>		Canarium australianum var. australianum	Scrub Turpentine
<b>Caesalpiniaceae</b>	*	Bauhinia monandra	Orchid Tree
	*	Cassia fistula	Golden Shower Tree
	*	Delonix regia	Poinciana
		Intsia bijuga	Kwila
<b>Clusiaceae</b>		Calophyllum sil	Blush Touriga
<b>Combretaceae</b>		Terminalia catappa	Sea Almond
		Terminalia muelleri	Little Sea Almond
		Terminalia sericocarpa	Damson

# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

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Family Code	Taxon	Common Name
<b>Convolvulaceae</b>		
*	<i>Distimake dissectus</i>	Hairy Merremia
*	<i>Distimake quinquefolius</i>	Merremia
*	<i>Ipomoea hederifolia</i>	Cardinal's Flower
<b>Dilleniaceae</b>		
	<i>Dillenia alata</i>	Red Beech
<b>Ebenaceae</b>		
*	<i>Diospyros nigra</i>	Black Sapote
<b>Euphorbiaceae</b>		
	<i>Claoxylon hillii</i>	Hill's Brittlewood
*	<i>Euphorbia heterophylla</i>	Milkweed
	<i>Macaranga involucrata</i> var. <i>mallotoides</i>	Brown Macaranga
	<i>Macaranga tanarius</i>	Blush Macaranga
	<i>Mallotus philippensis</i>	Red Kamala
*	<i>Manihot esculenta</i>	Cassava
<b>Fabaceae</b>		
	<i>Abrus precatorius</i>	Gidee Gidee
*	<i>Centrosema molle</i>	Centro
*	<i>Crotalaria pallida</i> var. <i>obovata</i>	Streaked Rattle Pod
	<i>Dalbergia candenatensis</i>	Dalbergia
*	<i>Macroptilium atropurpureum</i>	Sirato
	<i>Vandasina retusa</i>	
<b>Flacourtiaceae</b>		
	<i>Scolopia braunii</i>	Flintwood
<b>Lamiaceae</b>		
	<i>Clerodendrum longiflorum</i> var. <i>glabrum</i>	Witches Tongues
	<i>Premna serratifolia</i>	Coastal Premna
<b>Lauraceae</b>		
	<i>Cryptocarya hypospodia</i>	Northern Laurel
	<i>Cryptocarya triplinervis</i> var. <i>riparia</i>	Brown Laurel
	<i>Endiandra hypotephra</i>	Rose Walnut
	<i>Litsea fawcettiana</i>	Bollywood
<b>Loranthaceae</b>		
	<i>Amyema conspicua</i> subsp. <i>conspicua</i>	Mistletoe
	<i>Dendrophthoe curvata</i>	Mistletoe
<b>Malvaceae</b>		
*	<i>Sida acuta</i>	Spinyhead Sida
*	<i>Urena lobata</i>	Urena Burr
<b>Meliaceae</b>		
	<i>Melia azedarach</i>	White Cedar
<b>Menispermaceae</b>		
	<i>Stephania japonica</i> var. <i>discolor</i>	Tape Vine
	<i>Tinospora smilacina</i>	Snake Vine
<b>Mimosaceae</b>		
	<i>Acacia crassicarpa</i>	Brown Wattle
	<i>Acacia mangium</i>	Sally Wattle
	<i>Acacia oraria</i>	Coastal Wattle
*	<i>Mimosa pudica</i> var. <i>unijuga</i>	Sensitive Plant
<b>Moraceae</b>		
	<i>Ficus benjamina</i>	Weeping Fig
	<i>Ficus hispida</i>	Hairy Fig; Boombil
	<i>Ficus opposita</i>	Sandpaper Fig
<b>Myrsinaceae</b>		
*	<i>Ardisia elliptica</i>	Shoe-button Ardisia
<b>Myrtaceae</b>		
	<i>Acmena hemilampra</i> subsp. <i>hemilampra</i>	Blush Satinash
	<i>Corymbia intermedia</i>	Pink Bloodwood
	<i>Corymbia tessellaris</i>	Moreton Bay Ash; Carbeen
	<i>Lophostemon suaveolens</i>	Swamp Mahogany
	<i>Melaleuca dealbata</i>	Red Tea Tree



# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

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Family	Code	Taxon	Common Name
		Melaleuca leucadendra	Tea Tree
		Melaleuca quinquenervia	Swamp Tea Tree
		Melaleuca viridiflora var. attenuata	Broad Leaf Tea Tree
	*	Syzygium cumini	Malabar Plum
	*	Syzygium jambos	Rose Apple
		Xanthostemon chrysanthus	Golden Penda; Black Penda
<b>Oleaceae</b>			
		Chionanthus ramiflora	Native Olive
		Jasminum elongatum	Native Jasmin
<b>Passifloraceae</b>			
	*	Passiflora edulis	Passion Fruit
	*	Passiflora foetida	Stinking Passion Fruit
<b>Phyllanthaceae</b>			
		Breynia cernua	Fart Tree
		Bridellia tomentosa	
		Flueggea virosa subsp. melanthesoides	White Currant
		Glochidion benthamianum	Bentham's Buttonwood
		Glochidion philippicum	Buttonwood
<b>Pittosporaceae</b>			
		Pittosporum tinifolium	Rusty Pittosporum
<b>Proteaceae</b>			
		Stenocarpus sinnatus	Wheel-of-fire Tree
<b>Rhamnaceae</b>			
		Alphitonia excelsa	Red Ash
		Alphitonia petriei	Pink Ash
		Rhamnella vitiensis	
<b>Rhizophoraceae</b>			
		Carallia brachiata	Corky Bark
<b>Rubiaceae</b>			
		Atractocarpus fitzalanii subsp fitzalanii	Brown Gardenia
	V	Myrmecodia beccarii	Ant Plant
		Nauclea orientalis	Leichhardt Tree
<b>Rutaceae</b>			
		Melicope elleryana	Evodia
		Melicope rubra	Evodiella
	*	Murraya paniculata cv. "Exotica"	Mock Orange
<b>Santalaceae</b>			
		Exocarpos latifolius	Native Cherry
<b>Sapindaceae</b>			
		Allophylus cobbe	
		Cupaniopsis anacardioides	Tuckeroo
		Ganophyllum falcatum	Daintree Hickory
		Guioa acutifolia	Glossy Tamarind
		Jagera pseudorhus var. pseudorhus	Foambark
		Toechima daemelianum	Cape Tamarind
<b>Sparrmanniaceae</b>			
	*	Triumfetta rhomboidea	Chinese Burr
<b>Sterculiaceae</b>			
		Brachychiton acerifolius	Flame Tree
<b>Verbenaceae</b>			
	*	Stachytarpheta jamaicensis	Blue Snakeweed
<b>Vitaceae</b>			
		Cayratia maritima	Coastal Water Vine
		Cissus adnata	Endeavour River Grape

# PROTECTED PLANTS FLORA SURVEY CAIRNS CEMETERY

Family	Code	Taxon	Common Name
<b>FLOWERING PLANTS-MONOCOTYLEDONS</b>			
<b>Araceae</b>	*	Dieffenbachia seguine	Dumb Cane
	*	Syngonium podophyllum	Goosefoot
<b>Arecaceae</b>		Archontophoenix alexandrae	Alexandra Palm
	*	Arenga sp.	
	#	Carpentaria acuminata	Carpentaria Palm
	*	Caryota mitis	Clustered Fishtail Palm
	*	Cocos nucifera	Coconut
	*	Livistona chinensis	Chinense Fan Palm
		Livistona muelleri	Mueller's Fan Palm
	#	Ptychosperma macarthurii	Macarthur Palm
<b>Cannaceae</b>	*	Canna indica	Indian Shot
<b>Commelinaceae</b>	*	Callisia repens	Creeping Inch Plant
	*	Commelina benghalensis	
		Commelina diffusa	Wandering Jew
	*	Tradescantia spathacea	Moses-in-the-boat
<b>Cyperaceae</b>	*	Cyperus aromaticus	Navua Sedge
		Cyperus javanicus	
	*	Cyperus sphacelatus	Roadside Flatsedge
<b>Dracaenaceae</b>	*	Dracaena fragrans	Happy Plant
	*	Sansevieria trifasciata	Mother-in-laws Tongue
<b>Heliconiaceae</b>	*	Heliconia psittacorum	Heliconia
<b>Laxmanniaceae</b>		Cordyline manners-suttoniae	Native Cordyline
<b>Orchidaceae</b>		Cymbidium canaliculatum	Black Orchid
<b>Pandanaceae</b>		Pandanus cookii	Cook's Pandan
		Pandanus slomslaubachii	Swamp Pandan
<b>Poaceae</b>	*	Eleusine indica	Crow's Foot Grass
	*	Megathyrsus maximus var. maximus	Guinea Grass
	*	Urochloa mutica	Para Grass
<b>Smilacaceae</b>		Smilax australis	Sarsaparilla Vine
<b>Strelitziaceae</b>	*	Ravenala madagascariensis	Travellers Palm

# Contemporary Report



## **LAND MANAGEMENT PLAN**

### **LITTLE STREET CEMETERY**

**RESERVE FOR CEMETERY PURPOSES R268**

**RESERVE FOR CEMETERY (EXTENSION)  
PURPOSES R868**

updated June 2018

**CAIRNS REGIONAL COUNCIL**



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**VERSION HISTORY**

<b>Version</b>	<b>Date</b>	<b>Comment</b>
v1	June 2018	This land management plan has been prepared to manage use of the trust land. There is no proposed tenure, therefore this document has not been submitted for approval under the <i>Land Act 1994</i> .

## 1. INTRODUCTION

---

This land management plan applies to the trust land known as Little Street Cemetery.

**Subject land:** Lot 115 on NR800836 and lot 1 on SP273012

**Address:** Little Street, Cairns North

### 1.1 Land management plan duration

Duration: Ongoing

Review: Review of the land management plan may occur:

- at the expiry or surrender of current trustee leases;
- when a request is received for secondary use that is not currently catered for in this land management plan; or
- earlier as required by the Minister, subject to three (3) months' notice being given to the trustee of a requirement for review from the Minister in accordance with the *Land Act 1994*.

## 2. TRUSTEE DETAILS

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**Trustee's name** Cairns Regional Council

**Trustee's address** 119-145 Spence Street  
PO Box 359  
CAIRNS Q 4870

## 3. EXISTING TENURE OF THE SUBJECT LAND

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**Trust land description:** Reserve for cemetery purposes R268  
Reserve for cemetery (extension) purposes R868

**Gazettal date:** R268 - 29 June 1935  
R868 - 17 December 1938

**Lot / plan:** R268 - lot 115 on NR800836  
R868 - lot 1 on SP273012

**Local government:** Cairns Regional Council

**Area of land:** R268 - 33.55 ha (surveyed)  
R868 - 1.625 ha (surveyed)

## **4. EXISTING USES**

---

### **4.1 Existing uses – primary and secondary**

The trust land is primarily used as a cemetery.

Under the Cairns Plan 2016, the areas of lots 115 and 1 used for cemetery purposes is zoned as community facilities with the remaining undeveloped part of the trust land being zoned as conservation, as shown at appendix C.

### **4.2 Existing interests**

Easement in gross no 716774247 for drainage purposes over easement A and B on SP271400 registered over lot 115 on NR800836 to provide for drainage pipes within the trust land from the structure located on lot 519 on NR5523.

Annual trustee permits have been issued to ARC Disability Services since 2015 for a community garden over an area of approx. 1492m<sup>2</sup> of lot 115 on NR800836 shown at appendix D. The trustee permit area adjoins lot 731 on NR7506 which is leased to ARC Disability Services until 30 June 2025.

## **5. PROPOSED SECONDARY USE/S OF THE SUBJECT LAND**

---

### **5.1 Proposed use/s of the subject land**

Construction and establishment of a flying fox nursery within the conservation zoned part of lot 115 on NR800836. Orphaned and young native flying foxes would be raised in the structure and cared for by professional animal carers during the bat-birthing season, these professionals will be acting as Council's volunteers.

This proposal entails construction of 1 or 2 large aviary style structures on concrete footings or slabs of approx. 10m x 5m floor size, with wire cage construction and solid zincalume roof to be used on a seasonal basis and includes use and maintenance of existing tracks to service and attend to the nursery.

This site has been selected due to:

- it having less chance of disturbance to the roost site from urban impacts and less juvenile mortality;
- its proximity to the current CBD roost, with the view of herding bats to a new preferable location; and
- it having suitable vegetation that flying foxes might use as a roost site.



At this stage no tenure is proposed to be issued to operate the flying fox nursery, however, this land management plan will be amended if tenure needs to be issued by the trustee at some point in the future.

**5.2 Is the proposed or existing secondary use consistent with the primary use of the trust land?**

No – the trustee considers that the proposed inconsistent use of the trust land does not diminish use of the trust land for its dedicated purpose.

## **6. COMMUNITY CONSULTATION**

---

Community consultation would be undertaken for any proposed intensification or development of the trust land in accordance with Council’s development application process.

## **7. SUMMARY AND RECOMMENDATION**

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Where a written authority under section 64 of the *Land Act 1994* is current, the trustee is able to issue trustee leases for consistent use of the trust land.

Any proposed inconsistent trustee leasing of the trust land that does not diminish use of the trust land for its dedicated purpose will be submitted by the trustee for approval in terms of the *Land Act 1994*.

## **8. APPENDICES**

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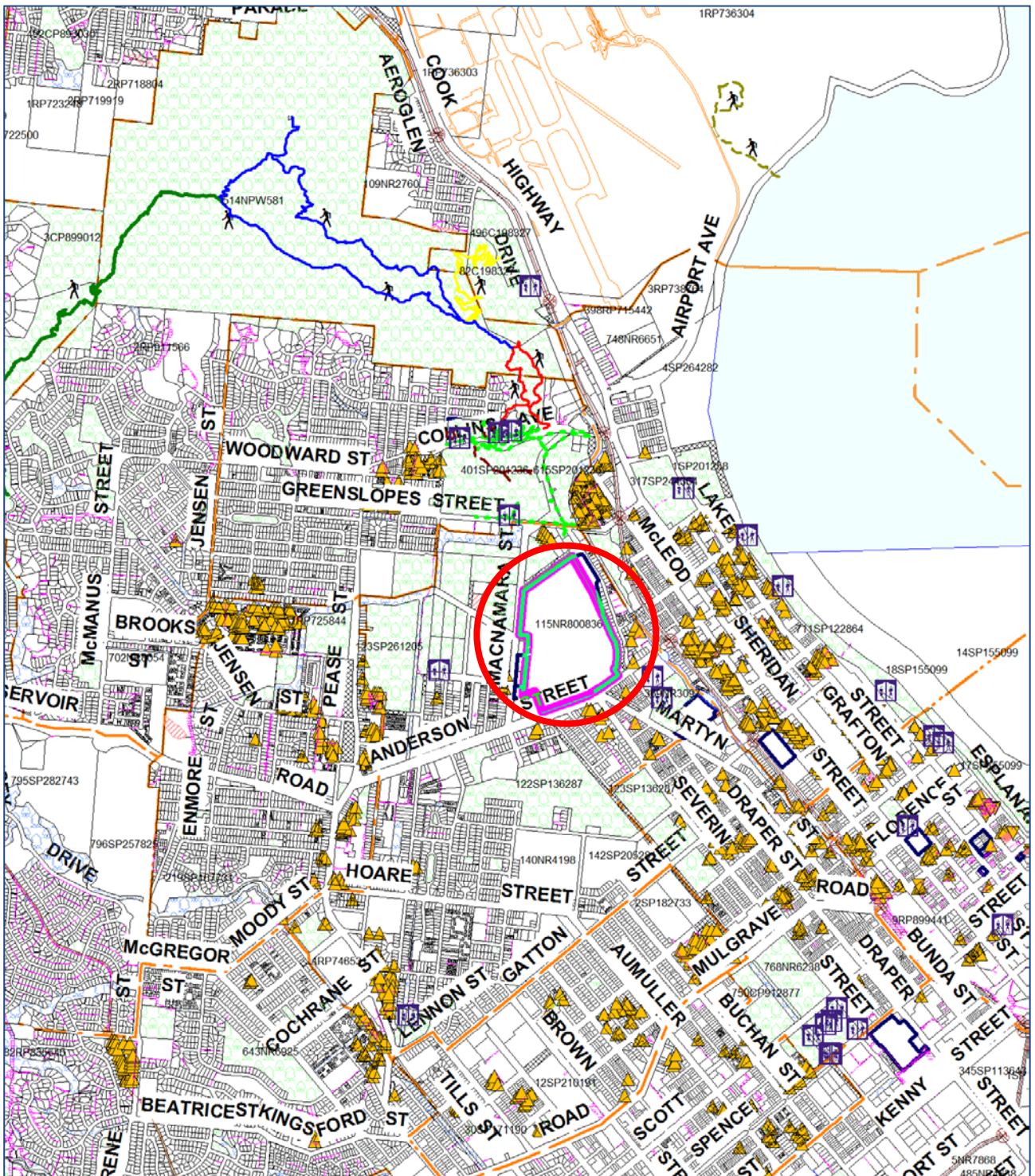
Appendix A – Locality map

Appendix B – Aerial photo of trust land

Appendix C – CairnsPlan 2016 zoning

Appendix D – Aerial photo showing location of existing interests and proposed flying fox nursery

Appendix A – Locality map



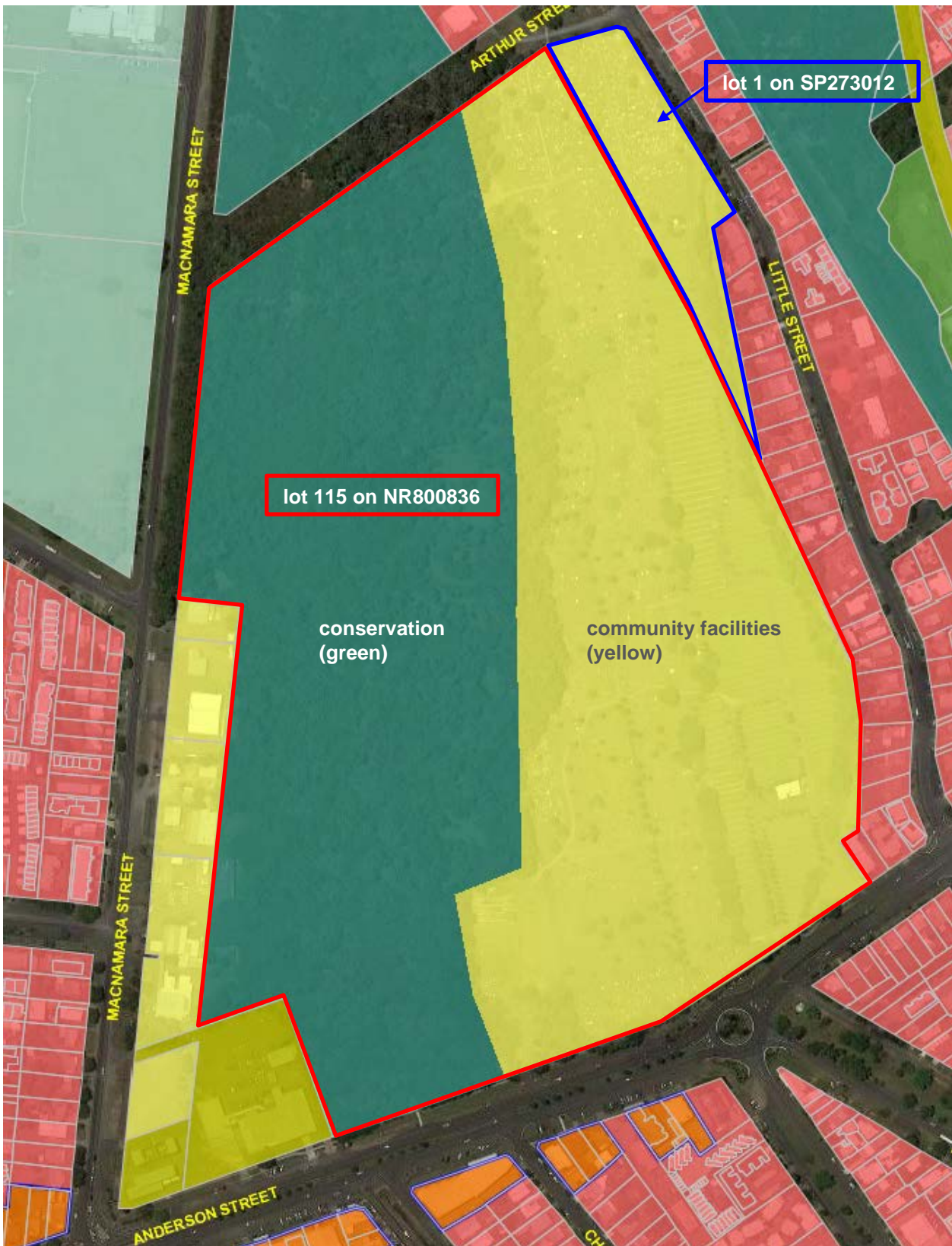


Appendix B – Aerial photo of trust land





Appendix C – CairnsPlan 2016 zoning





Appendix D – Aerial photo showing location of existing interests and proposed flying fox nursery



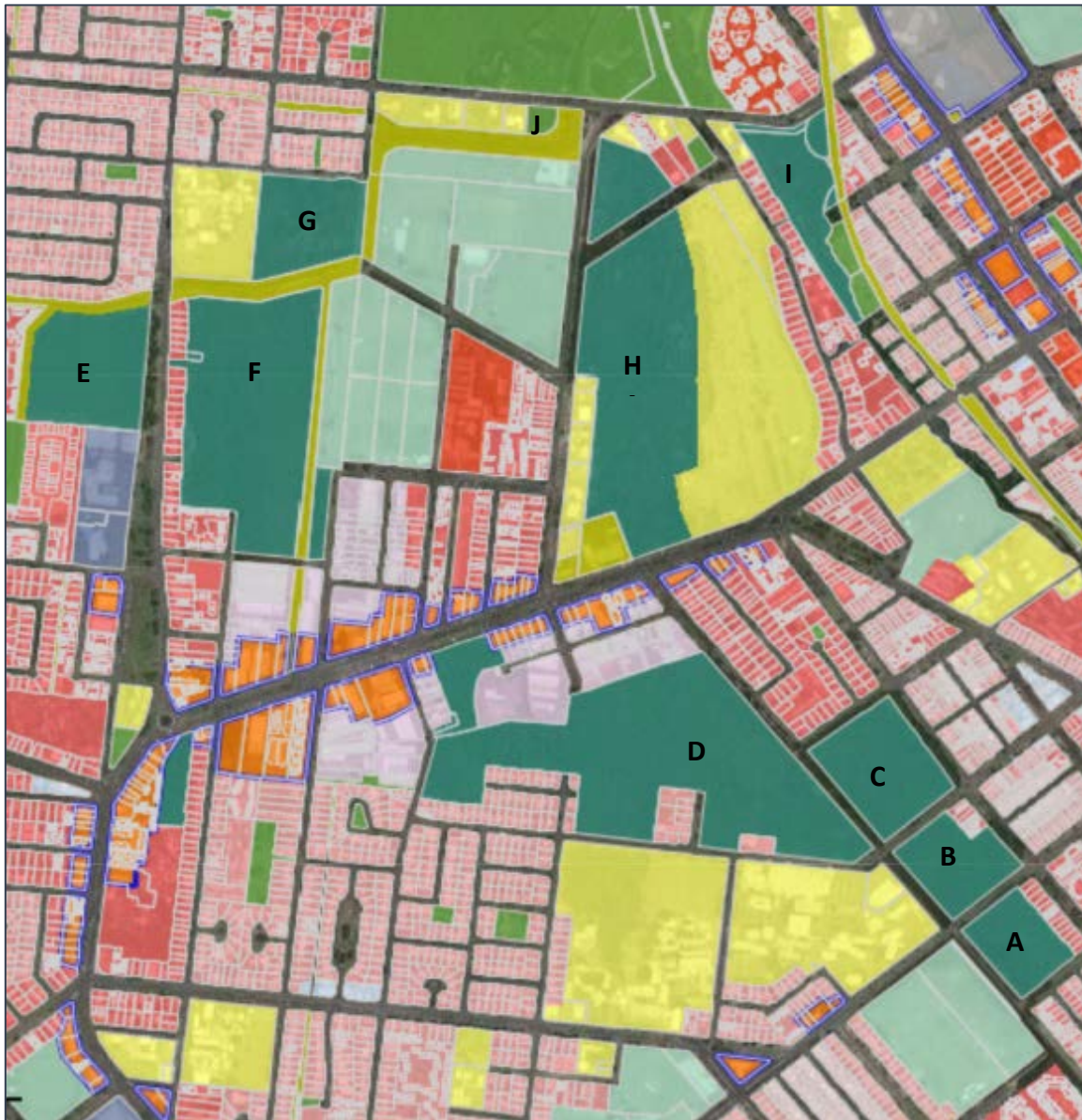
Appendix E:  
Cairns Central Swamp Land  
Zoning



## Cairns Central Swamp Site – Planning Zones & Consideration

Cairns Central Swamplands are covered by a Conservation zone to protect and enhance the biological diversity and ecological integrity of the ecosystems occurring within the area.

**Total area of approximately 113 Hectares of Conservation Zoned land**

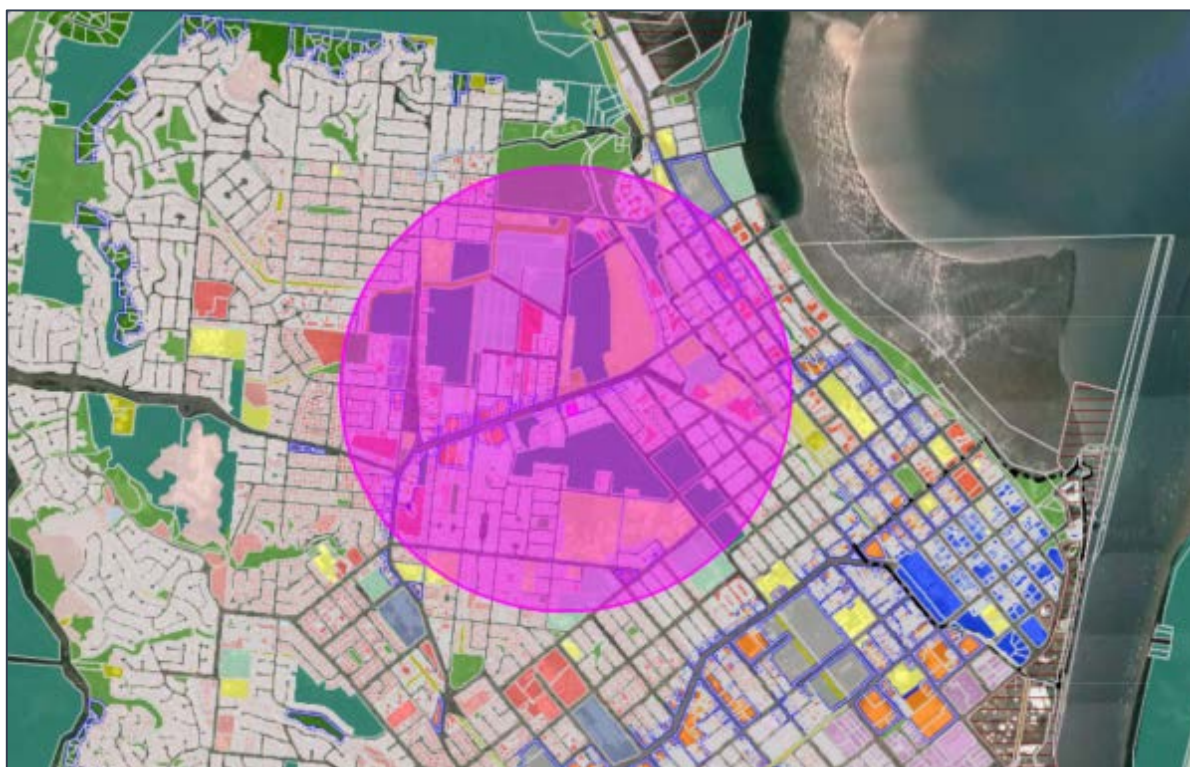


### Overlays

Zone	Conservation
Acid Sulfate Soils	Land at or below 5m AHD
Airport Environs	Aviation Facility - Redden Creek PSR, Aviation Facility - Redden Creek SSR, Wildlife Hazard Zone - 3-8km Wildlife Hazard Zone, Light Intensity Zone - Lighting Buffer Zone, PAN-OPS Area - Within PANS-OPS Area, Obstacle Limitation Surface - 46.0m AHD
Bushfire	High potential intensity, Bushfire potential impact buffer
Flood & Inundation	Flood Inundation (100 year ARI), Sub-precinct Zone 2 - CBD & Environs
Landscape Values	High landscape values
Natural Areas	MLES & MSES protected areas

## Cairns Central Swamplands – consists of the following

	Zone	Lot	Plan	Tenure	Area (ha)	Location
A	Conservation	118 & 119	SP136287 SP136287	Crown Land Council Trustee Environmental Reserve	0.1219 3.534	Severin Street, Gatton Street, Upward Street and Fearnly Street waterway.
B	Conservation	120	SP136287	Crown Land Council Trustee Environmental Reserve	3.935	Severin Street, Gatton Street, Upward Street and Fearnly Street waterway and Grove Street.
C	Conservation	123	SP136287	Crown Land Council Trustee Environmental Reserve	5.919	Severin Street, Gatton Street, Grove street and to the east of Fearnley Street waterway.
D	Conservation	122 124	SP136287 SP136301	Crown Land Council Trustee Environmental Reserve	24.3 2.174	Fearnly Street waterway and Wilkinson Street to the south and east and stretching westwards towards English Street and Anderson Street.
E	Conservation	1	RP725844	Freehold land Cairns Regional Council	8.554	The Pease Street area between Saltwater Creek and Pease Street.
F F&G	Conservation	16 123	C198289 SP136286	Crown Land Council Trustee Environmental Reserve	0.733 22.31	Area behind Pease Street houses Pease Street south (F) and north (G) of Saltwater Creek.
H	Conservation	115 3	NR800836 CP886975	Crown Land Council Trustee Cemetery Reserve Cultural Reserve	33.55 2.798	The cemetery area between Macnamara Street, Anderson Street and the Cemetery.
I	Conservation	71 3 3 4	SP136285 RP701191 RP701192 RP701192	Crown Land Council Trustee Environmental Reserve	4.13 0.4907 0.022 0.1012	The triangular Lily Creek area on the corner of Greenslopes Street, Little Street and Lily Creek
J	Conservation	566	NR6086	Crown Land Council Trustee Environmental Reserve	0.4578	Corner block between Saltwater Creek, Greenslopes Street and adjacent to the Rondo Theatre.
<b>Total Area</b>					<b>113.1 (ha)</b>	





## **Conservation Zone**

The purpose of the Conservation zone code is to provide for the protection, restoration and management of areas identified as supporting significant biological diversity and ecological integrity. The local government objective is to ensure the conservation, protection and restoration of the biological diversity, ecological integrity and scenic amenity values of land and provide for habitat connectivity and to recognise that land within this zone is generally not suitable for further development.

In 2005 Council engaged the services of a number of experts to produce the Cairns Central Swamp Wetland Management Plan to produce a detailed evaluation of the status of knowledge regarding the values of the swamp in terms of ecology, cultural heritage, social services and urban processes.

The Cairns Central Swamp site will not be developed and is protected from further encroachment from high density development by virtue of the surrounding low density residential zones.

### **Link to CairnsPlan 2016 Conservation Code -**

[https://www.cairns.qld.gov.au/\\_data/assets/pdf\\_file/0005/289571/Conservation-zone-code-v1.3.pdf](https://www.cairns.qld.gov.au/_data/assets/pdf_file/0005/289571/Conservation-zone-code-v1.3.pdf)

### **Link to Development Control Plan for Cairns Central swamp –**

[https://www.cairns.qld.gov.au/\\_data/assets/pdf\\_file/0019/7138/DCP3.pdf](https://www.cairns.qld.gov.au/_data/assets/pdf_file/0019/7138/DCP3.pdf)

Appendix F:  
Cairns Airport Planning and Flight  
Path




CRC Bird and Bat Hazards

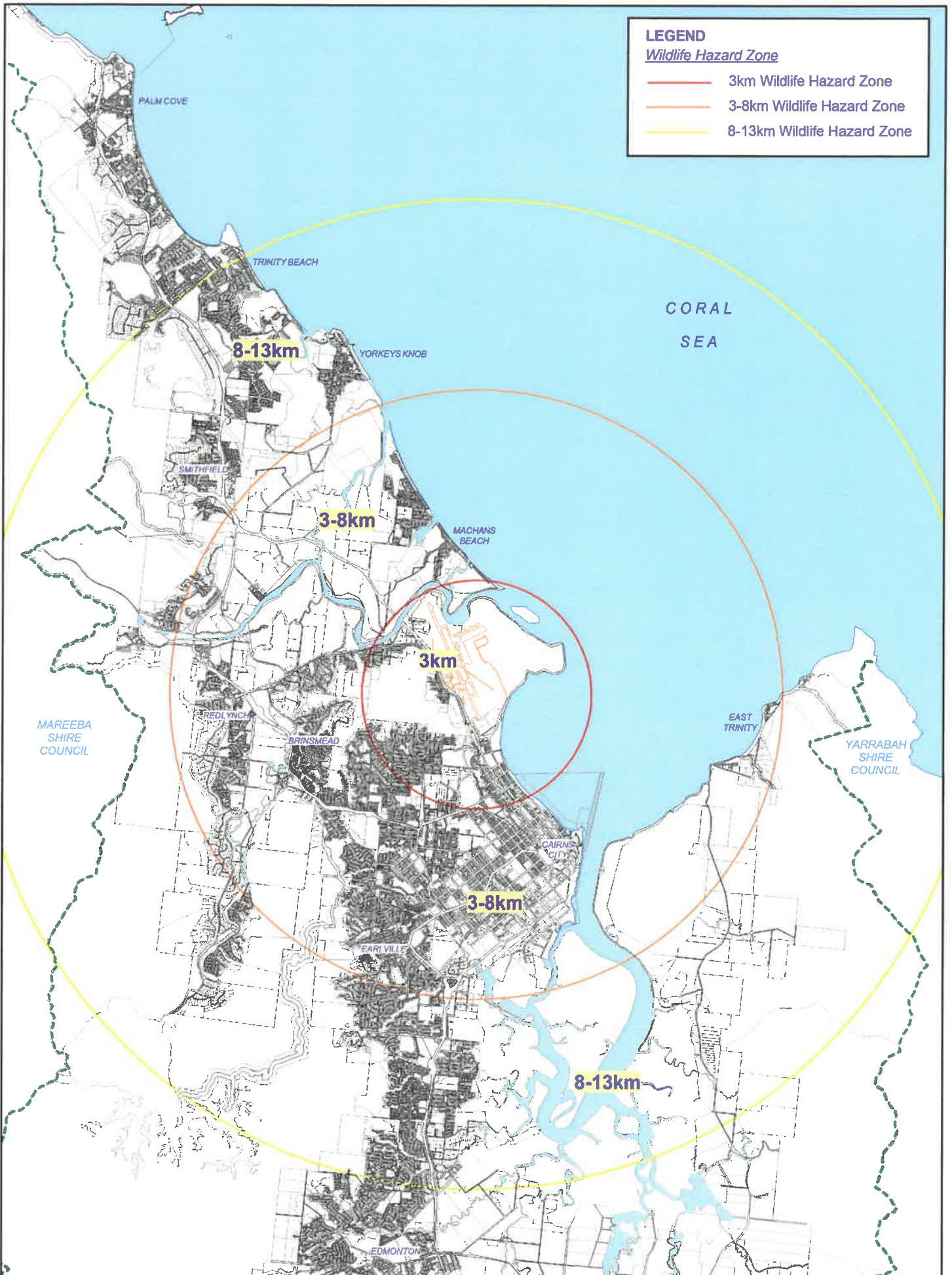
Air Services Australia Flight Paths

# CRC Bird and Bat Hazards

**LEGEND**

Wildlife Hazard Zone

-  3km Wildlife Hazard Zone
-  3-8km Wildlife Hazard Zone
-  8-13km Wildlife Hazard Zone





**LEGEND**

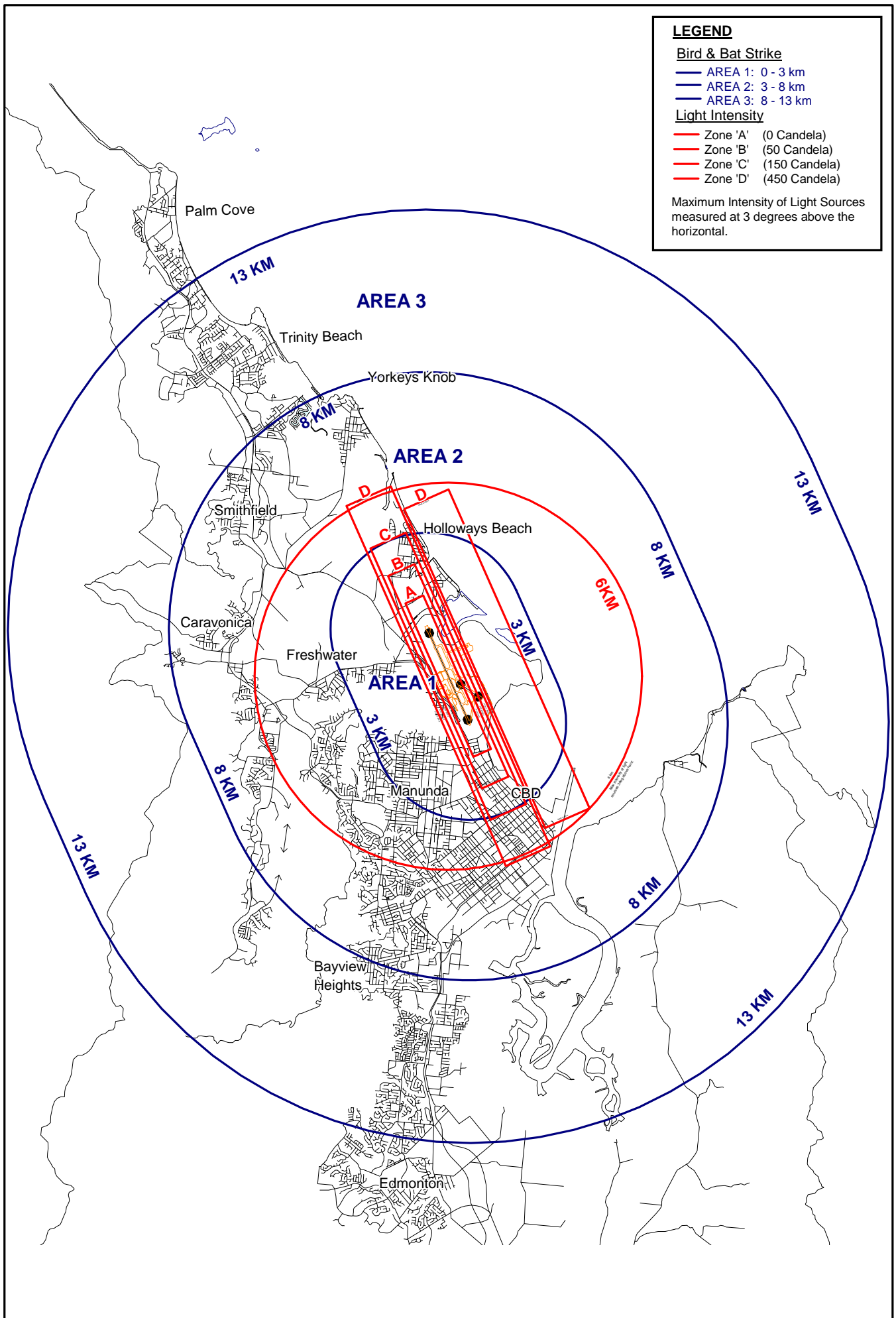
**Bird & Bat Strike**

- AREA 1: 0 - 3 km
- AREA 2: 3 - 8 km
- AREA 3: 8 - 13 km

**Light Intensity**

- Zone 'A' (0 Candela)
- Zone 'B' (50 Candela)
- Zone 'C' (150 Candela)
- Zone 'D' (450 Candela)

Maximum Intensity of Light Sources measured at 3 degrees above the horizontal.



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authorization is absolutely prohibited.

NOT TO SCALE


P.O. Box 359 Cairns, Qld., 4870 Tel: (07) 4044 3044 Fax: (07) 4044 3022



**Cairns Regional Council**  
Primary Light Control Plans/Bird  
and Bat Strike Hazards

Source: Cairns Port Authority



	
<b>BirdStrike_PLCP.WOR</b>	
Commencement Date:	Mar 2009
Amendment Date:	

# Air Services Australia Flight Paths

[back to aircservices](#)

## Cairns Airport

[Intro](#) [Movements](#) [Flight Paths](#) [Runways](#) [Investigations & Consultation](#) [Noise Monitoring](#) [Complaints](#)

### Flight Paths

#### Arrivals

Jets arriving from the north tend to follow one of two paths.

Aircraft will generally approach from the north east, crossing the coast at Richter's Creek, largely avoiding residential areas.

Aircraft using the Instrument Landing System on Runway 15 will approach over land directly from the north, flying over some suburbs. This approach will be used most frequently in poor weather, but international carriers will often use this approach regardless of the weather conditions. This type of approach requires aircraft to be at around 3000 feet when they begin their approach. Aircraft will descend steadily to the runway using the horizontal and vertical guidance provided by the system.

The approach from the south is straight in from the south-east, and passes over the central business district.

There is no minimum altitude for aircraft in process of landing. Aircraft will generally descend on a glide slope of three degrees.

#### Departures

Departure flight paths allow aircraft to maintain the runway heading for a short time until they are stabilised in flight, and then to turn towards the route that will take them to their destination.

Jet departures to the south turn soon after take-off to the east, crossing over the ocean. Some residential areas are over flown but these are limited to suburbs within four kilometres of the airport, and the central business district is not overflown.

Departures to the north turn to the north-east to cross the coast at Richter's Creek. This flight path flies over a small number of suburbs.

The altitude of aircraft after departure will depend on factors such as the type of aircraft and its weight, how heavily laden it is with fuel and passengers, and the atmospheric conditions at the time. All these factors affect an aircraft's climb rate. There is no regulated minimum altitude for an aircraft in the process of taking off.

[back to aircservices](#)

A growing number of modern aircraft are now fitted with navigation systems that use satellite-assisted guidance which allow aircraft to fly with a higher degree of accuracy and more closely follow the same route as other aircraft. Aircservices refers to these routes as 'Smart Tracking'. Smart Tracking technology makes air travel safer, cleaner and more dependable. It also has the potential to improve noise outcomes for communities living close to airports.

In May 2013, Aircservices implemented [ten permanent Smart Tracking flight paths](#) at Cairns. All but one of these tracks is within previously existing flight paths, and none fly directly over the city. The main benefit of Smart Tracking at Cairns is that more departing and arriving jets will be able to use the Richter's Creek corridor north of the airport, which means that they avoid residential areas.

## Flight path information

See below for images of typical flight paths and how frequently they were used in the quarter indicated. Please note that aircraft do fly outside the shown swathes. For example, the swathes do not extend to all the areas that are overflowed by arriving aircraft prior to aligning with the runway, or show the full length of departure flight paths. Further, aircraft may be directed off the usual flight paths for reasons including the need to avoid bad weather or for traffic management, that is, to ensure safe separation between aircraft. See [WebTrak](#) for further information about where aircraft fly. More explanation is also available in the [Why Aircraft Fly Where They Do](#) fact sheet.

You can access historical information about flight path use through [WebTrak](#). To access this information click the "Historical" link below the text in the Quick Start Guide at the top left-hand side of the screen. Then use the tick boxes at the bottom-right of the screen to select monthly, quarterly or yearly information. Use the sliders to refine your selection to specific timeframes.

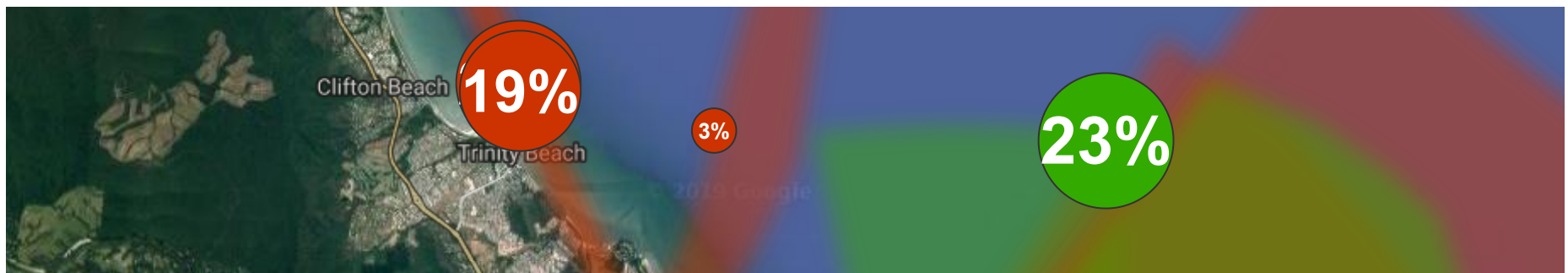
— April - June 2019

### Flight path use

The image below shows typical flight path 'swathes' for aircraft arriving (red) and departing (green) Cairns Airport.

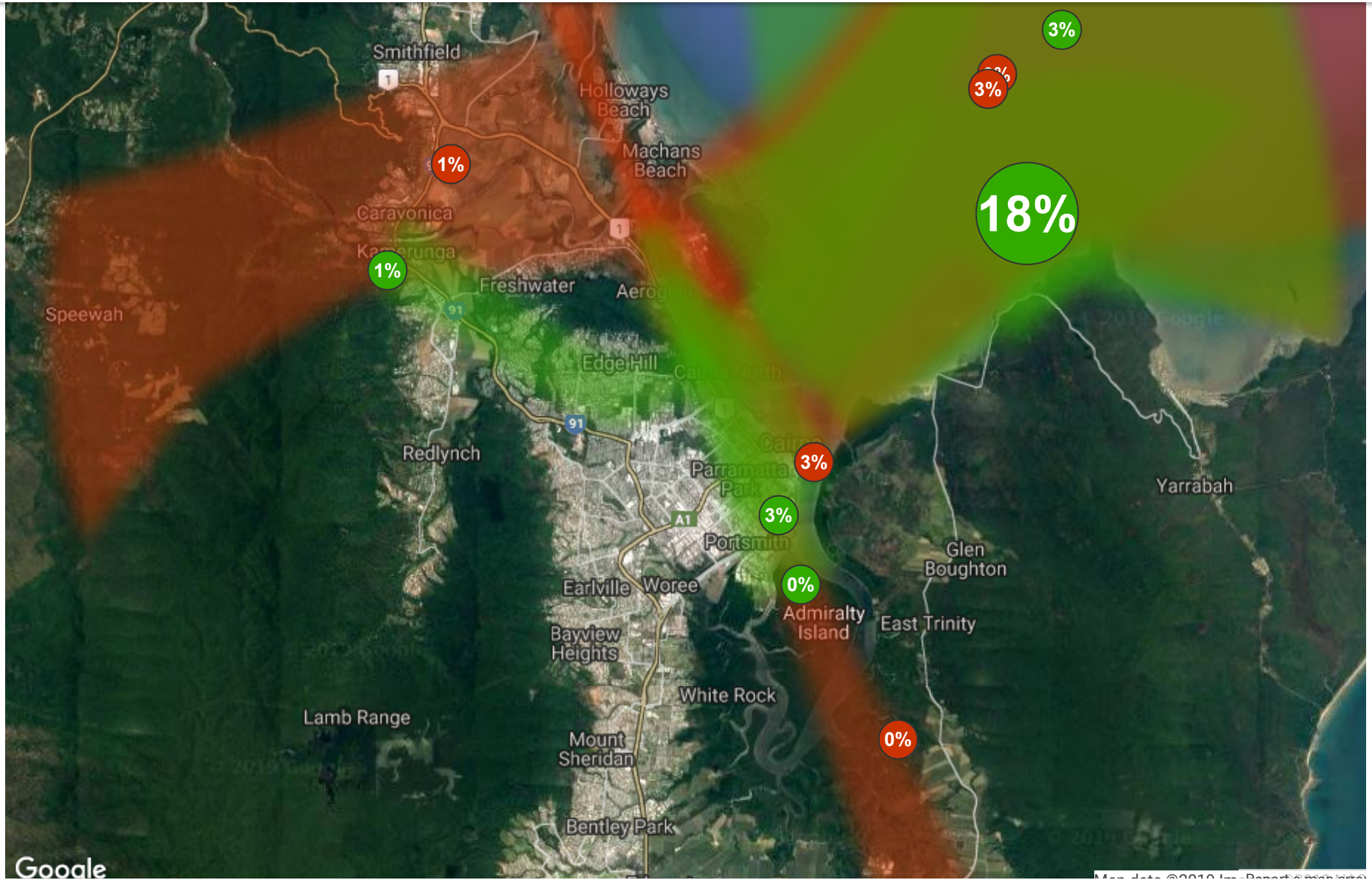
**How To:** Arrivals (shown in red), Departures (shown in green) or Both can be selected using the links immediately below. The figure in the circle is the percentage of aircraft using each flight path during the quarter for the type of operation selected. As you click the (i) icon on the swathe tag, or the applicable radio button below the map, the charts below will change to display information for that flight path. Hover the mouse over a swathe to highlight it.

[Arrivals](#) | [Departures](#) | [Both](#)





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Arrival Paths



[back to airtservices](#)

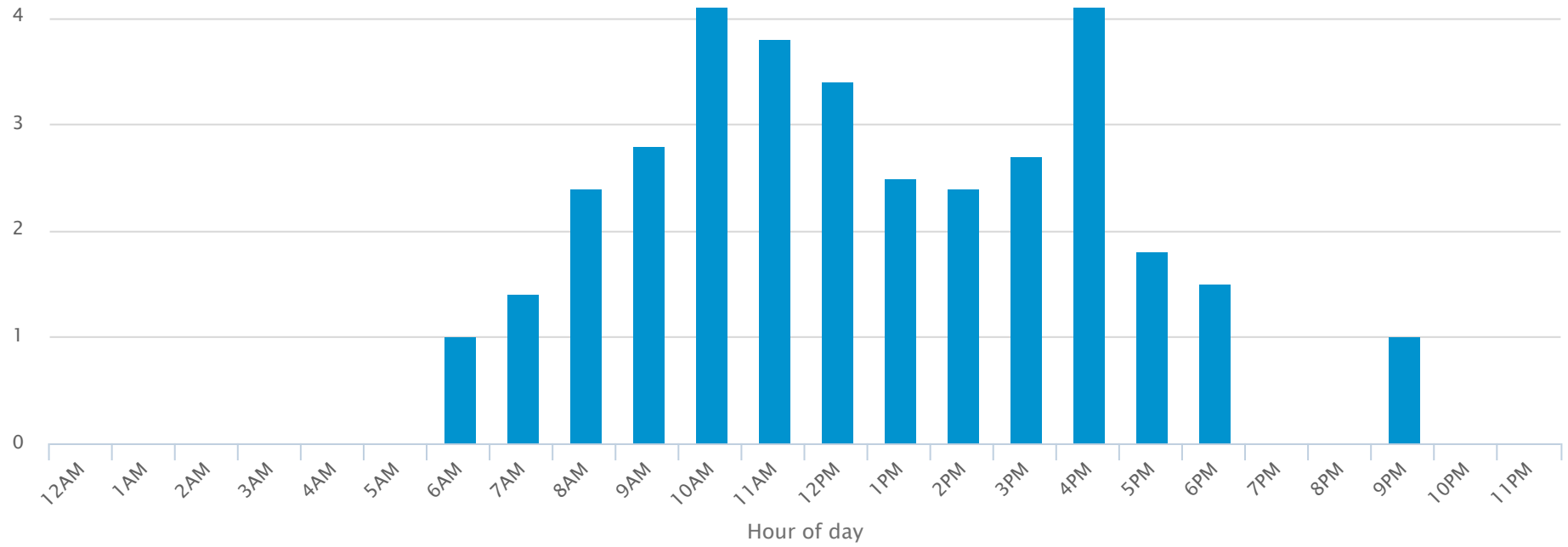
<input type="radio"/> to 15 (A_NE_15)	<input type="radio"/> (A_N_15)	<input type="radio"/> to 15 (A_NW_15)	<input type="radio"/> jets (A_N_NJ)	<input type="radio"/> jets (A_W_NJ)	<input type="radio"/> jets (A_S_NJ)
<input type="radio"/> From south to helipad (A_S_H)	<input type="radio"/> From east to helipad (A_E_H)				

**Departure Paths**

<input type="radio"/> To south-east from 15 (D_SE_15)	<input type="radio"/> To south, non-jets (D_S_NJ)	<input type="radio"/> To north-east from 15 (D_NE_15)	<input type="radio"/> To west, non-jets (D_W_NJ)	<input type="radio"/> To north-east, non-jets (D_NE_33_NJ)	<input type="radio"/> To north-east from 33, jets (D_NE_33_J)
<input type="radio"/> To west from 33, non-jets (D_W_33_NJ)	<input type="radio"/> To south from helipad (D_S_H)	<input type="radio"/> To east from helipad (D_E_H)			

**Hourly movements (average)**

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### Aircraft types

[back to aircservices](#)



**+ January - March 2019**

**+ October - December 2018**

**+ July - September 2018**

**+ April - June 2018**

**+ January - March 2018**



[back to aircservices](#)

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**+ July - September 2017**

**+ April - June 2017**

**+ January - March 2017**

**+ October - December 2016**

**+ July - September 2016**

**+ April - June 2016**

**+ January - March 2016**

Appendix G:  
CRC Policy Documents



## Cairns Regional Council Flying Fox Assessment Matrix

<u>Location:</u>		<u>Date:</u>		
	<b>1</b>	<b>2</b>	<b>3</b>	<b>Score</b>
<b>No: of Bats</b>	0-250	250-500	>500	
<b>Dist from houses</b>	>75-50m	50-25m	<25m	
<b>No: of houses impacted</b>	1-10	10-20	>20	
<b>Setting</b>	Natural area or Low Density Residential/industrial	Medium Density Residential/industrial	High Density Residential/industrial	
<b>Noise</b>	Very little -some occasional	Noticeable, intermittent	Loud continuous	
<b>Smell</b>	Weak occasional	Medium intermittent	Strong continuous	
<b>Mess</b>	0-20% coverage	20-50%	>50% coverage	
<b>Health</b>	Low risk	Medium risk	High risk	
<b>Achievability</b>	Low	Medium	High	
<b>Cost of Action</b>	High	Medium	Low	
			<b>Total</b>	/30



## Cairns Regional Council Flying Fox Assessment Matrix

Score	Response	Actions
0-20	No immediate action Monitor frequently	Provide information & Education, Community liaison, Individual resident liaison, Investigate possible operational works if conditions change
21-30	Intervention required	Formulate action plan, scope resources, State & Commonwealth Government Agency liaison*, Operational works

Attribute	Assessment Criteria
Number of Bats	Influences the potential impacts - high numbers increase the impacts of all attributes
Distance from houses	Influences the potential impacts – closer to houses/buildings the greater impact of noise, smell, health and Impact on assets
Number of houses impacted	How many houses are impacted - one or two house in a semi remote or a residential area to high density housing estates
Setting	Is the roost occupying a natural habitat and this is where you expect bats to roost. Are the bats in a residential area? Is it near a school, hospital or childcare, old age housing, airport?
Noise	Is the noise only for a little while eg early morning/late evening; quite or loud can use decibel readings – Environmental health standards
Smell	How strong is the smell and how often can it be smelt
Mess	Quantify the coverage of bat droppings on footpaths, and other park infrastructure using a percentage and or damage to assets
Health	What are the main concerns? Is it a general perception issue or legitimate health concern? QLD Health or other health professional required to advise if there are exception circumstances.
Achievability	Will dispersal work and not just shift the problem somewhere else eg –Riparian zone – will the bats simply move a few hundred metres. How long has the roost been occupied – the longer the occupation the harder to disperse.
Costs	Each intervention has a cost ranging from relative low costs but resource demanding passive actions eg smoke, lights to extremely high costs associated with habitat modification or long term actions

\* in some cases it may be prudent to consider the EPBC Act prior to undertaking an action that could impact on EPBC-listed flying foxes, and to seek advice from the department in those cases.



**FLYING FOX COLONY MANAGEMENT**

**Intent:** This policy is intended to outline Cairns Regional Council's position concerning Flying Fox Management within designated urban areas in accordance with relevant legislation.

**Scope:** The provisions of this policy apply to defined urban areas designated within Council's planning scheme as having a residential or commercial purpose including a buffer of one (1) kilometre. The defined urban areas will collectively be referred to as Urban Flying Fox Management Areas (UFFMA).

**Out of Scope:**

- Non-Urban areas; and
- Flying fox roosts on non-Council land.

**PROVISIONS**

Cairns Regional Council acknowledges that:

- Flying foxes are an important part of the natural environment and play a significant role in the pollination and seed dispersal of natural vegetation.
- A balanced approach will be taken when managing a flying fox roost which considers the needs and expectations of the community with the welfare and unpredictable behaviours of the animals themselves.
- However, the health and wellbeing of people is to be given primary consideration over the health and wellbeing of flying foxes, where there is conflict between the two;
- Flying foxes will not be culled and only non-lethal methods of dispersal will be used.

The following principles will be considered as part of every colony relocation decision:

- Location of the flying fox roost;
- Environmental impact;
- Welfare of the animal;
- Public amenity;
- Community health and safety;
- Appropriate consultation being undertaken;
- Sufficient resources and funding being available to carry out the management activity.

**IMPLEMENTATION**

Council will adhere to an adopted Code of Practice which focuses on how management activities will be conducted.

◆◆◆◆◆

**This policy is to remain in force until otherwise determined by Council.**

**General Manager Responsible for Review:**

**Community, Sport & Cultural Services**

**ORIGINALLY ADOPTED: 18/12/2013**

**CURRENT ADOPTION: 21/02/2018**

**DUE FOR REVISION: 21/02/2022**

**REVOKED/SUPERSEDED:**



**John Andrejic**  
Chief Executive Officer

## JOB SAFETY ANALYSIS
















### SECTION A: JOB DETAILS

Job Title:	Bat management and deterrent activities		
Location/Address:	Various		
Description of Work:	Utilising high intensity light, variety of sound and Long Range Acoustic Device (LRAD) technology to undertake deterrent activities	Date/s of Activity:	01 <sup>st</sup> May to 30 <sup>th</sup> October
Prepared by:	Coordinator Safety Systems Coordinator Environmental Services	Date Prepared:	01/07/2019
<b>PERMIT REQUIRED</b>	<del>Confined Space</del>	<b>ISOLATION</b>	Mechanical
	<del>Hot Works</del>		Hydraulic
		Electrical	Pneumatic

## SECTION B: RISK MANAGEMENT PROCESS

<b>Step 1</b>	<b>Identify hazards</b> – Identify the things or situation that could potentially cause harm to people.
<b>Step 2</b>	<b>Assess risks</b> – Consider what could happen if someone is exposed to a hazard and how likely that is.
<b>Step 3</b>	<b>Control hazards</b> – Try to eliminate the risk first, or if that is not possible, put controls in place that minimise the risk so far as reasonably practicable.
<b>Step 4</b>	<b>Residual risk</b> – Re-Assess the risk for each task with the control measures implemented
<b>Step 5</b>	<b>Communicate and implement control measures; and</b>
<b>Step 6</b>	<b>Monitor and review the effective of the control measures</b> – ensure they are working as planned. If not, review the task analysis, hazard and controls and rectify.

## STEP 1: HAZARD IDENTIFICATION

CATEGORY	HAZARD	CATEGORY	HAZARD	CATEGORY	HAZARD
Gravitational 	<input checked="" type="checkbox"/> Falling object <input type="checkbox"/> Working at height <input type="checkbox"/> Incomplete scaffolding <input type="checkbox"/> Lifting equipment <input type="checkbox"/> Excavation / trenching <input type="checkbox"/> Use of ladders <input type="checkbox"/> Holes, penetrations, gaps <input type="checkbox"/> Structural failure/exceeding floor/Rack load rating <input type="checkbox"/> Ground stability	Pressure 	<input type="checkbox"/> Compressed gases <input type="checkbox"/> Hydraulic <input type="checkbox"/> High pressure steam <input type="checkbox"/> Water <input type="checkbox"/> Vacuum <hr/> <input checked="" type="checkbox"/> Noise Level e.g. daily exposure <input type="checkbox"/> Vibration <input type="checkbox"/> Peak	General Work Area 	Access / egress <input type="checkbox"/> Confined space <input type="checkbox"/> Restricted work area <input type="checkbox"/> Restricted visibility <input type="checkbox"/> Interaction with others <input checked="" type="checkbox"/> Unauthorised personnel / public Weather <input type="checkbox"/> Illumination / glare/ transition <input type="checkbox"/> Wet / slippery <input type="checkbox"/> Windy <input type="checkbox"/> UV exposure Work Organisation <input checked="" type="checkbox"/> Slip and trip hazards <input type="checkbox"/> Poor ventilation <input type="checkbox"/> Dust <input type="checkbox"/> Poor housekeeping <input type="checkbox"/> Protrusions <input type="checkbox"/> Disorganisation
Electrical 	<input type="checkbox"/> Damaged / strained cables <input type="checkbox"/> Overhead cables <input type="checkbox"/> Underground cables <input type="checkbox"/> Transformers <input type="checkbox"/> High voltage equipment <input type="checkbox"/> Sub-stations / switch rooms <input type="checkbox"/> No earth leakage protection <input type="checkbox"/> Radiation / laser	Thermal 	<input type="checkbox"/> Steam / condensate <input type="checkbox"/> Hot materials <input type="checkbox"/> Hot surfaces <input type="checkbox"/> Hot work (welding/grinding) <input type="checkbox"/> Heat <input type="checkbox"/> Cold <hr/> <input checked="" type="checkbox"/> Repetitive/overuse <input type="checkbox"/> High low Reach <input checked="" type="checkbox"/> Awkward / heavy loads <input type="checkbox"/> Sedentary / poor posture <input checked="" type="checkbox"/> Over exertion / fatigue <input type="checkbox"/> Design / layout	Fire /Explosion 	<input type="checkbox"/> Inappropriate chemical storage <input type="checkbox"/> Oxy-acetylene welding <input type="checkbox"/> Flammable liquids use & storage <input type="checkbox"/> Self-ignition combustibles, e.g. dust,
Mechanical 	<input type="checkbox"/> Unguarded moving parts <input type="checkbox"/> Drawing in / cutting points <input type="checkbox"/> Impact and crushing areas <input type="checkbox"/> Auto-start equipment <input type="checkbox"/> Inadequate isolation points <input type="checkbox"/> Hand and power tool condition <input type="checkbox"/> Welding or cutting <input type="checkbox"/> Abrasive blasting/grinding <input type="checkbox"/> Stored energy <input type="checkbox"/> Interlocks non-operational	Ergonomics 	<input type="checkbox"/> Legionella / bacteria / viruses <input type="checkbox"/> Insects / animals / plants <input type="checkbox"/> Body fluids <input type="checkbox"/> Sharps e.g. needles	Environmental 	<input type="checkbox"/> Soil, water or air contamination <input type="checkbox"/> Stormwater contamination <input type="checkbox"/> Contaminated materials <input type="checkbox"/> Waste, e.g. effluent, hazardous <input type="checkbox"/> Solid / packaging waste <input type="checkbox"/> Fuel (gas, diesel, oils, petrol)
Mobile Plant 	<input checked="" type="checkbox"/> Traffic / pedestrian interaction <input type="checkbox"/> Underground services <input type="checkbox"/> Overhead services <input type="checkbox"/> Rated capacity of forklift <input type="checkbox"/> Poor condition <input type="checkbox"/> Registered plant (out of inspection) <input checked="" type="checkbox"/> Unlicensed / untrained operators <input type="checkbox"/> Vehicle instability, e.g. rollover <input checked="" type="checkbox"/> Mobile plant interactions <input checked="" type="checkbox"/> Driving <input type="checkbox"/> Towing	Biological 	<input type="checkbox"/> Strong acids/bases (caustic) <input type="checkbox"/> Volatile organic compound <input type="checkbox"/> Toxic / hazardous substances <input type="checkbox"/> Unlabeled containers <input type="checkbox"/> Gases or vapours e.g. noxious, fumes <input type="checkbox"/> Asbestos / synthetic mineral fibre <input type="checkbox"/> Inadequate storage <input type="checkbox"/> Incompatible storage	Emergency 	<input type="checkbox"/> Lack of first aid facilities <input type="checkbox"/> Poor communication <input type="checkbox"/> Working alone <input type="checkbox"/> Remote work
		Chemical 	<input type="checkbox"/> Unrealistic workload/dis-organisation <input checked="" type="checkbox"/> Aggression / bullying / assault <input checked="" type="checkbox"/> Inappropriate behaviour <input type="checkbox"/> Personal issues <input type="checkbox"/> other	Wellness 	<input type="checkbox"/> Fitness for work <input type="checkbox"/> Proactive medical/disease management <input type="checkbox"/> Fatigue <input type="checkbox"/> Alcohol / drug abuse <input type="checkbox"/> Other
		Psychological 			



## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
Community Awareness	<ul style="list-style-type: none"> <li>▪ People not aware of activity</li> <li>▪ Nuisance complaints</li> <li>▪ Unexpected disturbance to community</li> </ul>	H	<ul style="list-style-type: none"> <li>▪ Affected residents and the local media informed prior to deterrent activities i.e. notice to residents, media announcements.</li> </ul>	L
Pre-start	<ul style="list-style-type: none"> <li>▪ Workers unfamiliar with location and associated hazards</li> </ul>	H	<ul style="list-style-type: none"> <li>▪ Communicate the scope of works to all workers on site, including contractors, before work commences.</li> <li>▪ Identify hazards and implement controls that may be encountered on the day.                             <ul style="list-style-type: none"> <li>- Use Stop, Think, Choose, Act.</li> <li>- Above Below Behind &amp; Hidden</li> </ul> </li> <li>▪ Communicate Hazards and Risks associated with the works to be carried out during the shift.</li> <li>▪ Ensure sufficient drinking water available for staff/workers</li> <li>▪ Ensure sufficient rest breaks are established during the activity for staff/workers</li> <li>▪ Recorded on Pre-start Record</li> </ul>	L
Arriving at work site	<ul style="list-style-type: none"> <li>▪ Work vehicle causing damage or injury to member of the public.</li> </ul>	H	<ul style="list-style-type: none"> <li>▪ Current Drivers Licence</li> <li>▪ Visual scan of path to be driven</li> <li>▪ Visual scan further abroad of the anticipated path</li> <li>▪ Apply vehicle Hazard Lights</li> <li>▪ Manually switch on vehicle beeper if fitted. Do not use beepers/horns if it will interfere with high profile events/attractions at that time, use a guide if available</li> <li>▪ Drive work vehicle at Idle speed / walking pace</li> <li>▪ Prepare to stop to avoid contact with others at all times (pedestrians have right of way)</li> <li>▪ Drive in a direct line as near as possible</li> <li>▪ Avoid driving in different directions</li> <li>▪ Drive on vehicle paths if available</li> <li>▪ Beep the vehicle horn as needed to warn pedestrians of vehicle movement</li> <li>▪ If there is a second person in the vehicle they are to walk front side of vehicle to give verbal warnings to pedestrians that vehicle is approaching. (Do not walk in front of vehicle)</li> </ul>	L

## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
			<ul style="list-style-type: none"> <li>▪ Visual inspection of parking site</li> <li>▪ Park away from pedestrian access / egress points</li> <li>▪ Avoid parking on pedestrian pathways / walkways / tracks / trails.</li> <li>▪ Apply handbrake</li> <li>▪ Look up and be aware of falling debris from trees</li> <li>▪ Lock / secure vehicle when leaving vehicle unattended</li> <li>▪ Park vehicle so facing forwards for when leaving task to lower the risk of backing into a pedestrian when leaving site</li> <li>▪ Mandatory use of a 'Spotter' if reversing.</li> </ul>	
Site establishment Note: Activity related to fly-in time which is approximately 4:00am to 7:00 am	<ul style="list-style-type: none"> <li>▪ Remote and isolated worker                              (Remote or isolated work is work that is isolated from the assistance of other people because of the location, time or nature of the work being done.                              i.e. a worker may be isolated even if other people may be close i.e. working with the public around or in unpopulated areas</li> </ul>	H	<ul style="list-style-type: none"> <li>▪ Where possible, workers will not be working alone, but in a buddy system in remote or isolated situations</li> <li>▪ Worker's level of work experience and training should enable the worker to make sound judgements about his or her own safety</li> <li>▪ Communication and movement records, knowing where workers are expected to be, have a regular call-in system with supervisors or colleagues.</li> <li>▪ Discuss with supervisor any pre-existing medical conditions that may increase risk of injury</li> <li>▪ Discuss how assistance will be rendered for rescue, medical assistance and emergency services if required – Establish appropriate first aid kit for the location</li> <li>▪ Workplaces and their surrounds, designed to reduce the likelihood of violence, for example by installing physical barriers, monitored CCTV and enhancing visibility</li> </ul>	L
	<ul style="list-style-type: none"> <li>▪ Limited visibility - Person struck by vehicle or equipment</li> </ul>	H	<ul style="list-style-type: none"> <li>▪ All workers shall wear a Day and / or Night high visibility garments that comply with the Australian Standards AS/NZ 4602 – High Visibility Safety Garments.</li> <li>▪ Hi vis garment to be worn over any warm clothing during colder weather.</li> <li>▪ NOTE: Garments must be in good condition and not faded, torn or otherwise compromised by normal wear &amp; tear</li> <li>• Deterrent activity extends into vehicle parking area, driveways, roadway a traffic management plan/traffic guidance scheme to be prepared by a traffic management design qualification. The traffic guidance scheme to be implemented by a qualified traffic implement person.</li> </ul>	L

## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
			<ul style="list-style-type: none"> <li>Workers as a minimum to be trained in Traffic Management Awareness</li> <li>During periods of low light, consider workers using torches to attract vehicle drivers to hazards whilst in operation</li> </ul>	
	<ul style="list-style-type: none"> <li>Member of public (MOP) becomes violent or abusive or does not follow direction</li> </ul>	H	<ul style="list-style-type: none"> <li>Council Compliant Cards with the customer service number 1300 69 22 47</li> </ul> <p>Violent</p> <ul style="list-style-type: none"> <li>Do not retaliate</li> <li>Remove yourself from the area</li> <li>Immediately contact the police and your supervisor</li> <li>Seek medical attention if required.</li> </ul> <p>Abusive</p> <ul style="list-style-type: none"> <li>Do not retaliate with further verbal exchanges</li> <li>Inform the MOP that his/her behaviour is unacceptable</li> <li>Remove yourself from the area (not turning your back on the MOP)</li> <li>Immediately contact your supervisor and detail to them your situation</li> <li>Contact the Police if required.</li> </ul> <p>Direction</p> <ul style="list-style-type: none"> <li>Inform the MOP of the reason for the order</li> <li>If they still refuse remove yourself from the area and inform your supervisor ASAP</li> <li>If the MOP is required to move on then contact the police for their action.</li> <li>Never manhandle a MOP</li> </ul>	M
	<ul style="list-style-type: none"> <li>Member of the public is injured due to the deterrent works.</li> </ul>	M	<ul style="list-style-type: none"> <li>If pedestrians keep encroaching onto the worksite implement a spotter (i.e. traffic control)/security</li> <li>Safety barriers, temporary fencing or high visibility barrier mesh to be installed where required.</li> </ul>	L
Loading and unloading equipment	<ul style="list-style-type: none"> <li>Manual handling injuries.</li> </ul>	H	<ul style="list-style-type: none"> <li>All items of small plant greater than 20kg must be team lifted or lifted by mechanical means</li> <li>Vehicle tray side boards must be lowered when loading or unloading items of any weight on to the tray</li> <li>Lifting devices (if fitted) must be used when loading or unloading items of significant weight in or out of vehicles</li> </ul>	M

## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
Flying Fox Deterrent Work	<ul style="list-style-type: none"> <li>• Virus transmitted from flying fox to human from:                             <ul style="list-style-type: none"> <li>○ Bite or Scratch by infected bat</li> <li>○ Bat saliva in eye, nose or mouth (mucous membrane exposure)</li> <li>○ Bat saliva onto pre-existing break in the skin</li> </ul> </li> <li>• Virus transmitted from outside the bat or in a dead bat (ABLV survives no more than a few hours – in dry environments that are exposed to sunlight)</li> <li>• Virus transmitted with bat faeces, urine or blood (not considered to pose a risk of ABLV)</li> </ul> <p>Signs and symptoms of ABLV, paralysis, delirium, convulsions and death.</p>	H	<p><b><u>Pre-exposure vaccination</u></b>                      A course of three rabies vaccine injections is given over one month (days zero, seven and 28). <b>The vaccine does not offer protection until after the third dose is given and people should not handle bats until two weeks after the course is complete.</b></p> <p>People at ongoing risk of exposure should have a blood test to check their immunity every 2 years and receive a booster vaccination if not immune.</p> <p><b><u>Pre-start</u></b>                      Persons who have been vaccinated to undertake the work around active roosts.                      Prestart to incorporate action to be taken if bitten or scratched including exposure treatment and post exposure vaccination</p> <p><b><u>PPE</u></b>                      Full length clothing                      Appropriate gloves                      Broad Brim Hat                      Steel Cap Boots                      Face shield                      Other PPE, as required by the equipment operator’s manual</p> <p>Ensure all contaminated PPE is disposed of or appropriately cleaned.</p> <p><b><u>Injured Bats</u></b>                      Only vaccinated people who have been trained in the care of bats should ever handle bats or flying foxes.                      Wildlife Carers:                      FNQ Wildlife Rescue 4053 4467                      Wildlife Care and Rescue 4036 1984                      Bat Reach 4093 8858 or 0459 942 519</p> <p><b><u>Clean-up Dead Bats (Non Heat Stress Event)</u></b>                      Pick-up sticks and gloves                      Use buckets lined with bag (versus bags alone) to collect dead bats to avoid puncture wounds</p> <p><b><u>Collection and Disposal of Dead Bats (Non Heat Stress Event)</u></b>                      Wearing Gloves, Seal bag and place bat into rubbish bin</p>	L



## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
			<p><b>Exposure treatment</b>                      If bitten or scratched, immediately wash the wound thoroughly with soap and water for at least five minutes. If available, an antiseptic with anti-virus action such as povidone-iodine or alcohol (ethanol) should be applied after washing. If bat saliva contacts the eyes, nose or mouth, flush the area thoroughly with water for several minutes.                      Seek medical advice about the need for rabies vaccination as soon as possible, preferably on the same day or early in the day after the exposure to the bat occurred.                      A tetanus injection may also be necessary after a bat bite or scratch.</p> <p><b>Post-exposure vaccination</b>  <b>Anyone who has previously had rabies vaccinations will require two further doses of vaccine after a possible exposure to ABLV (day zero and three).</b></p> <p>Anyone who has possibly been exposed to ABLV, but who has never had a course of rabies vaccine before, will require four rabies vaccine injections over two weeks (on days zero, three, seven, and 14) and also may require an injection of Immunoglobulin (HRIG). People with a weak immune system will require a further (fifth) dose of vaccine given at day 28 and a blood test after this last dose.</p>	
	<ul style="list-style-type: none"> <li>Virus transmitted with bat faeces, urine or blood (not considered to pose a risk of ABLV)</li> </ul>	M	<p>Bat faeces, urine and blood are not considered to pose a risk of ABLV</p> <p>Wear appropriate gloves                      Where particles become airborne wear face shield as required.                      Other PPE, as required by the equipment operator's manual</p> <p>No food and/or eating within the vicinity of deterrent work.</p> <p>Contact with any bat fluids should generally be avoided.</p> <p>If you have any contact with bat fluids, wash your hands (or other affected area) immediately - Soap and water for at least five minutes</p>	L
	<ul style="list-style-type: none"> <li>Injury from Slip trip fall</li> </ul>	H	<ul style="list-style-type: none"> <li>Be aware of changes in the work environment i.e. curb edges, steps, changing terrain, changing surface (mud vs sand), branches, tree roots</li> <li>Wear footwear suitable to the task and in good condition i.e. no worn soles, lacking ankle support, loose</li> </ul>	L

## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
	<ul style="list-style-type: none"> <li>Manual handling injuries</li> </ul>	H	Elimination <ul style="list-style-type: none"> <li>Automate the manual task (such as using remote controls)</li> <li>Deliver goods directly to the point of use to eliminate multiple handling</li> </ul> Substitution <ul style="list-style-type: none"> <li>Replace heavy items with those that are lighter, smaller and/or easier to handle</li> </ul> Isolate <ul style="list-style-type: none"> <li>Isolate vibrating machinery from the user,</li> </ul> Engineering <ul style="list-style-type: none"> <li>Use mechanical lifting aids</li> </ul> Administrative <ul style="list-style-type: none"> <li>Rotate workers between different tasks</li> <li>Arrange workflows to avoid peak physical and mental demands towards the end of a shift</li> </ul> Personal Protective equipment <ul style="list-style-type: none"> <li>Heat resistant gloves for handling hot items</li> <li>Shock absorbent shoes for work on hard concrete surfaces</li> </ul>	M
	<ul style="list-style-type: none"> <li>Hazards associated with high intensity light</li> </ul>	M	<ul style="list-style-type: none"> <li>Do no direct light into eyes</li> <li>Utilise lights in accordance with any warning labels or manuals provided</li> </ul>	L
	<ul style="list-style-type: none"> <li>Hazards associated with various sound equipment</li> </ul>	H	<ul style="list-style-type: none"> <li>Ear protection for the user and surrounding people</li> </ul>	L
	<ul style="list-style-type: none"> <li>Inappropriate use of the LRAD (self-contained, handheld, portable communication device)</li> </ul>	M	<ul style="list-style-type: none"> <li>Familiarisation into the equipment</li> <li>Ensure Owner's Manual has been reviewed and operator is confident before using.</li> <li>Wear correct PPE as specified in the operator's manual</li> </ul>	L

## SECTION C: JOB SAFETY ANALYSIS

Person responsible: Site Supervisor & Workers

<b>Job/Task Step</b> A brief description of what is to be done in the order they are carried out. Consider the equipment involved and the work method.	<b>Incident/ Contact Types/ Hazards.</b>	<b>Risk Score Before Control (Step 2)</b>	<b>Control Options/Safety Precautions (Step 3)</b>	<b>Risk Score After Control (Step 4)</b>
			<ul style="list-style-type: none"> <li>▪ Ensure surround workers have required PPE and necessary separation distances</li> <li>▪ Ensure faulty equipment is not used and is tagged out of service</li> </ul>	
	<ul style="list-style-type: none"> <li>• Member of public or surrounding workers impacted by vehicle moving through site or leaving site</li> </ul>	H	<ul style="list-style-type: none"> <li>▪ Prior to getting into vehicle:                             <ul style="list-style-type: none"> <li>- Check under vehicle for people / animals / balls / Frisbees etc</li> <li>- Check around vehicle for people / animals / strollers / prams / children playing</li> <li>- Make certain load in back of vehicle is tied down and secure.</li> </ul> </li> <li>▪ Ensure it is safe to drive off</li> <li>▪ Switch on vehicle flashers</li> <li>▪ Manually switch on Vehicle Beeper if fitted. Do not use beepers/horns if it will interfere with high profile events/attractions at that time, use a guide if available</li> <li>▪ Switch off radio / CD etc... to avoid distraction</li> <li>▪ Do not use mobile phones while driving</li> <li>▪ Drive at idle / walking pace</li> <li>▪ Drive direct line as possible</li> <li>▪ Prepare to stop to avoid contact with others at all times</li> <li>▪ If second person is available, they can be used to guide vehicle and warn others of vehicle movement. (Do not walk directly in front of moving vehicle)</li> </ul>	L
Site disestablishment	<ul style="list-style-type: none"> <li>▪ Member of the public injured by site being left in an unsafe condition.</li> </ul>	M	<ul style="list-style-type: none"> <li>▪ Leave gloves on until all equipment has been loaded into vehicle.</li> <li>▪ Dispose of all contaminated PPE</li> <li>▪ Wash hands properly, use hand sanitiser, specially before eating.</li> <li>▪ Wash work clothes separate from other clothes.</li> <li>▪ Remove any pedestrian containment and signs at the conclusion of site once all hazards are removed.</li> </ul>	L

**SECTION D: CONSULTATION – Employees and contractors have contributed and been consulted, understand the hazards and risk controls associates with this task and will implement and comply with the control measures. Inform the Supervisor if the hazards of the task change.**

Date	Name	Signature	Company



**SECTION E: SUPERVISOR APPROVAL – Responsible for ensuring implementation and monitoring**

Supervisor Name:	
Supervisor Signature:	
Date Approved:	
Review Date:	

Step 2: RISK MATRIX	Consequence				
Consequence Criteria	Insignificant	Minor	Moderate	Major	Catastrophic
<b>People</b>	No injury	First aid only - no time lost	Medical Expenses Only or less than 4 days' time lost ie. minor lacerations, skin abrasions, sprains and strains or illness	More than 4 days' time off work due to injury ie. severe sprain/strains or illness Deep laceration requiring multiple sutures/ causing broken bones Severe back injury or psychological injury	Death or loss of limb or bodily function
<b>Property</b>	Negligible damage to or loss of assets	Minor loss / damage. Some repairs may be required	Moderate damage requiring specialist / contract or equipment to repair or replace	Significant / permanent damage to assets and / or infrastructure	Widespread, substantial permanent damage to assets and / or infrastructure
<b>Financial</b>	Low financial loss (e.g. < \$1,000)	Minor financial loss (e.g. \$1,000 - \$5,000)	Moderate financial loss (e.g. \$5,000 - \$50,000)	Major financial loss (e.g. \$50,000 - \$250,000)	Huge financial loss (e.g. > \$250,000)
Likelihood	Risk Score				
<b>Almost certain</b> Event may occur within any 1 yr	<b>M</b>	<b>H</b>	<b>H</b>	<b>E</b>	<b>E</b>
<b>Likely</b> Event may occur one in every 1 – 2 yrs	<b>L</b>	<b>M</b>	<b>H</b>	<b>H</b>	<b>E</b>
<b>Possible</b> Event may occur one in every 2 – 5 yrs	<b>L</b>	<b>M</b>	<b>M</b>	<b>H</b>	<b>E</b>
<b>Unlikely</b> Event may occur in every 5 – 10 yrs	<b>L</b>	<b>L</b>	<b>M</b>	<b>H</b>	<b>H</b>
<b>Rare</b> Event may occur once in every 10+ yrs	<b>L</b>	<b>L</b>	<b>L</b>	<b>M</b>	<b>H</b>
Step 4: RESIDUAL RISK ACCEPTANCE	Action				

<b>E - Extreme</b>	No work is to commence before risk is mitigated to ALARP (As Low As Reasonably Practical) and the risk assessment/plan is accepted by management and employees
<b>H - High</b>	The work must be strictly supervised by a competent person. All persons are to be fully trained and competent to complete the task. A prestart briefing to all staff is to occur and cover the following - the task, its hazards, risks and controls. This meeting is to be documented e.g. SWMS
<b>M - Medium</b>	If it is a one off task, work can commence on task with supervision after all persons are briefed on the risk and controls before commencing work. If it is a routine task, all persons are to be inducted on the work process and deemed competent by the supervisor before being allowed to conduct work unsupervised All processes are to be documented.
<b>L - Low</b>	Competent person can do work unsupervised within the documented process

**Step 3: HIERACHY OF RISK CONTROL**  
When deciding on the control measures to prevent or minimise risk, the hierarchy of control must be considered. The hierarchy of control is:

Control Level	Hierarchy of control	Definition
1	<b>Elimination</b>	Eliminate the work process, material, or hazardous substance completely
2	<b>Substitution</b>	Replace the work process, material, or hazardous substance with a safer one
	<b>Isolation</b>	Isolate the person(s) from the work process, material, or hazardous substance
	<b>Engineering</b>	Design or re-design the work process, material or work environment
3	<b>Administration</b>	Limit the person(s) exposure to risk by job rotation, following a safe work procedure and/or providing adequate training
	<b>PPE</b>	Use personal protective equipment to protect the person(s)

# Appendix H: Implementation Framework

# Implementation Framework

## 1.1 Background

- Objective
- Location of proposed action<sup>1</sup>
- Key management issues and risks
- Consultation
- Overview of the proposed action including:
  - timing, duration and staging
  - expected outcomes

## 1.2 Relocation and deterrence

- Timing of relocation program:
  - seasonal timing and relocation staging considerations<sup>2</sup>
  - daily timing
- Relocation approach, including:
  - types of tools to be deployed at Cairns City FF colony
  - types of tools for use at intermediate and non-target sites
  - roles and responsibilities
  - stakeholders
  - relocation method
  - community consultation and engagement
  - animal welfare and conservation
  - human safety
- Deterrence approach, including:
  - types of tools to be used for deterrence
  - deterrence method
  - animal welfare and conservation
  - human safety

## 1.3 Monitoring and reporting

- Environmental values to be monitored
- Monitoring method
- Sites, timeframes and frequency
- Relocation success indicators

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<sup>1</sup> To include the location of Cairns City Flying-fox colony, proposed relocation site, preferred and non-preferred intermediate sites and other known roost sites in the area (shown on a map).

<sup>2</sup> Including reference to potential for use, and timeframe, of intermediate sites.



- Relocation program stop triggers
- Criteria to determine the need for further roost management at:
  - Cairns City FF colony
  - Relocation site
  - Intermediate and non-target sites

## **1.4 Review**

- Review
  - Scope
  - Implementation
    - Method
    - Monitoring
    - Reporting
- Continuous improvement



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