

# Flying-fox Management Strategy- Cairns LGA

Community Life Branch

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# 1 Executive Summary

Cairns Regional Council has developed an adaptive Flying-fox Management Strategy as a framework for managing the community's health, economic and amenity issues associated with flying-foxes; whilst providing for flying-fox conservation. This approach is guided by a roost categorisation method which determines whether in-situ management or control methods would be considered at problem roost locations.

The Flying-fox Management Strategy aims to;

- Outline current flying-fox management actions by Cairns Regional Council.
- Assist decision making regarding management options at flying-fox roosts.
- Maximise the effectiveness of any management action undertaken at flying-fox roosts.
- Minimise the likelihood of any management actions causing harm to flying-foxes.
- Ensure flying-fox management actions meet legal obligations and are based on scientific knowledge of flying-fox ecology and management.
- To promote community understanding of flying-fox conservation, ecology, and health risks, and encourage improved community engagement in flying-fox management.

Management of all flying-foxes and their habitat is undertaken in accordance with the Queensland government's 'as-of-right authority' and State Codes of Practice, which allows Council to undertake conditional maintenance and deterrent activities within an urban flying-fox management area.

Council has adopted a risk-based approach to the management of flying-fox roosts in the Cairns LGA. This is based on potential health, safety, wellbeing and economic implications for the community, the likelihood of management success, the risk of splintering the roost to equally or more problematic locations and cost. Council may apply several management options where appropriate to mitigate the impacts of flying-fox roosts in Cairns, including on-going deterrent operations at the Cairns City Library, Cairns CBD and Brinsmead Reserve Park.



## 2 Acronyms

ABLV	Australian Bat Lyssavirus
COP	Code of practice
DES	Department of Environment and Science (Queensland)
DMP	Damage Mitigation Permit
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DAWE	Department of Agriculture Water and Energy
EPBC	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EVNT	Endangered, Vulnerable or Near Threatened
FF	Flying-fox
SFF	Spectacled Flying-fox
FFMS	Flying-fox Management Strategy
FFRMP	Flying-fox Roost Management Permit
HeV	Hendra virus
LGA	Local government area
LRFF	Little red flying-fox
MNES	Matters of National Environmental Significance
NCA	Nature Conservation Act 1992 (Queensland)
NFFMP	National Flying-fox Monitoring Program
QLD	Queensland
UFFMA	Urban Flying-fox Management Area
VMA	Vegetation Management Act 1999 (Queensland)

## 2.1 List of Tables, Graphs & Flowcharts

Table 1: List of known roost locations in the Cairn LGA

Table 2: Blank on purpose

Table 3: Potential Flying-fox roost impacts on the local community

Table 4: List of CRMs by suburb 2021

Table 5: Guide to Minimum Intervention Options

Table 6: Summary of management options for flying-fox roosts

Table 7: Flying-fox Roost Management Options

Flow Chart 1: Standard Operating Procedure (SOP) – SFF Incident

Flow Chart 2: Standard Operating Procedure (SOP) – Separated Dependant Young

Flow Chart 3: Level of risks and cost in flying-fox roost management

Flow Chart 4: Decision tree for managing human-flying-fox conflict

Flow Chart 5: Determining Potential Level of Human-Flying-fox Conflict

# PART A

## 3 Purpose of the Flying-fox Management Strategy (FFMS)

The purpose of the Flying-fox Management Strategy (FFMS) is to guide the adaptive management of flying-fox roosts within the Cairns LGA. The FFMS will be reviewed every three (3) years or as required.

Flying-fox roosts are defined under the *Queensland Nature Conservation Act 1992* (NCA) as a tree or other place where flying-foxes congregate from time to time for breeding or rearing their young. The literature defines a flying-fox camp as a tree or other place where flying-foxes congregate during the day. For the purpose of this strategy, the term roost is used to describe both above.

The FFMS provides a range of management options available to Council to manage flying-fox roosts on Council owned land (freehold) and Council managed land (trustee). The FFMS also recognises the need for Council participation in a cross-tenure landscape approach to the management of flying-fox roosts in the Cairns LGA. This FFMS, does not consider the management of roosts occurring solely on private property or State managed land; roosts occurring in such areas may be managed by the relevant landowner, remaining subject to compliance with legislative requirements and authorisation by the Department of Environment and Science (DES).

### 3.1 Objectives of the FFMS

With consideration to the above, this strategy is guided by the following key objectives.

- To address and manage the concerns of residents experiencing lifestyle impacts associated with living near a problematic flying-fox roost on Council managed land.
- To develop flying-fox management strategies consistent with legislative obligations.
- To increase community understanding and appreciation of the essential ecological role of flying-foxes and the need for conservation efforts.
- To develop information management strategies to ensure community have access to accurate and up to date information relating to perceived health risks.
- To increase our understanding of flying-fox behaviour through monitoring and research and ensure management practices align with the most recent knowledge.
- To identify and where possible prevent future residential/flying-fox land use conflict issues.

## 3.2 Legislative Framework

Spectacled flying-foxes are native animals, protected under both State and Federal legislation. DES administers the *Queensland Nature Conservation Act (1992)* and are responsible for the regulation and protection of Spectacled flying-foxes in Queensland.

Queensland State legislation changes and reforms in 2013 saw delegation for management of SFF handed to local governments. The purpose was to provide more direct authority for local councils to undertake activities authorised and undertaken as per a devised code of practice. The department policy toward the management of SFF is stated as follows.

*“Local governments are now authorised as-of-right under the Nature Conservation Act (1992) to manage, including disperse, flying-fox roosts in defined urban areas – urban flying-fox management area (UFFMA). The as-of-right management activities are limited to non-lethal methods and may only be undertaken in accordance with the introduction of the Code of Practice – ‘Low impact activities affecting flying-fox roosts code’”. (DES2016).*

### Australian Government

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government’s central piece of environmental legislation that provides the protection and management of nationally threatened species. The Spectacled Flying-fox conservation status is listed as Endangered under the EPBC Act and under the *Queensland Nature Conservation Act 1992* (NC List). Any proposal to take SFF management actions that has, will have or is likely to have a significant impact on an EPBC Act-listed flying-fox species, you must refer the proposed action to the Minister prior to commencing the action. The Federal Minister will decide within 20 business days whether assessment is required under the EPBC Act. Department of Climate Change, Energy, the Environment and Water (DCCEEW).

### State Government

All flying-foxes and their roosting habitat are protected in Queensland under the *Nature Conservation Act 1992* (NCA) and the *Nature Conservation (Animals) Regulation 2020*. Local governments have an as-of right authority under the *Nature Conservation Act 1992* (NCA) to manage flying-fox roosts in Urban Flying-Fox Management Areas (UFFMA) on Council owned (freehold) or Council managed (trustee) land. However, management must also comply with Commonwealth legislation.

Queensland government legislation allows Councils to:

- a) Destroy a flying-fox roost.
- b) Drive away, or attempt to drive away, a flying-fox from a flying-fox roost.
- c) Disturb a flying-fox in a flying-fox roost.

Management activities must be done in compliance with the *Code of Practice – Ecologically sustainable management of flying-fox roosts* and the *Flying-Fox Roost Management Guidelines* developed under section 174A of the NCA. The *Flying-fox Roost Management Guideline* provides Council with additional information that may assist decision making and management of flying-fox roosts.



Any landowners can conduct low impact activities (as defined under section 62s of the NCAR 2020 on private land without approval provided it is done in accordance with the *Code of Practice – Low impact activities affecting flying-fox roosts*. Anyone other than Council intending to destroy or disperse a flying-fox roost are required to apply for a flying-fox roost management permit (FFRMP) issued by the Department of Environment and Science to manage flying-fox roosts irrespective of the roost location.

Outside a UFFMA, Council requires a Flying-fox Property Management Plan to undertake flying-fox management works. Council may be granted three-year approval following endorsement of the Flying-Fox Management Plan by EHP.

### **Cairns Regional Council**

Cairns Regional Council has undertaken a variety of low-impact activities under or near SFF roosts for many years and without incident. With the introduction of the state *Code of Practice – ‘Low impact activities affecting flying-fox roosts’*, most activities are approached with due care and a precautionary approach to ensure compliance or adherence to the State code, and to ensure potential SFF disturbance or harm is mitigated.

Council engages suitably qualified ecologists or persons knowledgeable of flying-fox behaviour to assess and monitor council works and impacts on flying-fox roosts.



### 3.3 Stakeholders

The management of flying-foxes involves a range of stakeholders with varying roles in relation to regulation, protection, management capacity and responsibility. The following key stakeholders are listed below with details of their respective roles in relation to flying-fox management.

#### **Department of Climate Change, Energy, the Environment and Water (DCCEEW) (Australian Government)**

DCCEEW has the regulatory responsibility for the protection of federally listed species through administration of the EPBC Act. Under the *Referral guideline for management actions in grey-headed and spectacled flying-fox camps*, any action defined as having a significant impact on a nationally important camp requires approval from the Australian Government Minister for the Environment.

#### **Department of Environment and Science (DES) (State Government)**

DES is responsible for administering the NCA and associated Regulations in Queensland and the regulating authority for flying-fox management in and directly responsible for the management of flying-fox colonies on State and privately-owned land. Under the *Code of Practice – Ecologically sustainable management of flying-fox roosts*, local government is required to notify DES two business days prior to commencement of any flying-fox roost management actions.

#### **Cairns Regional Council (Local Government)**

Council has the responsibility for land use planning, management of public land and care of community wellbeing. Council has discretionary responsibility for the management of flying-fox roosts on Council owned (freehold) and Council managed (trustee) land. Council is also well placed to assist the community through education and information dissemination relating to flying-fox issues across the broader region.

#### **Biosecurity Queensland**

Biosecurity Queensland, within the Department of Agriculture and, Fisheries (DAF), is responsible for coordinating the State Government's efforts to prevent, respond to and recover from diseases such as, Hendra virus and Australian Bat Lyssavirus.

#### **Queensland Health**

Queensland Health is responsible for the response to outbreaks of notifiable diseases, including Australian Bat lyssavirus and Hendra virus, in the human population. In the event of such outbreaks, Queensland Health works closely with Biosecurity Queensland and other relevant stakeholders.

#### **Ergon Energy**

Ergon Energy supplies electricity and manages the electrical distribution network throughout the Cairns LGA. Line maintenance on the networks sometimes involves the removal of electrocuted flying-foxes that have encountered overhead electricity cables. Flying-fox roosts in urban areas presents an increased risk of such encounters in the urban distribution grid.

#### **Flying-fox & Not for Profit Groups**

In addition to care services provided by local veterinarians, the Cairns Regional Council LGA has an agreement with the Bats and Trees Society of Cairns Inc. to support bat rescuers and carers in the Cairns LGA. BatSoc has a high level of

expertise within their membership base and ongoing consultation with this group can assist Council in formulating and acquitting appropriate management actions in relation to roost management. BatSoc is a member of the Spectacled Flying-fox Recovery Team.

### **General Community**

Community stakeholders can be defined as:

- a) Primary affected residents: those whose properties closely adjoin a flying-fox roost or have a colony located on their own land (within 100m of the outside of a roost).
- b) Secondary affected residents: those who are indirectly affected by the presence of a flying-fox roost in moderate proximity to their property (between 100m and 300m of the outside of a roost), and
- c) General community: those residents not particularly affected by flying-foxes either directly or indirectly.

Where needed, customer service requests can be utilised as a measure of demand within these groupings, to indicate community concern or request for action.



# PART B

## 4 Known Roost Locations in the Cairns LGA

There are currently 44 known flying-fox roost sites in the Cairns LGA, however less than half of these are occupied at any one time.

The Cairns region contains 12 flying-fox roosts that meet the criteria for listing as nationally important roosts according to the National Flying-fox Monitoring Viewer (DCCEEW 2022).

Table 1: List of known roost location in the Cairns LGA

FLYING-FOX ROOST	SUBURB	Tenure
Mangosteen Farm Roost	BABINDA	Private
Babinda Golf Club Roost	BABINDA	Private
Lavis Road Roost	BARROM	Private
Edmonds Close Roost	BENTLEY PARK	CRC
Robert Rd Roost	BENTLEY PARK	Private
Bulimba Cres Drainage Roost	BENTLEY PARK	CRC
Vigilant Close Roost	BENTLEY PARK	Private
Bramston Beach Roost	BRAMSTON	CRC
Loridan Drive Park Roost	BRINSMEAD	CRC
Slathiel Roost	BRINSMEAD	Private
Hardwood Close Roost	BRINSMEAD	Private
Goomboora Park Roost	BRINSMEAD	CRC
Cairns City (Library) Roost	CAIRNS CITY	CRC
Ports North Roost	CAIRNS CITY	Port Auth
Les Davies Park Roost	CAIRNS NORTH	CRC
Dunn St Roost	CAIRNS NORTH	Private
Deeral Boat Ramp Roost	DEERAL	CRC
Giangurra Esplanade Roost	EAST TRINITY	Private
Chay Rd (Mt Peter Rd) Roost	EDMONTON	Private
Farmer St Roost	EDMONTON	Private
North Queensland Veterinary Service Roost	EDMONTON	Private
Ragnar Street Roost	EDMONTON	CRC
Goldsborough Roost	GOLDSBOROUGH	Private
Fisher Rd Roost	GORDONVALE	CRC
Gordonvale State High Roost	GORDONVALE	State
Gillies Roost	GORDONVALE	CRC
Creswell Close Roost	GORDONVALE	Private
Maher Road, Dajurra Roost	GORDONVALE	Private
Gadaloff Close Roost	GORDONVALE	Private

<b>Riverstone Road Roost</b>	GORDONVALE	CRC
<b>Dempsey Street Roost</b>	GORDONVALE	CRC
<b>Holloways Beach Roost</b>	HOLLOWAYS BEACH	CRC
<b>Irene Street Park Roost</b>	KANIMBLA	CRC
<b>Cottesloe Drive Roost</b>	KEWARRA BEACH	Private
<b>Kewarra Resort Roost</b>	KEWARRA BEACH	Private
<b>Cairns Villa and Leisure Park Roost</b>	MANOORA	Private
<b>Murray St Park Roost</b>	MANOORA	CRC
<b>Anderson Conservation Park Roost Site</b>	MANOORA	CRC
<b>Little Pease St (Sunland Leisure Park) Roost</b>	MANOORA	Private
<b>Cemetery/Swamp Roost Site</b>	MANUNDA	CRC
<b>Guginy Reserve (McCormack Street) Roost</b>	MANUNDA	CRC
<b>Sperring Street Roost</b>	MANUNDA	Private
<b>Mayers Street Roost</b>	MANUNDA	Private
<b>Waratah Drive Roost</b>	MANUNDA	Private
<b>Beatrice St Park Roost</b>	MOOROOBOOL	CRC
<b>Idalia Park Roost</b>	MOUNT SHERIDAN	State
<b>Sawpit Gully Roost</b>	MOUNT SHERIDAN	CRC
<b>Bulimba Crescent Roost</b>	MOUTN SHERIDAN	Private
<b>Minnie Street Roost</b>	PARRAMATTA PARK	Private
<b>Lily Creek Roost</b>	PARRAMATTA PARK	CRC
<b>Freshwater/Redlynch Roost</b>	REDLYNCH	CRC
<b>St Andrews Catholic College Roost</b>	REDLYNCH	Private
<b>Chirio Drive Roost</b>	REDLYNCH	Private
<b>Rose/Tills Street Roost</b>	WESTCOURT	Private
<b>White Rock State School Roost</b>	WHITE ROCK	State
<b>Saltwater Creek Roost</b>	WHITFIELD	Private
<b>Balzer Close Roost</b>	WHITFILED	Private
<b>Quail Close Roost</b>	WOREE	Private
<b>Henley Street Park Roost</b>	WOREE	CRC

# PART C

## 5 Environment permits and notices for Flying-fox management

### 5.1 History of City Library dispersal and approvals

Cairns Regional Council (CRC) decision to relocate the Spectacled Flying-foxes (SFF) from the Cairns City Library was made in consultation with members of the Flying-fox Advisory Committee (FFAC) at the time.

Council's position was that the proposed SFF relocation would be safer for the species and ultimately provide a better option for long-term survival of the species outside of the CBD.

Relocation and deterrence objectives were to.

- Mitigate human/flying-fox conflict at the City Library site.
- Enable the large heritage-listed trees on site to recover from overuse.
- Likely reduce the high rates of pup mortality that had been recorded at the library.
- Reduce unsustainable SFF roosting in the CBD generally and encourage the animals to find more suitable, natural roost environments less prone to urban heat events and impacts.

#### 5.1.1 The Cairns Swamp

The Cairns Central Swamp (CCS) was determined to be a suitable relocation site. It is a known, former roost site for SFF and contains approximately 30ha of remnant rainforest and paperbark swamp that is seen as suitable habitat for flying-foxes. The site was favoured also on account of its proximity to the current location of the Cairns City Library FF roost. The CCS primarily composed of the following two land parcels:

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

#### 5.1.2 Legislation

The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) looks after the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Act.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's key piece of environmental legislation which commenced 16 July 2000. The EPBC Act enables the Australian Government to join with the states and territories in providing a truly national scheme of environment and heritage protection and biodiversity conservation. The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.

The Spectacled Flying-fox is listed as 'endangered' under the EPBC and protected as a 'Matter of National Environmental Significance'.

### 5.1.3 CRC Application

CRC prepared a referral (EPBC 2019/8424) to the, Commonwealth Department of the Environment and Energy (DoEE), since becoming the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC for a relocation the Cairns City FF colony away from the Cairns Central Business District.

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. CRC was granted EPBC approval to relocate the colony of SFF roosting at the Cairns City Library in May 2020.

The approved action, as subject to several conditions, could only occur between the months of May and September (*i.e.*, outside of the spectacled flying-fox pup rearing season). This was specifically aimed to avoid disruption to the species' breeding cycle.

### 5.1.4 Council Relocation Team

Council coordinated a team of staff for the relocation operation, including engagement of specialist persons and stakeholders, and undertook SFF relocation activities in accordance the Commonwealth approval (EPBC 2019/8424).

The relocation actions followed the CRC's Flying-fox Relocation Management Plan (RMP) and subsequent Flying-Fox Implementation Management Plan (IMP) and took place over 39 consecutive days, between 4 July and 11 August 2020. The process for relocating the Cairns City Library SFF roost as per the IMP is referenced in the Federal approval by DAWE.

During EPBC actions, flying-fox numbers at the City Library attempting to land were reduced significantly, as roosting occurred in other areas outside the CBD. Whilst roosting did not occur at the preferred relocation site of the Cairns Central Swamp, Council formally ceased the federal SFF relocation program under the EPBC approval with notification provided to DAWE, ending relocation in mid-August 2020.

### 5.1.5 CRC 2020 Federal Approval and ongoing reporting - EPBC

The CRC 2020 federal approval is effectively 'parked', the reporting conditions of the EPBC approval remain and include monthly SFF roost monitoring in the Cairns area, annual reporting of habitat and population variation counts, post relocation, occurring until October 2024.

Ongoing monthly monitoring of all roost sites within 30km of the CBD as conditioned in the EPBC approval, is currently undertaken by NRA consultants who provide the roost data to CRC Environmental Services team.

The CRC federal licence requires all such yearly reporting to be submitted to DCCEEW. This undertaken by NRA Env Consultants, with compiled ecological reports provided and checked by Environment Services team.

## 5.2 The Code of Practice – current management actions

The Department of Environment and Science (DES) confirmed that Councils Flying-fox deterrent actions could proceed in accordance with the QLD state Code of Practice - *Ecologically sustainable management of flying-fox roosts*, without exception- the 'COP'.

**The Code of Practice** authorises all Councils within 'Urban Management Areas' as-of-right management, using low-impact deterrence measures to discourage the flying-foxes from returning to the identified urban roosting areas.

Council had previously and successfully used similar deterrents to discourage SFFs from roosting in the Cairns CBD, with no injury or stress caused to the animals.

Due to Council's decision that roosting at the City Library site is incompatible with surrounding land uses, Council opted to continue daily deterrence's targeting SFF using low-impact means permitted under the COP to ensure roosting does not occur within the identified CBD areas.

## 5.3 Council Deterrent Operations

- Engagement and use of a qualified 'deterrence' contractor, via the Council procurement process.
- Daily deterrent activities using 1-3 contractors to actively engage in SFF management actions, as required within the CBD\*.
- The preferred window for deterrence is the fly-in times circa 4am – 7am (*6-9pm fly-out time is available and can be considered by CRC only if required*).
- Times of operation are adjusted via communication between CRC and operators as required according to seasonal variations.
- Use of torches, and/or other 'simple' intermittent use of pool noodles and metal clangers (LRAD sound devices are permitted though rarely used post initial relocation operations).
- Daily communication summarising management times, FF numbers and reporting of wildlife incidents.

*\* It is a requirement to have person/s knowledgeable about flying fox behaviours present during management activities under the COP.*

## 5.4 Flying-fox Notifications and Permit Management and Processes

Authorised management under the [Code of practice—Ecologically sustainable management of flying-fox roosts](#) requires that the department be notified at least two business days prior to commencing any management actions.

<https://environment.des.qld.gov.au/wildlife/animals/living-with/bats/notification-form>

However, management actions may be commenced earlier than two business days following completion of the flying-fox roost management notification form on the DES website if an *authorised person* gives written notice to that effect prior.

Once a DES Wildlife online acknowledgement is received via email, Council will have a 28 day/4-week period as per the COP to undertake management actions. Ongoing DES notification occurs (prior to end of the period) to ensure that deterrent actions can be continued.

Note It is possible to place multiple or consecutive notifications via DES online.



The FFRMNF online notice states that Council is also obliged to notify other local government authorities of the action if the city roost sites are within 50km of another local government area.

Currently, this includes the following Councils, who are notified via email by the CRC Environmental Team at the beginning of a 28 period.

- Tablelands Regional Council
- Mareeba Shire Council
- Yarrabah Council

All revised notification forms are sent and copied via to all relevant Council staff.

### 5.5 Flying-fox Evaluation/Return of Operations form

For 'as-of-right' management actions by local governments, Section 2.6 of the Code of Practice — Ecologically sustainable management of flying-fox roosts, requires that DES are sent an Evaluation / Return of Operations form within six weeks of the date of as-of-right management actions being completed.

<https://environment.des.qld.gov.au/wildlife/animals/living-with/bats/evaluation-form>

The Council Environment Services team profiles all DES monthly notification emails and associated correspondence in Council's Document Management system and within prescribed Flying-fox management folders created.



## 6 Flying-fox Management Deterrent Actions

### 6.1 Consideration during management actions

The *QLD Nature Conservation Act 1992* (NCA) is the primary legislation that regulates flying-fox roost management in Queensland. Section 88C of the NCA prohibits the destruction of a flying-fox roost, driving away or attempting to drive away flying-foxes from a roost and the disturbance of a flying-fox in a roost, unless a person is authorised to do so.

#### 6.1.1 Compliance with legislation and code of practice

Ensure that you are aware of the laws applying to management of flying-fox roosts and the animals themselves.

You may wish to consider the following to ensure you are operating within the scope of the law.

- The *QLD Nature Conservation Act 1992*
- Code of Practice— Ecologically sustainable management of flying-fox roosts
- Code of Practice— Low impact activities affecting flying-fox roosts
- *Environment Protection and Biodiversity Conservation Act 1999*
- *QLD Vegetation Management Act 1999*
- Local Laws (Cairns Regional Council)
- An approved flying-fox roost management permit issued by DES.

### 6.2 Work Stoppages and Recommencement

The relevant codes of practice require work to stop in a range of circumstances, for example, under both codes work must stop when a flying-fox is found dead, injured or on the ground, and for low impact activities work must stop when flying-foxes remain airborne for five minutes or more.

In all circumstances where flying-foxes leave a roost and remain airborne for some time, it is important to record how long they remain in the air due to the potential for flying-foxes to over-exert or overheat during extended periods of 'active' flight. Refer to the relevant codes of practice regarding stopping work under these circumstances. See inset 'the energetics of flight in flying-foxes' for further information

#### 6.2.1 Determinations by the person in charge

Where work is required to stop under a relevant code of practice, the person in charge must determine whether recommencing work would pose a risk to other flying-foxes.

The person in charge should consider the following questions:

- If the cause of the injury, death or lifting of flying-foxes is known, can the management action be altered to limit repeat incidents?
- Are any flying-foxes displaying distress behaviours, for example, continual lifting out of the trees.
- Have flying-foxes been airborne for a period of time that may lead to exhaustion?

- If the conditions are currently hot or humid, are the flying-foxes displaying any signs of heat stress, for example, panting, fanning their wings, licking wing membranes.
- Are there any other factors you are aware of that might make recommencing works a significant risk to other flying-foxes?

If a flying-fox is killed, injured, or found, management actions may only recommence after

- The flying-fox has been removed by an appropriately trained person, and
- The person in charge determines, after receiving advice from a person knowledgeable about flying-fox behaviour, that resuming management actions poses no risk to other flying-foxes at or near the roost.

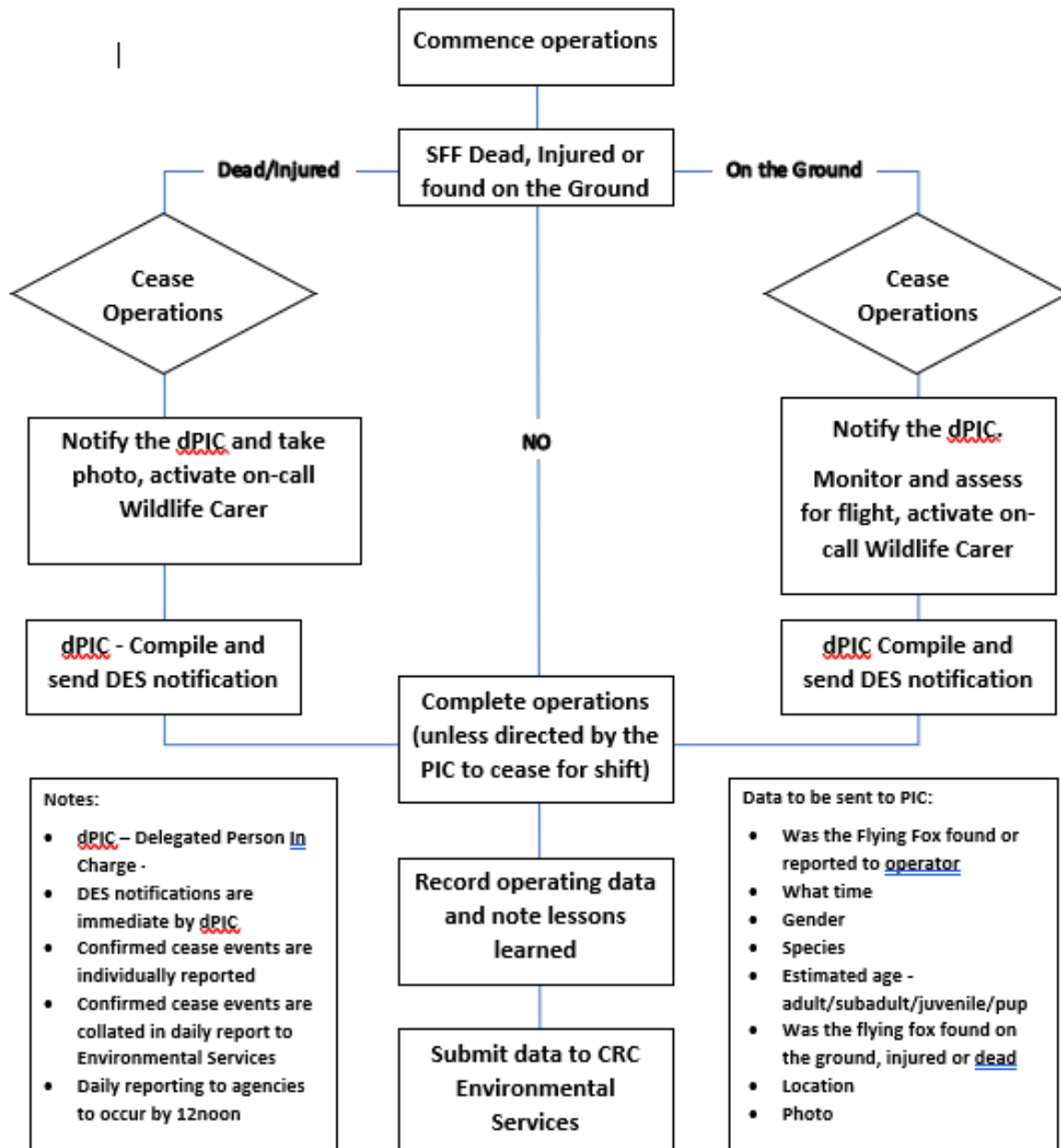


Flow Chart 1: Standard Operating Procedure (SOP) – SFF Incident

#6545674 SFF Deterrent Operations – Cairns Flying-fox Roost Management Plan  
Permit WA0028292

## Standard Operating Procedure (SOP) SFF Incident

*This SOP is to be read in conjunction with the #6545772 Cairns Flying-fox Management Plan*

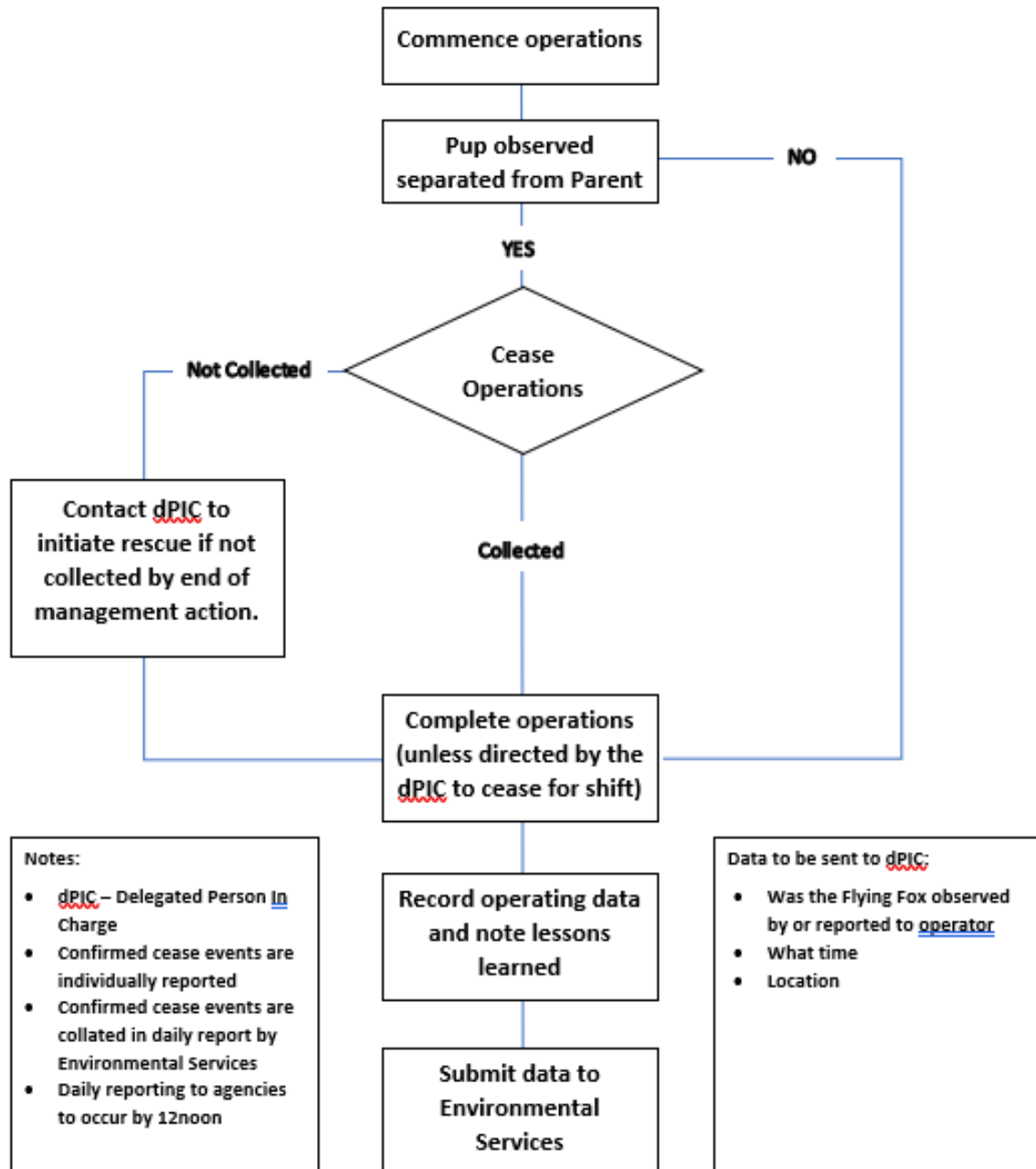


Flow Chart 2: Standard Operating Procedure (SOP) – Separated Dependant Young

Cairns Flying-fox Roost Management Plan Permit WA0028292

## Standard Operating Procedure (SOP) Separated Dependant Young.

*This SOP is to be read in conjunction with the #6545772 Cairns Flying-fox Management Plan*



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# PART D

## 7 Approach to roost management

Management of all flying-foxes and their habitat is currently only undertaken in accordance with the Queensland government's 'as-of-right' authority and State codes of Practice, which allows Council to undertake conditional maintenance and deterrent activities within an urban flying-fox management area, as per the administering agency, the Department of Environment & Science.

General aims of the management plan:

- Ensure council will manage flying-foxes in the region in compliance with all legislative obligations.
- To continue to recognise the ecological and environmental values of flying-foxes is understood and maintained.
- Address and manage all community concerns involving flying-fox colonies.
- To implement vegetation management as required to mitigate negative effects of flying-foxes to residents.

Cairns Regional Council has undertaken a variety of particularly low-impact activities under or near SFF roosts for many years and without incident. With the introduction of the *Code of Practice – 'Low impact activities affecting flying fox roosts'*, most activities are approached with due care and a precautionary approach to ensure compliance or adherence to the State code, and to ensure potential SFF disturbance or harm is mitigated.

Council will engage suitably qualified ecologists or persons knowledgeable of flying-fox behaviour to assess and monitor council works and impacts on flying-fox roosts.

## 7.1 Potential Flying-fox roost impacts on the Local Community

Table 3: Potential Flying-fox roost impacts on the local community

POTENTIAL IMPACT	COMMENT
Business Patronage	The noise, odour and perceived health risks of a roost may deter some patrons from visiting nearby businesses.
Fruit Crop Damage	Flying-foxes can cause damage to commercial fruit crops, especially in drought years when eucalypt blossoms are scarce. Damage isn't considered directly associated with an individual roost as multiple roosts may be within flying distance. Rats, possums, and birds are also known to damage fruit crops.
Health Risks	Although the health risks are low, resident's perception of health risks associated with flying-foxes can increase stress levels creating potential health concerns.
Noise	Nearby residents may suffer disturbed sleep due to roost noise.
Odour	The odour associated with roosts is typically that of the flying-foxes and not their faeces. All animals (including humans) have distinct body odours. Many Cairns houses are "Queenslander" styles that rely on passive cooling to ventilate the home. Most residents gain relief by shutting up their homes and running the air conditioner.
Property damage	Flying-fox faecal material can frequently land on houses and cars of nearby residents and may damage paint work if not removed in a timely manner.
Public usage of Parks	When flying-fox roosts occur in public parks these areas may no longer be accessible by the public due to health and safety concerns. Some people may choose not to visit parks due to the noise, odour and/or perceived health risks of the roost.
Vegetation Damage at roost Sites	Continual heavy usage of roosts due to a reduction in the availability of suitable roost habitat can result in damage to trees and reduces the opportunity for vegetation to recover from the effects of roosting flying-foxes.
Vegetation Management at Roost Sites	Flying-fox roosts may increase the maintenance requirements of roost vegetation especially in any associated parks where damaged vegetation may need to be removed for public safety.
Vegetation Management by Residents	Some residents may incur additional costs by undertaking vegetation management practices to limit roosting ability on private properties.
Veterinary Costs	Many horse owners feel that due to the close proximity of a roost there is an increased need to vaccinate their horse(s) against Hendra virus thus incurring veterinary fees.
Water Tank contamination	Contamination of water tanks is not exclusive to flying-foxes. Queensland Health recommends all water tanks have filters to eliminate faecal contamination by mammals, birds, reptiles (geckos) and frogs.

*Note. Potential impacts can be real or perceived, Council can provide education and information to assist residents.*

## 7.2 Natural Assets Management Team

Natural Assets Management Team (NAM) is the internal Council team that actions flying-fox enquiries, including Customer Relationship Management Requests (CRMs) from the public.

The NAM team has a variety of options to manage flying-fox enquires:

- Over the phone
- Site Visit
- Via email
- Flying-fox Assessment Matrix Tool
- Provision of educational material
- Provision of promotional items to promote “living under one sky” branding
- Provide preliminary advice regarding state permit and code of practices

Majority of the flying-fox enquires are submitted via the CRM system under the category, “Flying Foxes/SFF/Bats. The review of CRMS in 2021 found that most were concerned with health issues pertaining to bat droppings and noise. The roost around the Cairns Swamp accounted for 33% of the lodged CRMs in 2021.

Table 4: List of CRMs by suburb 2021

<b>Suburb</b>	<b>Number of CRMs</b>	<b>Nature of Spectacled Flying-Fox CRM</b>
Bentley Park	2	Roosting close to property and feeding in Golden Penda trees
Brinsmead	1	Roosting close by in park
Cairns City	5	Roosting in city trees – these were then actioned with morning deterrent team
Cairns North	1	Roosting in city trees – these were then actioned with morning deterrent team
Earlville	2	Roosting in park close by
Edmonton	1	Roosting close by
Manoora	8	Roosting on property, health concerns, noise, and bat droppings
Manunda	6	Roosting on property, health concerns, noise, and bat droppings
Mooroolool	1	Roosting in trees behind the Balaclava State School
Mount Sheridan	4	Roosting close by and bat droppings
Parramatta Park	1	Roosting close by and noise and bat droppings
Redlynch	2	Feeding close by in the evening and bat droppings
Stratford	1	Feeding close by in the evening and bat droppings
Trinity Beach	2	Roosting on property, noise, and bat droppings. SFF in a park with a playground, health concerns
Westcourt	3	Roosting on property, noise, bat droppings, and smell
Whitfield	1	Feeding close by in the evening and bat droppings
Woree	1	Roosting close by, noise, smell and scaring birds



### 7.2.1 Flying-fox Roost Decision Support Tool

In recent years Council has received an increasing number of complaints in relation to flying-fox roosts found within urban areas of the Cairns region. Most complaints relate to excessive odour and noise, mess from faeces and the perceived human health risk.

A local government may assess a roost site and decide that the best management option is to leave it undisturbed. This option is best suited to roost sites which are in low human conflict areas. The 'no intervention' approach is often best used in conjunction with proactive community education, including speaking with affected residents living near to roost site.

In managing these complaints, Council recognises the need to be responsive to the social and economic needs of the community, while responding to environmental due diligence requirements for the protection of flying-foxes and the essential ecosystem services they provide. The nomadic behaviour of flying-foxes, and the temporary nature of the 'problems' that it results in, will be a key factor in Council's decision regarding management of flying-fox roosts in the Cairns LGA.

At General Meeting of 22 July 2015, Council noted a decision support tool to assist Council officers in relation to customer requests relating to flying-fox roosts, being the Flying-fox Assessment Matrix. Council has adopted the Flying-fox Assessment Matrix for use by officers when determining what, if any, actions are to occur for use outside of known roost sites in the CRC region.

### 7.2.2 Flying-fox Assessment Matrix (FFAMatrix) Process

The FFAMatrix is the primary tool for the Natural Assets Management Team to assess a flying-fox roost.

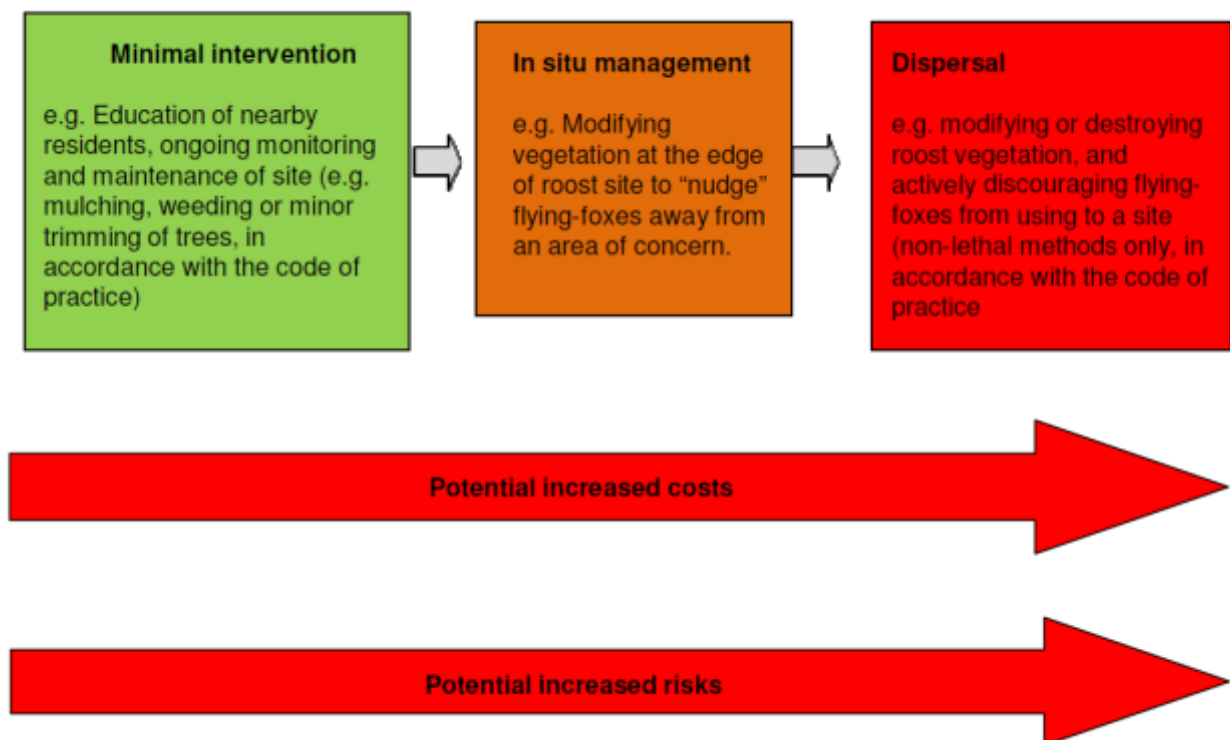
The identified risks include:

- Risk to community health and safety associated with interactions of community with flying-foxes roosts.
- Risk to community amenity and wellbeing associated with noise, odour, faecal drop and visual impacts to residences and businesses.
- Risk to flying-fox welfare caused by disturbance to flying-foxes potentially resulting in distress, injury, or death of flying-foxes.
- Risk of flying-fox shifting to an area in closer proximity to residences, businesses, or vulnerable demographics (e.g., school).
- Financial risk if management action is not successful in mitigating risks to community health, safety, amenity, and wellbeing.
- Risk of management action setting precedence and raising community expectation for management of other flying-fox roosts in the wider local government area.

The FFAMatrix has 10 criteria for assessment which are scored from 1 to 3 (3 being the highest). This will provide a total score out of 30 points.

Score	Response	Actions
0-20	No immediate action Monitor frequently	Provide information and 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

Flow Chart 3: Level of risks and cost in flying-fox roost management



### 7.2.4 Primary Decision Tree

When Council becomes aware of flying-fox roost management issues in the community, it will determine an appropriate course of action based on a range of factors, including:

- Location of the roost and history of roost occupation (i.e., long-term, or short-term and seasonality of use).
- Management responsibility for the land on which the roost is established.
- Proximity of the roost to residences and/or sensitive sites, such as child-care centres, hospitals, schools and frequently-used public facilities (e.g., pools and parks).
- Community concerns regarding public health and safety.
- Flying-fox ecology, breeding cycle and population dynamics; and

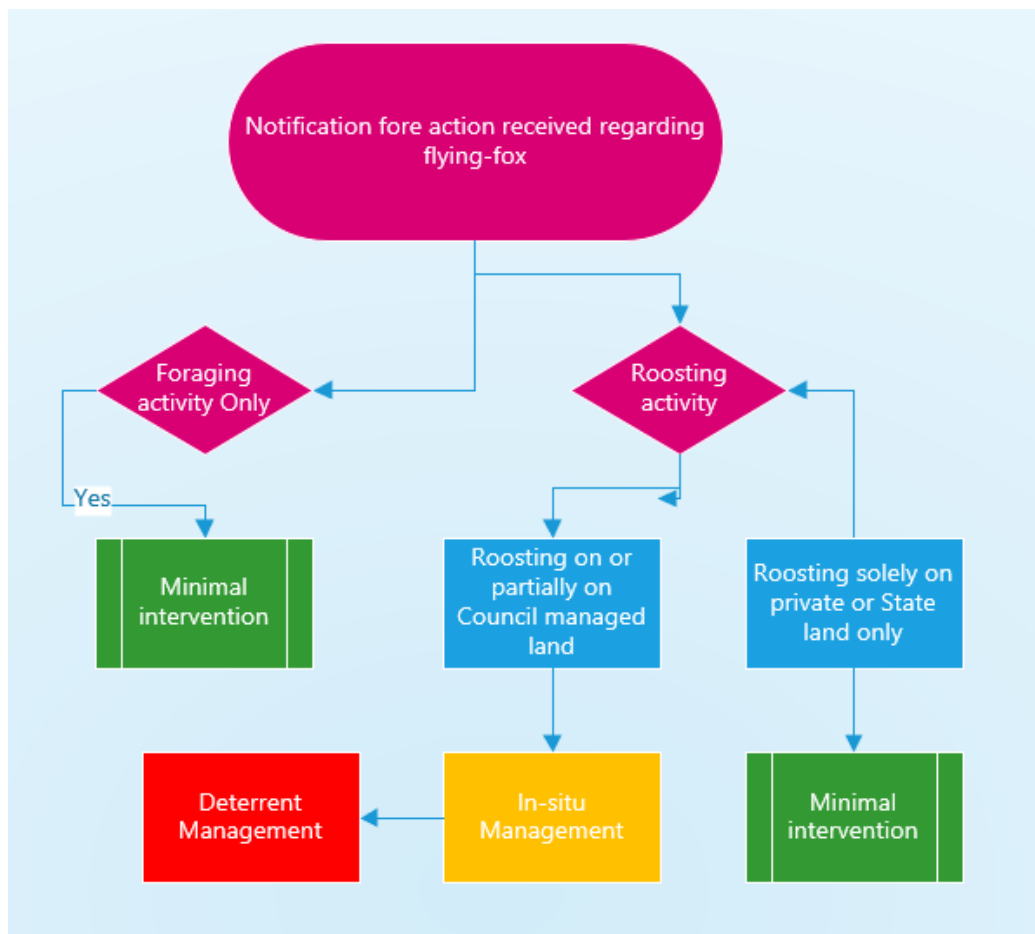
- Costs and risks associated with legally-available management options and the probability of successful resolution of the relevant issues

A decision tree has been developed to provide guidance through this process. The decision tree provides a logical series of steps to:

1. Identify if Council should take an active role in managing a reported flying-fox issue.
2. Assess the severity of conflict resulting from flying-fox presence and determine the likelihood of conflict escalating.
3. Review management options and determine the degree of intervention required; and
4. Assess the risks involved and likelihood of the various management options resulting in successful conflict resolution.

At key decision points within the primary tree, where additional decision support is required, the decision-maker is referred to secondary decision tools.

Flow Chart 4: Decision tree for managing human-flying-fox conflict



### 7.2.4 Assessing Potential for Human/Flying-fox Conflict

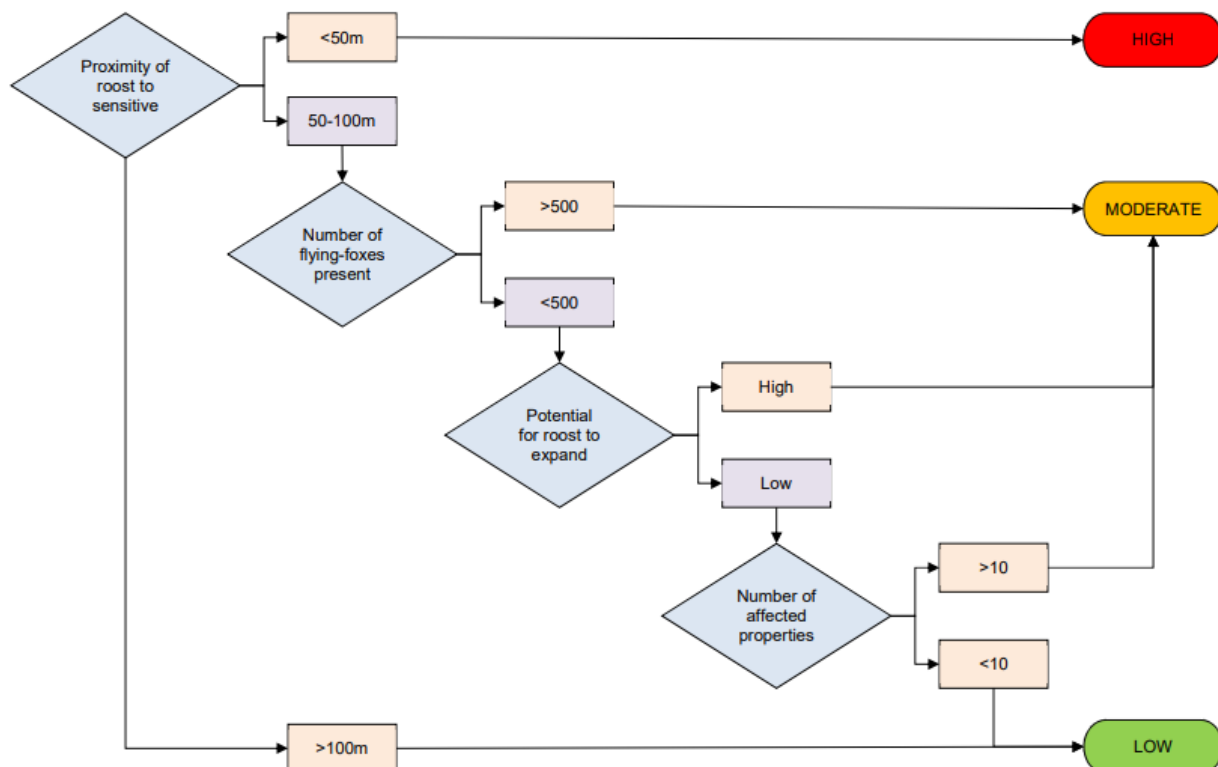
Several factors contribute to the level of concern expressed within the community in relation to flying-fox roost management. Foremost among these is the proximity of the roost to residences or schools and child-care centres, with nearby roosts generating significant conflict due to the impacts of noise, odour, and excrement, as well as raising concerns for public health and safety.

Other key factors include the size of the flying-fox colony using the roost, along with its potential to increase and the number of properties or people affected directly by the flying-fox roost. These factors are incorporated into a sub-tree in the decision process to determine the level of conflict likely to arise if a roost is left unmanaged.

The following actions are not reflected in the Assessment Matrix however this can provide consideration for additional decision-making responses or advice. Potential for conflict is rated as 'high', 'medium' or 'low', with the primary determinant being distance of the roost from 'sensitive sites'. 'Sensitive sites' are defined as residential dwellings (excluding a shed or similar out-building that is detached from the residential building), child-care facilities, school classrooms, nursing homes, motels and similar accommodation facilities. Public use facilities, such as swimming pools, parks, halls, and churches, may also be regarded as 'sensitive sites', depending upon usage patterns (i.e., frequency and type of use; number of people affected).

Roosts within 50m of a sensitive site are considered to have 'high' potential for human/flying-fox conflict, whereas those greater than 100m from sensitive sites are rated as having a 'low' likelihood of conflict. At intermediate distance (50-100m) from a sensitive site, a roost will generally be considered to have 'medium' conflict potential, unless it affects relatively few properties and is unlikely to expand in population size or extent, in which case it is rated as a 'low' conflict roost.

Flow Chart 5: Determining Potential Level of Human/flying-fox Conflict 50m to 100m



### 7.2.3 Responding to complaints and choosing no intervention

Council will apply a minimum intervention approach to the management of most flying-fox roosts that come to its attention. These will range from 'do nothing' to information sharing, community education and guiding affected land-managers to relevant authorities or sources of further information.

Where necessary, Council may facilitate meetings between affected residents and relevant authorities, such as DES. A guide to determining appropriate actions for roosts requiring minimum intervention management. This decision support tool summarises relevant management actions under the minimum intervention approach and describes the risks and benefits associated with those actions.

Table 5: Guide to Minimum Intervention Options

Option	Description	Risks	Benefits
Do nothing	Take no action at all Only applicable for low conflict roosts, including those remote from UFFMA	Negative community perception Potential for roost to move to higher conflict site Inconsistent with a pro-active management approach Impact on Council's 'green credentials'	No costs No legislative compliance requirements
Education	Provide community with information about flying-fox biology and behaviour ecological significance of flying-foxes health risks location and history of roosts in region management options and likelihood of success Through means such as Council website leaflets / fact-sheets local press workshop / community forum presentation to schools, community groups, etc. local planning information Collaboration opportunities through DEHP	Costs associated with producing materials and/or running events Negative community perception – Council not doing enough	Pro-active approach Costs low compared with interventionist options Improved community awareness of flying-fox ecology and management Greater likelihood of community accepting and/or cooperating with Council on FF management Improved planning outcomes to prevent encroachment of development on known/potential roost sites
Monitoring	Regular direct observation and recording of known roost sites and/or FF activity Documentation and review of FF reports/complaints coming in from community	Cost associated with Council staff or contractors undertaking monitoring & reporting	Pro-active approach that may provide early warning signals for impending FF incursion and/or increasing conflict

Option	Description	Risks	Benefits
Maintain sensitive site buffers	Applies only where roost is already >100m away from sensitive sites Identify potential roost sites within 50m of sensitive site and manage to prevent (or reduce likelihood of) FF from roosting within buffer zone	Costs associated with vegetation management Community resistance to vegetation management (e.g. don't want large trees lopped or removed)	Pro-active approach that has potential to significantly decrease risk of future conflict Opportunity to engage with community to undertake preventive management
Protect low impact roost	Manage existing low-impact roost site to maintain and/or enhance suitability to FF, e.g. Control fire and weeds, especially while FF are absent, to maintain vegetation structure Supplementary planting of woody species to enhance and/or enlarge existing roost area	Costs associated with weed/fire control Costs for additional planting Potential for roost to provide "splinter groups" that might form new roosts in nearby high-conflict areas Negative community perception – exacerbating the 'problem' by helping FF survive locally	Provide permanent roost location that attracts FF away from high conflict areas Opportunity to engage and educate community in FF ecology and management → improved community perception and acceptance of FF Improve Council's 'green credentials'
Provide alternative roost habitat	Establish and maintain additional roost habitat in low impact areas	Costs for site preparation and planting Potential for roost to provide "splinter groups" that might form new roosts in nearby high-conflict areas Negative community perception – exacerbating the 'problem' by helping FF survive locally	Provide permanent roost location that attracts FF away from high conflict areas Opportunity to engage and educate community in FF ecology and management → improved community perception and acceptance of FF Improve Council's 'green credentials'

Banana Shire: Flying-fox management plan 2017

## 8. Flying-fox Roost Management Options

### 8.1. Flying -fox Management Strategies - Overview

Based on the potential outcomes of the decision process, flying-fox roosts in the Cairns LGA may fall into one of six categories. For all roost categories the management approach will follow a sequence from least to most interventionist management options

Table 6: Summary of management options for flying-fox roost categories

Roost management category	Roost description	Management options	Potential management strategies (see Appendix 4 for detail)
Category A	New or existing roosts on <u>non-Council</u> land, where Council involvement is not warranted	Minimum intervention	Education Refer to EHP
Category B	New roosts on <u>non-Council</u> land with a <b>high</b> likelihood of conflict	Minimum intervention In situ management Dispersal	Education Monitoring Refer to EHP Council will not fund or directly undertake any roost management actions
Category C	New or existing roosts on Council-managed land with <b>low</b> likelihood of conflict	Minimum intervention	Education Monitoring Low-impact maintenance Roost enhancement
Category D	New or existing roosts on Council-managed land with <b>medium</b> likelihood of conflict	Minimum intervention	Education Monitoring Maintenance of buffer zone Low-impact maintenance
Category E	Existing roosts on Council-managed land with a <b>high</b> likelihood of conflict	Minimum intervention  In situ management  Dispersal	Education Monitoring Low-impact maintenance  Infrastructure and/or usage modification Roost modification to create & maintain a buffer zone  Roost modification to make unsuitable for roosting Roost removal Disturbance to force FF to leave roost or prevent return
Category F	New roosts on Council-managed land with a <b>high</b> likelihood of conflict	Minimum intervention  In situ management  Dispersal	Education Monitoring Low-impact maintenance  Infrastructure and/or usage modification Roost modification to create & maintain a buffer zone  Roost modification to make unsuitable for roosting Roost removal Disturbance to force FF to leave roost or prevent return



## 8.2 Minimal intervention Approach

Minimum intervention is Council's preferred approach to all flying-fox management issues in Cairns LGA, except in cases of high human/flying-fox conflict, where roosts become established near residential or other sensitive sites.

Minimal intervention means that an established flying-fox roost will not be interfered with directly. It may include a "do nothing" approach, but more appropriately involves activities such as:

- education (e.g., of affected land-holders, council workers) to improve community appreciation of flying-fox ecology, health risks, management options and associated risks.
- monitoring of flying-fox roosts to enable forward-planning of management responses.
- providing and/or enhancing alternative roost sites that could attract flying-foxes to roost away from sensitive urban conflict areas; and
- management of the urban tree-scape to reduce the availability (or prevent further proliferation) of large trees such as mangoes and figs that attract flying-foxes for both foraging and roosting.

### 8.2.1 Education and awareness

Education and awareness are a key component in the successful long-term management of human/flying-fox conflict in urban areas. This approach focuses on building understanding and appreciation for flying-foxes by providing comprehensive and accurate information to the community about managing risk and impacts. This may assist in reducing misconceptions and fears surrounding flying-foxes, increase community value held for their ecological role and understanding of flying-fox behaviours and roost dynamics.

Educational material will endeavour to include information about flying-fox ecology and behaviour, health and safety issues associated, options available to reduce impacts from roosting and foraging flying-foxes at private properties and updates on roost numbers, movements, and management actions.

This information will be provided through various communication channels to appropriately capture the range of demographics impacted by flying-foxes. Such channels will include Council's website and social media, print, publications (e.g., brochures and factsheets), and interpretive signage.

Council will also maintain and ensure staff awareness of internal procedures and guidance documents relevant to flying-fox management, including training where required, on aspects such as responding to customer enquiries, injured or orphaned flying-fox handling and roost management activities.

## 8.2.2 Roosts on non-council land, not warranting Council involvement (Category A & B)

Where a flying-fox roost is

- a) not on Council-managed land and
- b) determined at Council discretion to not warrant Council involvement,

Council will generally take a “do nothing approach” to the management of the roost; however, Council may provide relevant information resources to the affected land-manager/s and will refer them to DES for further guidance and advice on roost management.

## 8.2.3 Roosts on Council-managed land with low likelihood of conflict (Category C)

A minimum intervention approach will also be taken to any roost on Council-managed land that is rated as having a low potential for causing human/flying-fox conflict (i.e., is more than 100m away from the nearest sensitive site).

## 8.2.4 Roosts on Council-managed land with medium likelihood of conflict (Category D)

If a roost becomes established within 100m of, but more than 50m away from a sensitive site, a minimum intervention approach will be undertaken to ensure that the flying-foxes remain largely undisturbed, but which prevents the roost from encroaching closer to the sensitive site.

Ideally a ~20 metre buffer zone would be managed to ensure no vegetation suitable for flying-fox roosting is available; however, where there is a desire to retain vegetation that may also be suitable for roosting, regular monitoring will be required to give early warning of any advancement of the flying-fox roost toward the sensitive sites. If such incursion were to occur, the roost management options would be re-assessed using the decision-support tools.

## 8.3 In-situ Management Strategies

In-situ management of roosts occurring on Council-managed land may assist to reduce human-flying-fox interactions by separating or increasing the distance between the roost and residences or public buildings. Importantly, these management options focus on managing roosts in their established location and are not intended to disperse the flying-foxes.

This approach involves taking direct action on the roost or affected properties to reduce impacts on affected residents, whilst retaining flying-foxes in the roost. In situ management options will only be undertaken if minimum intervention options fail to resolve problems encountered by the community at high conflict roost sites.

### 8.3.1 Relocation or retrofitting of public infrastructure and activities

Sources of human-flying-fox conflict associated with noise, odour, faecal drop, and visual amenity may be alleviated through modification of public infrastructure and activities in areas nearby to roosts. This may include retrofitting Council buildings to reduce noise and odour impacts to staff and customers and relocating park infrastructure or public activities (e.g., markets, pedestrian access) from areas impacted by flying-fox roosts. In taking such action, consideration will be given to options and alternatives that are most feasible, cost-effective, and likely to reduce conflict.

### 8.3.2 Management/restoration of flying-fox roost site

The occupation of Council-managed areas by flying-fox roosts can result in several visual amenity impacts, including faecal drop on park infrastructure and footpaths, limb breakage and defoliation of roost trees and overgrowth of weeds and grasses beneath the roost.

While Council can undertake minor maintenance while the roost is occupied in accordance with COP: Low impact activities affecting flying-fox roosts, large-scale clean-up and restoration of roost areas will occur following seasonal departure of flying-foxes. If flying-foxes have occupied and impacted the health of heritage fig trees, activities may include measures to aid recovery, e.g., fertiliser application.

### 8.3.3 Buffers without vegetation removal

Fencing and other structures can be used as a buffer to reduce the potential for human-flying-fox conflict by reducing the distance between flying-fox roosts and the public.

This will specifically include the installation of temporary fencing or barriers and advisory signage surrounding roosts in Council-managed Park. This action will assist to prevent human-flying-fox interactions and associated health and safety risks and minimise disturbance of flying-fox.

Where appropriate, fencing will also incorporate mesh banners to screen visual impacts of the site and potentially reduce odour issues.

### 8.3.4 Buffers through vegetation removal

The pruning or removal of vegetation within parts of the roost aims to alter the area of habitat so it is no longer suitable for roosting, however, needs to be in accordance with vegetation legislation and roost management guidelines. This acts to create a buffer and increase the distance between flying-foxes and neighbouring properties, potentially alleviating concerns relating to noise, odour, and faecal drop. The amount of vegetation required to be removed varies between sites and roosts, ranging from some minor weed removal to removal of most of the canopy vegetation.

Consideration will be given to the likelihood of success in alleviating conflict, specifically that flying-fox will not be shifted closer to another neighbouring property or increase visibility into the camp and noise issues for residents.

Any vegetation removal will be undertaken using a staged approach, with the aim of removing as little native vegetation as possible to maintain the ecological and amenity values of roost sites. Works will be performed in line with the *COP: Ecologically sustainable management of flying-fox roosts* and the standard measures, including that roost trees are not pruned or removed while occupied by or likely to cause harm to roosting flying-fox.

### 8.3.5 Existing roosts on Council-managed land with high likelihood of conflict (Category E)

Where a roost occurs on Council-managed land, and has been present there, even intermittently, for several years, Council's preferred option is to leave the roost undisturbed.

Council may investigate the feasibility of minor roost management works to 'push back' the flying-foxes to an acceptable distance from the affected premises. At sites where there is a history of seasonal roost occupation, Council will endeavour to undertake the 'push-back' works, or buffering, while the roost is unoccupied, to minimise the likelihood of impacting negatively on the bats.

Where push-back buffering is not feasible, or has been unsuccessful, Council may also consider approaches to alter sensitive-site usage or modify buildings to reduce the impacts of the roost on residents and other users.

### 8.3.6 New roosts with a high likelihood of conflict (Categories B and F)

If a new roost starts to establish on land within 50m of a sensitive site and with no history of flying-fox occupation, whether on Council-managed or non-Council land, an early-intervention approach may be desirable to prevent the escalation of conflict between the community and the roost.

In the first instance, Council will investigate the risks and likelihood of success for a dispersal attempt at the new roost; however, if dispersal is found to be an unacceptable option, an in-situ management approach may be adopted. On Council-managed land, Council may undertake vegetation management to push-back flying-fox roosting to an acceptable distance from the sensitive site. On non-Council land, Council may provide basic advice and information to support land managers to undertake such work and facilitate required discussions with DES.

## 8.4 Deterrent & Dispersal Strategies

Deterrent and dispersal actions aim to encourage flying-foxes to move from current roost to another established roost at another location with minimum impact to surrounding residents and other.

Flying-fox roost dispersal (using non-lethal methods) will generally be considered only as a last resort if less intrusive management options at high conflict roosts (categories B, E and F) are demonstrably ineffective in resolving conflict arising from the presence of the roost.

The only exception to this rule will be where it can be demonstrated that early-intervention dispersal is necessary to prevent a newly established roost (categories B and F) from becoming a high conflict roost.

Table 7: Flying-fox Roost Management Options

	Management Action	Applicable to	Action (s)	Timing	Indicative annual costs
Minimal intervention	Educations and Awareness	Whole community · Residents · Business · Clubs · Schools · Tourists	Provide educational material to community; resources to include information about living with flying-foxes, flying-fox ecology and behaviour, public health issues and diseases, tank water management and management of non-native foraging trees.  Educational material regularly updated and provided through various communication channels including Council website, publications, social media, signage, and mail-outs.	Material reviewed annually	
		Council internal officers	Maintain and ensure staff awareness of internal procedures and guidance documents for flying-fox management activities, including training where required.	When staff involved in flying-fox management activities.	Staff time only
	Participation in research	Council	Provide information and support to the National Flying-fox Monitoring Program (NFFMP) and research studies investigating flying-fox roost management.	Submit data for NFFMP monitoring quarterly  Support research as required	Staff time only

In-situ management	Relocation or retrofitting of public infrastructure and activities	Public infrastructure and activities occurring on Council managed land	<p>Where appropriate, modify or relocate infrastructure or activities to alleviate conflict with flying-foxes.</p> <p>Including:</p> <ul style="list-style-type: none"> <li>• Investigate potential to relocate exercise equipment to allow community access when area occupied by roost and fenced off.</li> <li>• Ensure safe alternative pedestrian access is provided when walk area occupied by roost and fenced off.</li> </ul>	When flying-foxes are causing conflict and opportunities exist	
	Manage/restore flying-fox roost site	Roosts on Council managed land	<p>When flying-fox depart roosts respond in a timely manner to clean-up and restore vegetation damage, weed/grass growth, and faecal drop to alleviate visual amenity impacts.</p> <p>If flying-fox impact heritage fig trees, implement strategies to improve tree health.</p>	When flying-foxes depart roost	
	Buffers without vegetation removal	Roosts in Council managed parks	<p>Install temporary exclusion measures (fencing/barriers) and advisory signage when flying-fox are roosting in Council-managed parks to prevent human-flying-fox interactions and minimise disturbance of flying-fox.</p> <p>Where appropriate, fencing to incorporate mesh banners to screen site and reduce odour issues.</p>	When flying-foxes are roosting in Council managed parks	
	Buffers through vegetation removal	Roosts on Council managed land directly adjoining	Where appropriate, trim, or thin canopy trees of flying-fox roosts to increase distance between flying-fox and	When flying-foxes are not present	Tree maintenance budget stream

		private property	<p>affected residents/businesses. Suitability assessed on a case-by-case basis to ensure action DCCEEWs not risk inadvertent dispersal or increase impacts to another neighbour.</p> <p>Any works must be undertaken in line with flying-fox Codes of Practice and consider Flying-fox Roost Management Guidelines.</p>		
Deterrent & Dispersal	Rapid-response dispersal	Council managed land	<p>Maintain a rapid response service for early dispersal of flying-fox.</p> <p>Once initial roost establishment is reported to Council, a small team of specialist consultants will mobilise to site (within 24 hours) to discourage the early stages of roosting and direct flying-fox to a preferred location.</p>	When flying-foxes establish roost	Deterrent Contractor

# PART E

## 9 Flying-fox Emergency Action Plan: Heat Stress Event (FFEAP-HSE)

The need for a Cairns Region Council Flying-fox Emergency Action Plan - Heat Stress Event is evident by the November 2018 heat stress event which saw the loss of estimated 23,000 Spectacled Flying-foxes due to unprecedented temperatures over 3 days. Cairns Regional Council recognises that Spectacled Flying-foxes (SFF) is currently listed as a national significant threatened species and that the species' welfare in the local government area is managed by multiple agencies. Council's coordination of FFEAP-HSE, is consistent with Council's holistic, long-term approach to Flying-fox management, which was supported by the Flying Fox Advisory Committee.

This Flying-fox Emergency Action Plan – Heat Stress details the actions that agencies and community groups are recommended to take in response to a heat stress event. The purpose of the Flying-fox Emergency Plan – Heat Stress is to:

- Effectively manage the risk to the community,
- Inform responses within Government and non-government agencies,
- Promote effective liaison between the Council and other agencies involved

The Objectives of the Flying-fox Emergency Plan – Heat Stress is to facilitate the implementation of effective and efficient emergencies strategies and arrangements including:

- The development, review, and assessment of effective FFHS management for the local government area, including arrangements for mitigating, preventing, preparing for, responding to, and recovering from a heat stress event,
- Clarify the roles and responsibilities of agencies involved in the FFHS operations and management in the area,
- Coordination of the heat stress emergency operations and activities relating to the FFHS management performed by the agencies,
- Strategies and priorities for FFHS management of the affected roosts,
- The development, implementation and monitoring of priorities for FFHS management for the local government area and,
- Manage public health risks associated with FFHS events.

The full CRC Flying-fox Emergency Action Plan: Heat Stress Event, is available on the council website.



# PART F

## 10 Community Engagement Management

### 10.1 Proactive Community Education

Proactive community education allows people to learn about flying-foxes, their behaviours and a better understand the issues that are associated with flying-fox roosts and their management.

There are two main target audiences for community education:

- Directly affected residents
- General community

Directly affected residents can have strong negative attitudes toward flying-foxes. Understanding the residents' position is the starting point for effective community engagement. Understanding their position can help in framing a suitable response (e.g., if a resident is concerned about disease risks, then highlighting the broader ecological service flying-foxes provide will have no relevance to them until their disease concerns are addressed).

The general community, while largely unaffected by roost sites, may react to fears and anxieties regarding flying-foxes which tend to be sensationalised by some media. This may manifest into a general intolerance of flying-foxes by the larger community, and greater pressure to entirely remove flying-foxes without contemplating the practicalities, expense, and consequences.

Proactive community engagement needs to acknowledge people's concerns (without portraying flying-foxes in a negatively biased way) then communicate positive, information about flying-foxes, and build understanding of flying-foxes themselves, e.g., why they are roosting close to residential areas, the real health risks that they pose, and the unique ecological services they provide.

Complaints about flying-fox roosts usually relate to excessive odour and noise, mess from faeces staining walls, driveways, washing or parked cars along with other issues such as damage to domestic fruit trees, constraints on opening windows etc.

Community concerns also include the loss of property values; the impact on the psychological wellbeing of residents exposed to the persistent impacts of living near flying-fox roosts and the subsequent deterioration of the amenity of the home.

Importantly one of the most significant concerns raised by residents relates to the potential human health risks from Australian Bat Lyssavirus (ABLV) and Hendra Virus.

## 10.2 Bats and Trees Society of Cairns Inc. Resource and Performance Agreement.

The Bats and Trees Society of Cairns Inc. (BatSoc) is a not-for-profit incorporated entity, their primary activities seek to engage and inform the local community of all ages about bats and trees through events and educational talks at schools and within the community.

This is a constituted committee of volunteers, who hold regular meetings, minutes and financial statements that are provided to Council as a requirement of the current Resource and Performance Agreement.

- **Wildlife Carers Grant:** Council provides an annual Resource and Performance Agreement to BatSoc to support Wildlife Rescuers and Carers in the Cairns LGA.
- **Annual Bat Festival 2022:** Council provides financial assistance for the annual festival held in June.
- **'Flying-Fox Living Under One Sky':** Council provides educational material to BatSoc to use as engagement aids.



BATS AND TREES  
SOCIETY OF CAIRNS

# PART G

## 11 Evaluation and Reporting

### 11.1 Outcomes and reports

Monitoring is required to validate success and to allow for timely intervention to avoid adverse impacts.

The overarching objective of the current monitoring program is to accomplish the relocation of the City Library SFF roost whilst avoiding any harm. The success criteria for the operation are as follows.

Component	Success Criterion	
	Current Site Cairns City SFF Colony	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

Monitoring and Reporting will be undertaken by a Suitably Qualified Person whilst deterrent operations are being undertaken. This will include.

- Daily monitoring of SFF at the Cairns City Library, Cairns CBD and Brinsmead Reserve Park.
- Monthly of SFF roosts (30km from Cairns City Library) by NRA.

### 11.2 Flying-fox Roost Information capture

All information regarding location and details of the roost are captured by the Natural Assets Management Team in the Spectrum Spatial Analyst (SSA) via GIS team as they visit sites activated by the Customer Response Management (CRM) system.

Another form of information captured is the monthly roost count by Natural Resource Assets (NRA). This information report is sent to Environmental Services Team and onto the GIS team.

Council's general mapping platform SSA holds the latest the information provided in terms of roost numbers and shows all historical roost sites.

## 11.4 Research & Development

Cairns Regional Council is committed to participating in ongoing research opportunities that may be useful in the development of flying-fox management strategies in the LGA. To facilitate this Council may:

- Contribute monitoring data to the National Flying-Fox Monitoring Program,
- Seek grant funding for long-term flying-fox management projects where available,
- Collaborate with other agencies within the Central Queensland (CQ) region including participating and at times facilitating the CQFF group meetings between CQLG's and DEHP,
- Make comment on State or Federal Government legislation changes related to flying-fox Management,
- Share flying-fox monitoring data and roost history with other research organisations upon request (i.e., Universities, etc.),

Appendix 1 CRC Flying-fox Assessment Matrix



**Cairns Regional Council Flying-fox Assessment Matrix**

		<b>CRM #:</b>			<b>Name of Resident</b>	
		<b>1</b>	<b>2</b>	<b>3</b>	<b>Score</b>	
1	<b>No: of Bats</b>	0-250	250-500	>500		
2	<b>Distance from houses</b>	>75-50m	50-25m	<25m		
3	<b>No: of houses impacted</b>	1-10	10-20	>20		
4	<b>Setting</b>	Natural area or Low Density Residential/industrial	Medium Density Residential/industrial	High Density Residential/industrial		
5	<b>Noise</b>	Very little -some occasional	Noticeable, intermittent	Loud continuous		
6	<b>Smell</b>	Weak occasional	Medium intermittent	Strong continuous		
7	<b>Mess</b>	0-20% coverage	20-50%	>50% coverage		
8	<b>Health</b>	Low risk	Medium risk	High risk		
9	<b>Achievability</b>	Low	Medium	High		
10	<b>Cost of Action</b>	High	Medium	Low		
		<b>Total /30</b>				

<b>Location of Roost:</b>	<b>Known or New Roost</b>
<b>CRC Assessment Officer:</b>	<b>If over 500 animals – estimate number:</b>
<b>Date of Assessment:</b>	<b>Signature:</b>
	<b>Notes:</b>

#6943137 CRC Flying Fox Assessment Matrix



### 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 e.g. 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 ego –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 e.g. 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.

Figure 5. Generalised breeding cycle for black, grey-headed, and spectacled flying-foxes. Note: this is for general information only and timing of behaviours may differ depending on region and climatic conditions. Flying-fox behaviour should be confirmed by a site visit.

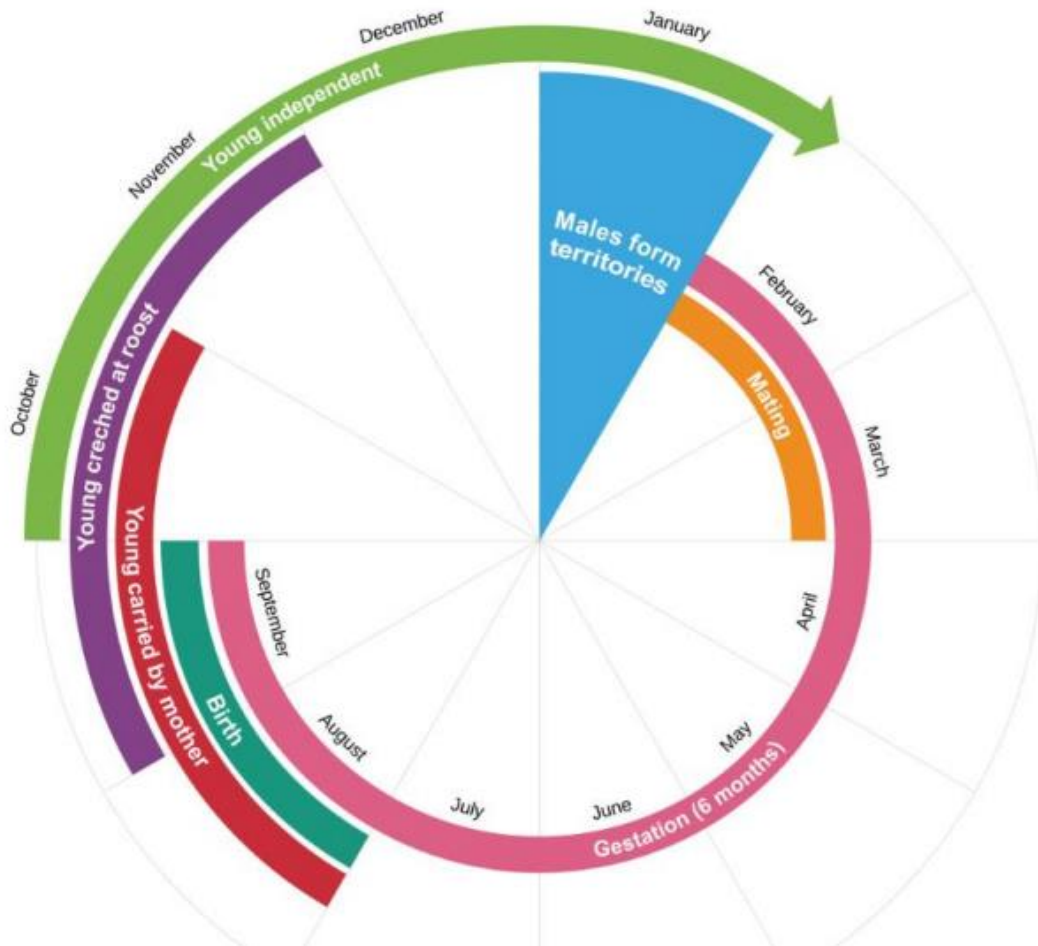
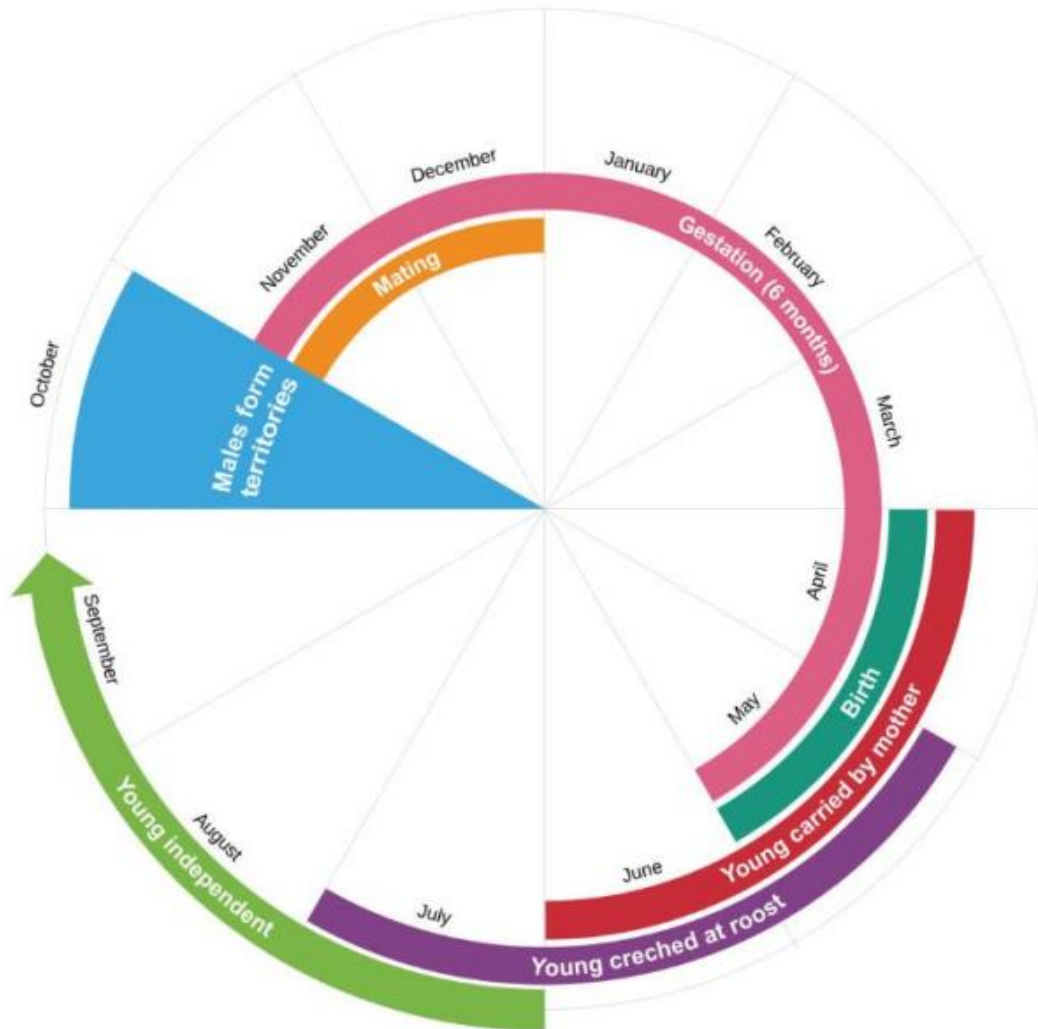


Figure 6. Generalised breeding cycle for little red flying-foxes. Note: this is for general information only and timing of behaviours may differ depending on region and climatic conditions. Flying-fox behaviour should be confirmed by a site visit.





Appendix 5 Flying-fox breeding calendar – DES 2020

Figure 11. Flying-fox breeding calendar to assist in determining best times to manage roosts\*

	January	February	March	April	May	June	July	August	September	October	November	December
BFF	Young flying on their own	Mating territories formed	Conception			Gestation period - Nomadic movement related to food source			Birth – Young carried for 4-5wks			Most young left at camp (crèched)
GHF	Young flying on their own	Mating territories formed	Conception			Gestation period - Nomadic movement related to food source			Birth – Young carried for 4-5wks			Most young left at camp (crèched)
SFF	Most young left at camp (crèched)	Young flying on their own	Mating territories formed	Conception			Gestation period - Nomadic movement related to food source			Birth – Young carried for 4-5wks		
LRFF	Gestation period - Nomadic movement related to food source			Birth – Young carried for 4-5wks			Most young left at camp (crèched)	Young flying on their own	Mating territories formed	Conception		Gestation

Key:

Lower likelihood of heavily pregnant or dependant young being present
Some likelihood of heavily pregnant or dependant young being present
High likelihood of heavily pregnant or dependant young being present
Seasonally lower risk of heat stress events
Seasonally higher risk of heat stress events

\*this is for general information only and timing of behaviours may differ depending on region and climatic conditions. Flying-fox behaviour should be confirmed by a site visit.