

Cairns Region Council Flying-Fox Emergency Action Plan: Heat Stress Event

Community Life Branch

5956027 v10

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Queensland Government - Department of Environment and Science (DES)

Flying-foxes are crucial to keeping native forests healthy. They play a significant role in dispersing seeds and pollinating flowering plants. Because flying-foxes are highly mobile, seeds can be transported over great distances. Where seeds can germinate away from their parent plant, they can have a greater chance of surviving and growing into a mature plant. Seed dispersal also expands the gene pool within forests. Mature trees then share their genes with neighboring trees of the same species and this transfer strengthens forests against environmental changes.

High mobility also makes flying-foxes highly effective as forest pollinators. Pollen sticks to their furry bodies and as they crawl from flower to flower, and fly from tree to tree, they pollinate the flowers and aid in the production of honey. This reinforces the gene pool and health of native forests.

In turn, native forests provide valuable timber, function as carbon sinks, stabilise river systems and water catchments, and provide recreational and tourism opportunities worth millions of dollars each year.

<https://environment.des.qld.gov.au/wildlife/livingwith/flyingfoxes/importance.html>

Risk Analysis

The factors below contribute to potential for a heat stress event;

- November to February are the month's most likely to have a heat stress event.
- Roosts with little or no mid height canopy are the highest risk.
- Trigger is 37 degrees to start checking camps.
- The Intergovernmental Panel on Climate Change Report 2018, identifies that due to changes in the climate the number of heatwave events will increase from now until 2030 from 3 days to 17 days resulting in an increase in the risk of event occurrence.
- All roosts are potentially at risk.
- In the heat stress event in 2018 the roosts below were affected.
 - Cairns City Library, Cairns CBD
 - Murray Street Roost, Manunda
 - Chay Road Roost, Edmonton

Introduction

The need for a Cairns Region Flying-Fox Emergency Action Plan - Heat Stress Event is evident from 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 this plan is consistent with Council's holistic, long-term approach to Flying-fox management, and was supported by the Flying Fox Advisory Committee in 2019.

Purpose

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 Action Plan – Heat Stress (FFHS) 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.

Objectives

The Objectives of the Flying-fox Emergency Action Plan – Heat Stress (FFHS) is to facilitate the implementation of effective and efficient emergency 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.

Strategic Framework

Flying-fox Emergency Action Plan - Heat Stress management in the Cairns Region will sit under the Council's Local Disaster Management Plan and connected to the BOM Special Weather Forecasting Working Group which is currently in development. This is achieved by:

- Ensuring a comprehensive, all hazards, all agencies approach by achieving the right balance of prevention, preparedness, response, and recovery.
- Adopting an integrated approach to ensure the engagement of all stakeholders, recognising no single agency can manage it alone.
- Engaging a cycle of continuous improvement through knowledge, collaboration, communication, and evaluation.

Structure and Governance

All wildlife response efforts must be coordinated, enacted, and carried out in compliance with the Commonwealth and Queensland state law being *Queensland Nature Conservation Act 1992* and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), for the species *Pteropus conspicillatus* (Spectacled Flying-fox).

Commonwealth Legislation

The Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) administers the *Environmental Protection and Biodiversity Conservation Act 1999*. This Act provides a legal framework for the protection and management of Commonwealth areas.

Commonwealth Legislation	Purpose	Authority
Environmental Protection Amendment Act 2003	Management of Australia's environment	DCCEEW
Environmental Protection and Biodiversity Conservation Act 1999	Protection of Australia's environment and biodiversity values	DCCEEW
Environmental Protections Biodiversity Conservation Regulations 2000	Protection of Australia's environment and biodiversity values	DCCEEW

State Legislation

The Queensland Government Department of Environment and Science (DES) appreciates that flying-fox roosts can be a source of unpleasant noise and smells in some places and recognises the need for flying-fox management arrangements to achieve a balance between addressing the concerns of impacted residents with the need to protect and retain flying-fox populations in the wild which play an essential role as pollinators for many native plant species.

A balanced approach to flying-fox roost management empowers local governments to act more responsively in the interests of their communities when flying-fox roosts are causing problems.

The Department of Environment and Science (DES) is the lead agency in Queensland for management of SFF. DES has the responsibility and statutory authority to treat, protect and destroy wildlife as outlined in the *Queensland Nature Conservation Act 1992*.

DES State Legislation	Purpose	Authority
Queensland Nature Conservation Act 1992	Management Flying-fox roosts	DES
Wet Tropics World Heritage Protection and Management Act 1993		WTHP

Queensland Health– *Public Health Act 2005*

The aim of the Public Health Act 2005 is to protect and promote the health of the Queensland public. The Act provides the basic safeguards necessary to protect public health through cooperation between the State Government, local governments, health care providers and the community.

Although QLD Health is the custodian of the *Public Health Act 2005*, local governments are required to ensure compliance with certain aspects of the Act, for which QLD Health have no direct responsibility. (QLD Health 2019).

<https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-2005-048>

Section 10 of the Public Health Act 2005 outlines public health risks for which responsibility sits with either the Local Government and/or Queensland Health. The section that relates to Bats (section 11 (1)(b)(vi)) sits with Local Government to enforce. As such although Queensland Health can provide advice and assistance in identifying and assessing public health risks where required the responsibility for managing these risks sits with Council in particular the Environmental Health Team.

QLD Health State Legislation	Purpose	Authority
The Public Health Act 2005	Protect and promote public health	QLD Health / CRC
Public Health Regulation 2018	Specific measures to prevent and control public health risks	QLD Health / CRC
QLD Health Heatwave Response Plan	Outline the arrangements for heatwaves in Queensland	QLD Health

Local Government

Local governments' as-of-right authority to manage flying-fox roosts.

The government recognises the significant role local governments continue to play in managing issues around flying-fox roosts in urban areas. Local governments have an as-of right authority under the *Nature Conservation Act 1992* (the Act) to manage flying-fox roosts in Urban Flying-Fox Management Areas (UFFMA).

The as-of-right management activities are limited to non-lethal methods, and may only be undertaken in accordance with the code of practice ensures acceptable welfare outcomes for flying foxes. If a local government does commit to roost management activities under the code of practice, it has a number of actions at its disposal including destroying a roost, dispersing the roost, or modifying a part of the roost through tree trimming and/or removal of roost trees. Activities affecting the spectacled flying-fox and grey-headed flying-fox may be subject to referral to the Commonwealth under the EPBC Act in the event of significant impact.

[Code of practice - Ecologically sustainable management of flying-fox roosts \(www.qld.gov.au\)](http://www.qld.gov.au)

https://www.qld.gov.au/data/assets/pdf_file/0009/221022/Guideline-Roost-Management.pdf

Local Government has responsibilities under the *Public Health Act 2005* to manage public health risks that are, or are likely to be hazardous to human health, or that contributes to, or are likely to contribute to, disease in humans or the transmission of an infectious condition to humans. This includes public health risks associated with waste or dead or living animals that have been or are likely to have been exposed to an infectious condition.

Cairns Regional Council	Purpose	Authority
CRC Biodiversity Strategy 2012-2022		CRC
CRC Management of Flying-foxes General Policy	Outline CRC position of SFF management	CRC
CRC Flying-fox Assessment Matrix	Assessment criteria of flying-fox roosts	CRC
CRC Local Disaster Management Plan	Collation and application of resources in times of disaster	CRC
LDMG-CR Special Event Weather Plan	Collation and application of resources in special weather events	CRC

Agency Roles and Responsibilities

The following table describes the roles and responsibilities of agencies that may be involved in the FFHS Management arrangements. All agencies are involved in the formulation of the Flying-fox Emergency ActionPlan strategies.

Prevention: measures to reduce the likelihood of an event occurring or if an event occurs to reduce the severity.

Preparedness: preparatory measures to ensure that if an event occurs communities, resources and services are able to cope with the effects.

Agency	Roles and Responsibilities
Cairns Regional Council (CRC)	<p>Prevention</p> <ul style="list-style-type: none"> • Management and administration of the Flying-Fox Heat Stress Emergency Plan. • Provide access to Council services and facilities to assist in response by agencies. • Ongoing community awareness and education. <p>Preparedness</p> <ul style="list-style-type: none"> • Provide access to Council services and facilities to assist in response by agencies. • Assessment of public health risks. • Vaccination and Training of Council staff. <p>Response</p> <ul style="list-style-type: none"> • Co-coordinate emergency operations. • Advise on the management of public health risks. • Monitoring and control of public health risks. • Coordination of communication between the entities. • Issue public warning and information. • Cordoning off of public land. • Waste management. • Signage. • Water connection where possible. • Water Truck where possible. • Ice and refreshments. <p>Recovery</p> <ul style="list-style-type: none"> • Collection and disposal of dead bats on Council land, maybe private land. • General clean-up the site.
Queensland Health (QLD Health)	<p>Primary hazard-specific agency for biological (human related) and heat wave hazards.</p> <p>Prevention</p> <ul style="list-style-type: none"> • Availability of vaccinations and treatment for flying-fox health risks. <p>Response</p> <p>Health advice and warnings to participating agencies and the community.</p> <ul style="list-style-type: none"> • Psychological and counselling services for disaster affected person. <p>Recovery</p> <ul style="list-style-type: none"> • Ongoing medical services required to preserve community health.
FNQ Wildlife Rescue & Wildlife Carers	<p>Prevention</p> <ul style="list-style-type: none"> • Monitoring of Flying-fox behaviours at various roosts. • Notification to Council that triage needs to be set-up which will activate the FFHS plan.

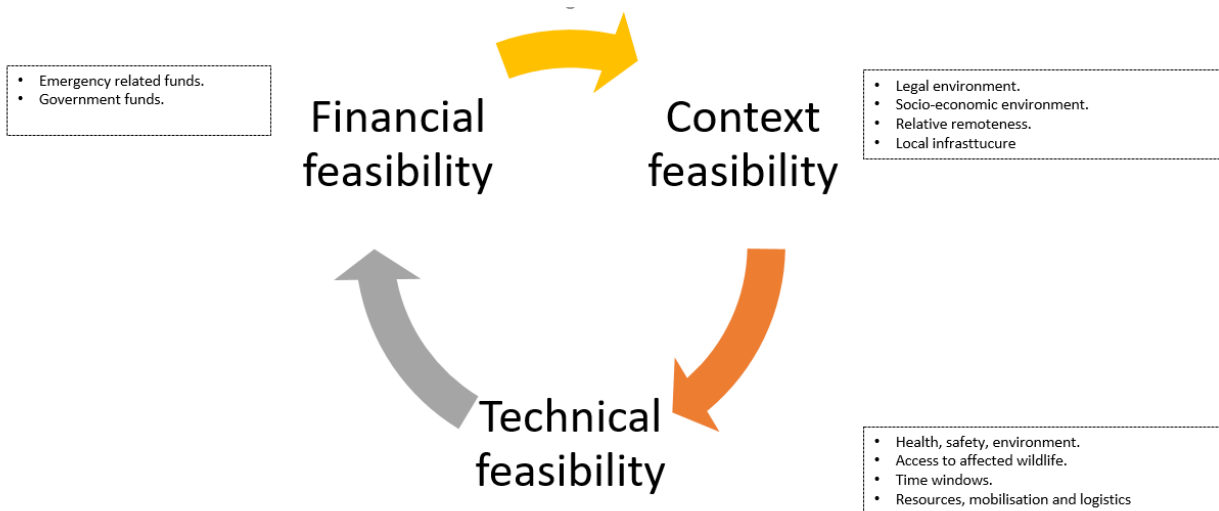
	<p>Preparedness</p> <ul style="list-style-type: none"> • Ongoing recruitment and capacity building of flying-fox rescue carers, including identification of further training. • Management of the Flying-fox wildlife carers' communication. • Ensure all Wildlife carers are up to date with vaccinations. <p>Response</p> <ul style="list-style-type: none"> • Activate and manage flying-fox rescue response teams. • All rescue response capabilities: spraying with trigger bottles, triage, transport, veterinary and after care. <p>Recovery</p> <ul style="list-style-type: none"> • Data management of outcomes of all animals taken into care and provision to agencies.
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Factors affecting the feasibility of the different operations that may be considered during a wildlife response to a heat stress event.

The objective of the FFHS Plan is to minimize the impact on animals, their populations and habitat. The decision-making process will need to take a large number of factors into account to assess the feasibility of different response options and their expected success in consideration of specific conditions at stake.

This includes the context of the event (including local infrastructure and the legal framework), the technical feasibility of mounting a wildlife response (including the health and safety of responders), financial feasibility and any cultural values (First Nations) that may influence response options and objectives. All these elements are best considered as part of a proactive planning process to ensure an efficient response and unity of effort.

Feasibility of Operations



PART 2

EMERGENCY RESPONSE HUMAN RESOURCES

The FFHS Response Team has been established to facilitate a fast and effective recovery response to FFHS Management.

Emergency Response Coordinators

Emergency Response Coordinators are responsible for the ongoing delivery of the FFHS Emergency Plan and can activate the FFHS Emergency Response Team.

Cairns Regional Council	Role: Executive Manager Community Life Name: Brett Spencer
Cairns Regional Council	Role: Coordinator Natural Asset Management Name: Jade Monda
Cairns Regional Council	Role: Business Systems & Wildlife Management Officer Name: Marcelle Kentwell
FNQ Wildlife Rescue	Role: Flying-fox Coordinator FNQ & Cairns Name: Rebecca Koller & Cheryl Hudson

Emergency Response Team

The Emergency Response Team is responsible for providing on the ground assistance including:

- Wildlife response,
- Site management,
- Infrastructure support and,
- Service support.

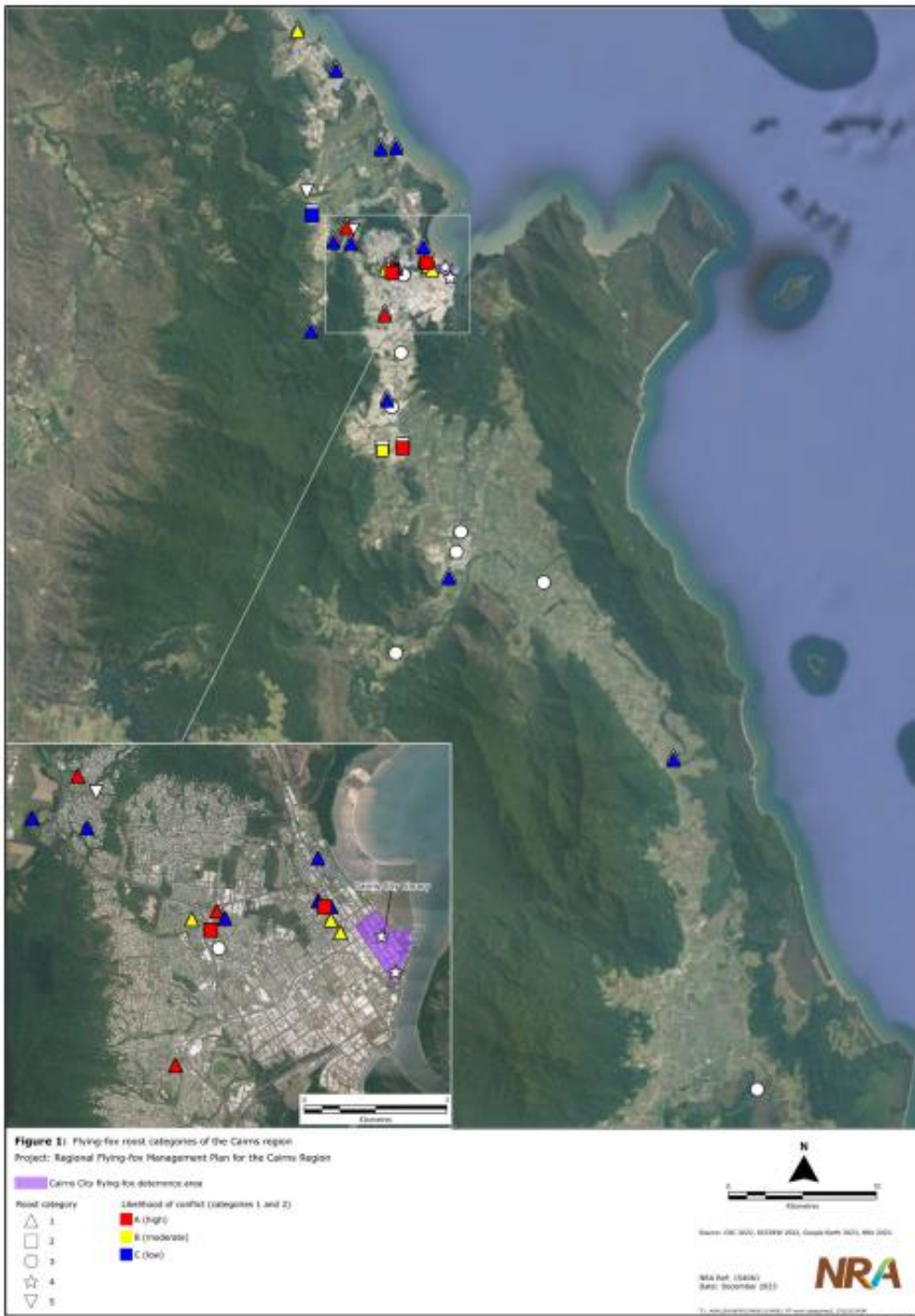
Agency	Role	Name	Contact	Responsibility
Cairns Regional Council	Executive Manager Community Life	Brett Spencer	b.spencer@cairns.qld.gov.au 4044 3334	CRC Operations
	Coordinator Natural Assets	Jade Monda	j.monda@cairns.qld.gov.au 4044 3372	CRC Operations in natural areas
	Wildlife Management Officer	Marcelle Kentwell	m.kentwell@cairns.qld.gov.au 4044 3701	CRC Operations and wildlife volunteer management
	Marketing Account Manager	Dion Eades	d.eades@cairns.qld.gov.au 4044 3370	CRC Communications and media officer
	Coordinator Parks	David Parsons	d.parsons@cairns.qld.gov.au 4044 3951	CRC Parks

	Environment Officer	Nick Miller	m.tortike@cairns.qld.gov.au 4044 3406	Assessment & control - permits
	Executive Manager Resource Recovery	Steve Cosatto	S.Cosatto@cairns.qld.gov.au 40443408	Provision of waste services.
FNQ Wildlife	Flying fox Volunteer Coordinator	Rebecca Koller & Cheryl Hudson	beckoller@icloud.com Chezh2@bigpond.com	Wildlife Coordinator
QLD Health	Team Leader Environmental Health	Andrew DAddonna	Andrew.daddona@helath.qld.gov.au	QLD Health
	Public Health Nurse	Carlie Thirlwell	Carlie.thirlwell@health.qld.gov.au	QLD Health

Scope

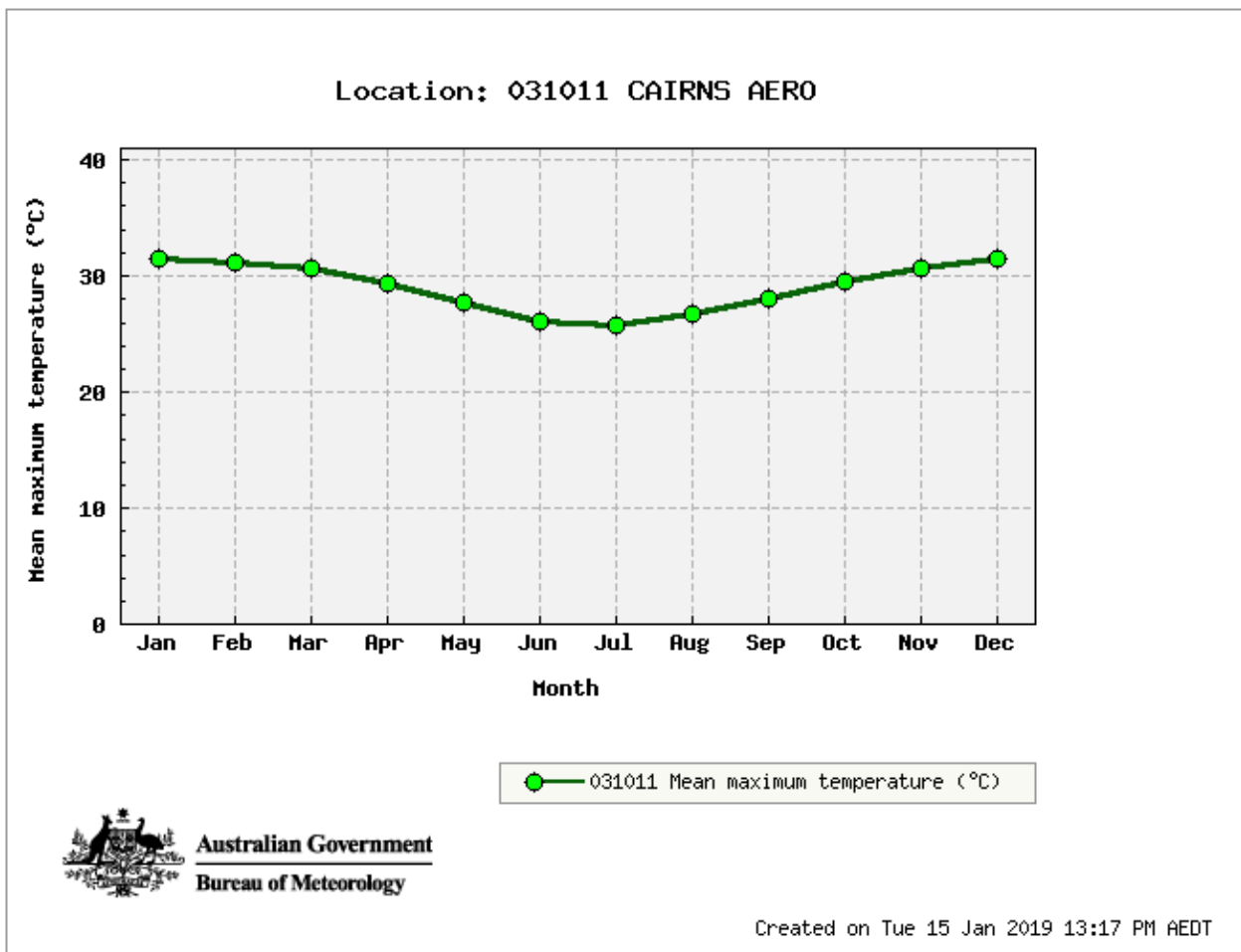
The FFHS sets out the minimum standard required for a heat stress event in the Cairns Regional Council boundaries. The FFHS details the legislative responsibilities, relationships to other plans, roles and responsibilities, wildlife response and standards of best practice procedures.

Location of known Flying-fox Roosts December 2023



Climate and Weather

Cairns Regional Council lies on the coast of Queensland at approximately 17 degrees' south latitude and experiences hot humid summers and milder dryer winters. During the summer months the region experiences temperatures between 23-31 degrees and high humidity. Temperatures rarely exceed 35 degrees or go below 15 degrees for extended periods.



Preparedness is having “arrangements or plans to deal with the threat situation or a disaster, that is, the mobilisation of the disaster response structure and resources” (Emergency Management Australia, 2004).

Triggers

The triggers for a potential heat stress event are based on the animals’ behaviour at the individual roosts and the predicted weather forecast.

- Pre-Trigger: Weather Forecast predicting heat wave event.
- Activation: Temperature over 37 degrees to start checking camps.
- Activation: Animal behaviour in Category 3.

Category	Who	Action	To be notified
1. Normal behaviour	Wildlife Coordinator	Inform Stakeholders	<ul style="list-style-type: none"> • Council
2. Wing Fanning	Wildlife Coordinator	Alert Stakeholders	<ul style="list-style-type: none"> • Council • QLD Heath • DES • CSIRO
3. Clustering	Wildlife Coordinator	Alert Stakeholders	<ul style="list-style-type: none"> • Council • QLD Heath • DES • CSIRO

How it relates to Local Disaster Management Group (LDMG) Activation levels

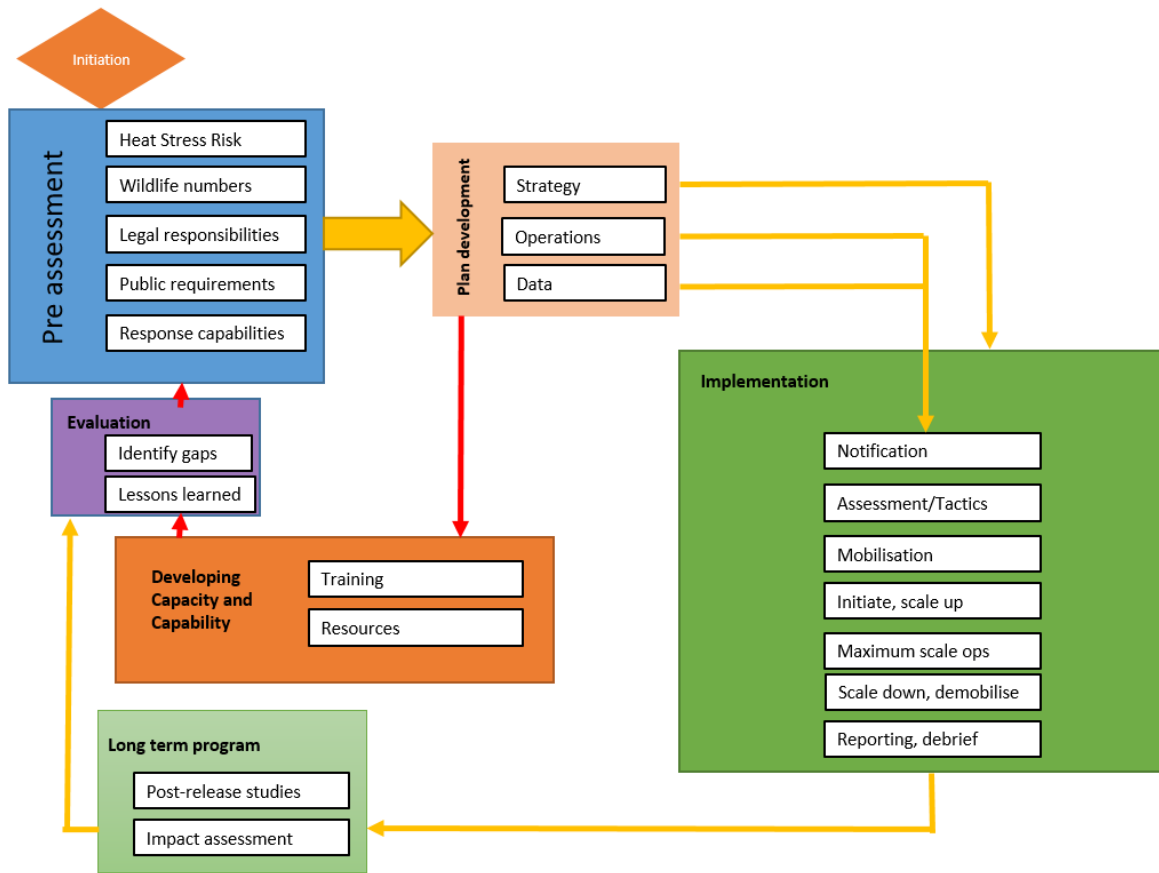
- LDMG @ Alert – BOM extreme Heat Event
- LDMG @ LEAN FORWARD – Activation of this Plan
- LDMG @ STAND UP – Resources are deployed

Event Coordination

Overall management of the coordinated response will be managed by Cairns Regional Council in cooperation with Queensland Health, Wildlife agencies and Department of Environment Services. A meeting will be called at Council Chambers Spence Street with the key contacts to determine and activate response plans.

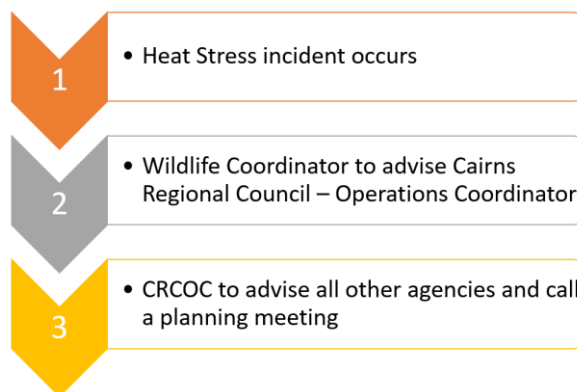
The diagram following shows how wildlife response preparedness can be built through a series of consecutive steps – assessment, planning, implementation, and evaluation – that form a continuous, cyclical process.

The cycle for developing wildlife response preparedness.



Communication between Operational Responders

There could be various stakeholders living in prominently at roost sites, the following table is a guide to identify stakeholders and who should be informed.



Communication and Media

The release of information to the community regarding the likely event and associated threats will be drafted between Cairns Regional Council and Queensland Health. This will be approved by the CRC General Manager of Communication and Marketing, and distributed through the Communications Officer. Public information and warnings will be strategically provided to the media so that consistent, appropriate, and reliable messaging with consideration to factors like target audience, frequency of messaging, demographics, and geographic situation.

Forms of communication

- Cairns Regional Council social media,
- Wildlife agencies social media,
- Information signage at roosts with contact details for coordinator, rescue group and QLD Health,
- CRC Disaster Dash Board,
- My Cairns App.

How can the media and public be informed so that the response will be understood and supported?	<ul style="list-style-type: none"> • Communicate the response plan and the immediate challenges. • Provide daily updates on the response. • Provide information to the public - what to do if an animal is found. • Allow the media to report on the wildlife response.
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Response Capability/Operational Limitations

Cairns Regional Council has resources available as per the table below. If additional resources are required, the resources will initially be sourced through local supplier.

List of Council resources available to response

<ul style="list-style-type: none"> • Coordinator and meeting venue
<ul style="list-style-type: none"> • PPE – masks, gloves, tongs
<ul style="list-style-type: none"> • Infrastructure – marquees, tables, chairs
<ul style="list-style-type: none"> • Waste Management – bins and disposal
<ul style="list-style-type: none"> • Communications – Council staff
<ul style="list-style-type: none"> • Man power – cordon off areas
<ul style="list-style-type: none"> • Maps of Roost and land ownership
<ul style="list-style-type: none"> • Water Truck
<ul style="list-style-type: none"> • Irrigation where possible
<ul style="list-style-type: none"> • Signage
<ul style="list-style-type: none"> • Ice and refreshments to volunteers

The ability and timeliness of responses will depend on the roost most affected, availability of resources, environmental and site conditions. The timing of the triggers and communication to the various agencies will affect the agency’s’ ability to respond.

Initial Impact Assessment

- The Wildlife Coordinator will carry out the inspections and assessments of flying-fox roosts and update Council on conditions and potential activation.
- Council assessment to mitigate steps and plan public announcements, restricting access, and signage as required.

Initial Response Actions: 0-48 hours

The first 24-48 hours of a response impact in the flying-fox are critical to the success of operations (i.e. reducing or avoiding impacts to wildlife).

Within the first 24 hours of the trigger

- Report incident to all Coordinators
- Activate designated Flying-fox carers/team.
- Complete a risk assessment – all coordinators.
- Activate Council ground irrigation systems where possible.

Following is a list of action items to be initiated in within 24-48 hours of incident.

Within 24-48 hours of an incident

- Advise surrounding residents.
- Establish communications to the general public.
- Determine locations to be secured from the public.
- Disperse Supplies and PPE equipment where needed.

FFHS Response Logistics table

Feature	Details	Action
Site Access	Approval required for both public and private sites by bat carers.	Wildlife carers to advise Council and ask private land owners for access. Council to provide maps and identify land tenure.
Access Logistics	Unlock gates Parking Footpaths Signage	Council to prepare a plan to include site controls, barriers, info signage, meeting points, assist with triage set-up.

	No go zones (barriers) Triage setup	
Health and safety	PPE Vaccinated workers Communication Hydration and Heat Stress Appropriate training Safe work methods Public health risks	Check appropriate PPE is being used. Wildlife carers to ensure all bat handlers are vaccinated. Induction/signed forms Check for any health or safety hazards. Start communication process, do not touch. Ensure adequate drinks and rests are taken. Assess and provide advice on public health risks as required.
Infrastructure	Water Power Shade structures Toilets	Wildlife coordinator to advise Council coordinator what is needed.
Rescue and care practices	Wildlife carers' emergency plan.	Wildlife coordinator to action.
Waste Collection and disposal	Landholder Council Wildlife carers.	Council to provide bins and disposal methods of carcasses and general waste. Wildlife carers need sharps disposal if needles are being used.

Media Management

Public Information and warnings will be strategically provided to the media that is consistent, appropriate, and reliable with consideration to factors like target audience, frequency or messaging, demographics, and geographic situation, though the CRC communications and marketing team.

Management of Volunteers

Volunteers, who contact Council, are directed to FNQ Wildlife Queensland, so they can be deployed to assist according to their experience and set of skills. Donations from the community will be directed to FNQ Wildlife Queensland.

FFHS Roles, Action and Responsibility

Role	Responsibility	Who
Coordination	Each Agency to nominate a coordinator.	All agencies
Colony monitors	Monitors of roosts	Wildlife Responders
Communication	Carers Facebook page Trigger Local residents General public	Wildlife responders Wildlife responders Council & QLD Health Council & QLD Health

Set-up and pack-up	Rescue equipment Infrastructure equipment Barriers to the general public Signage	Wildlife responders Council Council Council
Safety and PPE	PPE check Health check Provide PPE	Wildlife Responders Council Council
Public Health Risk Assessment	Environmental Health Officers	Council
Data recording of live and dead	Refer to Bat Carers Manual	Wildlife Responders
Rescue	Vaccinated people only	Wildlife Responders QLD Health to monitor.
Spraying & Irrigation	Spraying by Vaccinated Wildlife Responders Council Irrigation	Wildlife Responders Council
Triage and post monitoring	Vaccinated Wildlife Responders	Anyone who is vaccinated and trained in flying-care, includes vets and vet nurses.
Euthanasia	A veterinarian or Licensed Trauma Carer	Anyone who holds a valid drug permit from QLD Health and training in euthanizing flying-foxes
Carers on stand-by	Vaccinated Wildlife Responders	Anyone who is vaccinated and is trained in flying-fox care.
Food and water provision	Various	Support personnel
Dead Body Removal	Wildlife Responders working with government	Wildlife Responders Council & DES

Purpose of Water Truck – Trees in road medians

Trees located in within the road footprint are often surrounded by asphalt and pavements that have been found to heat up to +60 degrees and radiate excess heat back into environment. Spraying the road surface adjacent to the tree area reduces the temperature of the road seal under resulting in lower reflective heat. The spraying also increases the humidity under these trees giving relief to the flying-foxes and allowing them to move higher up into the tree. This will also reduce the risk to the general public that park and drive along these medium strips.

Event Coordination

The Wildlife Coordinator will provide a daily update to the Council Coordinator to distribute to all team members involved, in order to build an ongoing successful response. The Council Coordinator will determine what actions and resources need to occur or be distributed between the various roosts. The table below outlines summaries the phases in the emergency response and refer to Appendix 1 for a full response overview.

Phases in the Response

Phase in the response	Action	Tasks
Activating the heat stress plan	Notification, assessment, and mobilisation	<ul style="list-style-type: none"> Notify decision makers: determine whether the heat stress plan should be activated or, and under which circumstances. Wildlife responders begin. Assess reliable information on the event and carry out field inspection to assess the potential scale of impact at the various locations. Decide what mobilisation is needed for each response option that is considered. Ensure the mobilisation of appropriate resources.
Emergency management	Anticipate and react to the unfolding scenario	Quickly develop response system to the appropriate scale: <ul style="list-style-type: none"> Ensure functioning of communication systems and data flow. Develop a response action plan (24-48 hours), which is updated every day for each operational area. Continue field assessments to monitor potential changes in scale and new developments. Scale up existing operations as necessary
Project management	Deliver on plan objectives	Ensure stability of operations, effectiveness, cost-efficiency: <ul style="list-style-type: none"> Confirm continued communication flows. Ensure efficient use of resources
Demobilisation	Scale back down to zero	Demobilisation of personnel Demobilisation of wildlife equipment Formal close of wildlife response
Post demobilisation	Reporting	Classification and analysis of all data Conclusions and recommendations Financial round-up.

Response Sizing and Scale

Based on all available information, the Wildlife Coordinator must make recommendations to the Emergency Team on the scope and scale of wildlife response efforts necessary to implement an effective wildlife response. The Wildlife Coordinator will continually assess incident conditions to appropriately size the wildlife response efforts. Right-sizing the wildlife response may mean increasing or decreasing efforts as needed. Typically, search and capture of living bats will be initiated before the later stage of the response being removal of the dead animals. Recommendations for adjusting response efforts should be fully coordinated with FNQ Wildlife Rescue and government agencies prior to implementation.

In order to make decisions appropriate to the size, scale, and potential threat to the community the following information should be used to help determine the best strategy:

- Location of roosts,
- Identifying the most sensitive or highest risk location to the community,
- Weather forecast,
- Resource availability (bat carers, equipment, specific expertise, facilities),
- Health and Safety with regards to search and capture efforts.

Wildlife Carers Response

FNQ Wildlife Rescue will follow the Flying-fox Heat Event Response Guidelines prepared by Dr. Tania Bishop in September 2018. The document covers the logistics, detailed role delineation, triage protocol, and various information resources for Wildlife responders to use for this type of event and will not be documented in this plan. Wildlife responders' field of operations encompass all aspects of 'on-the-ground' wildlife response activities;

- Reconnaissance and monitoring,
- Pre-emptive capture of Flying-foxes in need of treatment,
- Chain of Custody and evidence of storage (if being frozen),
- Field stabilization (evaluation and medical care for SFF) and,
- Field transport (transport from field to wildlife care centre/place).

Human Health & Safety

Human health and safety is the first priority in any heat stress response. In addition to hazards from the high temperatures, numerous physical hazards may be associated with wildlife rescue and rehabilitation activities. Safety for all responders, as well as the safety of each individual animal, must be considered. All personnel involved in the wildlife response must maintain proper levels of safety and wildlife handling protocols.

Wildlife responders will comply with all health and safety protocols as required by all the agencies. Personnel may be given specific on-site safety training as identified by the agency. Safety measures may vary depending on the conditions such as the following;

- Location of roost
- Environmental conditions
- Biological hazards
- Potential hazards when working with impacted wildlife.

Appropriate personal protective equipment (PPE) is required for all personnel, such as gloves and protective footwear. To guard against injury from wildlife, all workers should wear approved PPE that is appropriate to their task. To protect against injury from wildlife, appropriate clothing (closed-toed shoes, long sleeved shirts, long pants, etc.). Respiratory protection from organic vapour hazards may also be required for some operations. Workers should be aware of temperature, weather, and other environmental conditions and use PPE to guard against, heat-stress and other hazards.

Council Environmental Health Officers can assess public health risks associated with FFHS events and provide guidance on the management of these risks. Enforcement options are available to prevent and control public health risks where necessary to protect public health and safety.

Zoonosis

Zoonosis is infective diseases that may be transmitted between animals and humans under natural conditions. Personnel handling or coming into contact with wildlife have the potential of exposure to zoonosis.

Australian Bat Lyssavirus

Australian bat lyssavirus (ABLV) is a virus that can be transmitted from bats to humans, causing serious illness. The virus was first identified in 1996 and has been found in four kinds of flying foxes/fruit bats and one species of insect-eating microbat. Blood tests have shown previous infection in a number of other bat species, so it is assumed that any bat in Australia could carry the virus.

While ABLV is more likely to be found in a sick or injured bat, bats that appear healthy may also be infectious. Surveys of wild bat populations have indicated less than one percent of bats carry ABLV. In sick and injured bats, around 7% have been found to carry the virus.

ABLV is one of twelve types of lyssaviruses which are found around the world. ABLV is the only one of these known to occur in Australia. ABLV is closely related but not identical to rabies virus, which causes a serious and usually fatal disease in humans.

Signs and Symptoms:

ABLV infection in humans causes a serious illness which results in paralysis, delirium, convulsions, and death. Since November 1996, three people have died as a result of ABLV infection, after being bitten or scratched by bats.

Treatment:

Rabies vaccine that is given after exposure to ABLV, but before a person becomes unwell, will prevent the disease. However, once a person develops the disease there is no specific treatment for ABLV.

Proper cleaning of the wound reduces the risk of infection. 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.

While bat faeces, urine and blood are not considered to pose a risk of ABLV, contact with any bat fluids should generally be avoided. If you have any contact with bat fluids, wash your hands (or other affected area) immediately.

Transmission:

The virus can be transmitted from bats to humans when infected bat saliva enters the human body, usually by a bite or scratch, but also by getting bat saliva in the eyes, nose, or mouth (mucous membrane exposure) or onto a pre-existing break in the skin.

The virus is also found in the nervous system of affected bats. Therefore needlesticks or cuts from a sharp item that has been used on a bat or coming into contact with brain tissue from a bat, are also possibly ways of transmitting ABLV.

ABLV is unlikely to survive outside the bat or in a dead bat for more than a few hours, especially in dry environments that are exposed to sunlight. Coming into contact with bat faeces, urine or blood do not pose a risk of exposure to ABLV, nor do living, playing, or walking near bat roosting areas. There is no evidence to suggest ABLV could be contracted by eating fruit

partially eaten by a bat. However, any fruit that has been partially eaten by any animal should be discarded as it could be contaminated by a variety of germs.

The time from exposure to the virus to the start of symptoms is variable; of the three known human cases of ABLV infection, one became ill several weeks after being bitten by a bat and another became ill more than two years after a bat bite. The timeframe around exposure of the third case is not confirmed. Classical rabies virus also shows a wide variability in time between exposure and illness, from weeks to years. Therefore, it is vital to seek medical advice even if some time has elapsed since the exposure.

Prevention:

1. Do not touch bats, even if they are injured.

Only vaccinated people who have been trained in the care of bats should ever handle bats or flying foxes. People who come across an injured bat should contact the Department of Environment and Heritage Protection (1300 130 372), RSPCA (1300 ANIMAL) or local wildlife care groups/rescuers/carers for assistance. Do not touch the bat.

2. Rabies vaccination

Rabies vaccine is used to protect against ABLV infection. Even if a person has had rabies vaccine before, further rabies vaccinations will be required if they are exposed to ABLV.

There are two types of vaccine that may be used:

- **Rabies Vaccine** contains killed virus that cannot cause the disease. The vaccine stimulates a person's immune system to develop antibodies that will recognise and kill the virus before it has time to cause illness.
- **Human Rabies Immunoglobulin (HRIG)** is made from blood donated by people who have been vaccinated against rabies. It is a concentrated form of antibodies against rabies virus. HRIG may be recommended for immediate protection for people who are exposed to ABLV and have never had rabies vaccination before. As much as possible of the HRIG dose is injected around the exposure site, with any remainder given as an injection into a muscle such as the buttock or thigh.

Pre-exposure vaccination

Pre-exposure vaccination is recommended for anyone who plans to care for bats or will come into contact with bats during the course of their work. A course of three rabies vaccine injections is given over one month (days zero, seven and 28). **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.**

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.

Post-exposure vaccination

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.

Anyone who has previously had rabies vaccinations will require two further doses of vaccine after a possible exposure to ABLV (day zero and three).

Because the disease caused by ABLV is lethal, all people who are exposed to this virus should have the injections. This includes where there is a possibility of allergic reactions, or during pregnancy, or for women who are breastfeeding. If problems are encountered during the vaccination course, specialist advice is sought about the risks of the reactions compared with the risks of developing the disease.

Post-exposure vaccination is recommended regardless of how long ago the exposure occurred.

Queensland Health funds post-exposure vaccinations, and your local public health unit will arrange for the injections to be delivered to your GP or hospital.

If the bat is available to be tested for ABLV, post-exposure vaccination can be postponed for up to 48 hours after the exposure while waiting for results. There is no need for rabies vaccination if the bat does not have ABLV. If more than 48 hours will pass before results are available, the rabies vaccination course is commenced, but stopped if the bat does not have ABLV.

Testing for the bat is arranged by the local public health unit. The bat should only be euthanised by an authorised wildlife organisation, state agricultural department or veterinarian.

Contact your local veterinarian if you suspect that your pet might have been bitten or scratched by a bat.

Recovery is a remedial and development process encompassing the following activities;

- Public Health risk assessment,
- Clean up of affected land areas,
- Carcass collection and disposal,
- The emotional, social, and physical well-being of individuals and communities, and
- Reducing exposure to hazards and associated risks.

Recovery Coordination

Public Health

- Public health risk assessment to be conducted by Council Environmental Health Officer/s with particular consideration to disease transmission, management of carcasses and potential effects on recreational water and public access areas.

Collection of dead wildlife

- Clean-up occurs after all live flying-foxes have been removed unless the person has been vaccinated.
- Carcasses can provide essential information for an impact assessment and wider ecological interest. Systematic collection, evaluation and storage of dead animals are therefore essential.

Community Communication

- Notification to the public
- Contact numbers of Wildlife rescue groups

Response Capability/Operational Limitations

- Permission needed to enter private land. (Note: Councils Environmental Health Officers have enforcement powers to manage public health risks on private land).
- Clean-up team has a limited time they can work in hot and rotting conditions.
- Clean-up occurs after all live flying-foxes have been removed unless the person has been vaccinated.

Debrief & Review

The success of a wildlife response is dependent on many factors:

- The level of integration into the overall response, so that facilities are ready by the time animals arrive and the project phase becomes an integral part of the wider response effort,
- The availability of technical and logistical resources for setting up and the running the facilities,
- In remote responses, the ability of the wildlife effort to capture and transport animals to facility operations,
- The level of integration of local resources into the response; and
- The increased local response capacity and integration of local community into ongoing preparedness and response efforts.
- FFHS will be reviewed annually or after an activation of the plan.

Evaluating an existing preparedness system for a wildlife response is of paramount importance.

Bringing participants together in meetings that allow a multidisciplinary evaluation of how a response went versus 'best practice' is an important element in building and firming up preparedness.

Evaluation Guidelines

Task	After the incident
When	<ul style="list-style-type: none"> • Evaluation by Wildlife Carers as they demobilise. • Internal evaluation within each participating agency • All agency evaluation (within 1-2 months) • Formal evaluation of the partners of a plan within weeks rather than months
Purpose	<ul style="list-style-type: none"> • Identify strengths and weaknesses in performances in relation to the real-time developments of an incident. • Purpose to include public health risks and management.
Lessons learned	<ul style="list-style-type: none"> • Because a real-time incident puts considerable pressure on the performance of all individuals involved, the consequences of mistakes may be more severe or at least perceived as such. • It is therefore essential that a constructive atmosphere is created by the organisers and moderators of the evaluation session. In the end it may appear that mistakes were not due to ignorance or misconduct, but were situation driven, or due to lack of guidance from the plan.
Gap analysis	<ul style="list-style-type: none"> • The experience gained from responding to an incident will lead to various new insights regarding potential scenarios and their effect on current response capabilities and the current response capabilities and the content of the underlying plan. • In extreme cases there may be reason to change the preparedness targets on the basis of the experience from the incident, and issue a complete reassessment of structures, expertise, training systems, equipment and facilities and a (partial) re-write of the wildlife response plan.

EVENT COORDINATION OVERVIEW

	Actions	Decisions	Planning and operational conditions	Resources: personnel	Resources: facilities and equipment
Initial impact assessment	<ul style="list-style-type: none"> Assess wildlife at risk. Assess public health risks 	<ul style="list-style-type: none"> Develop response strategies. Determine response levels. Determine response resource needs. <ul style="list-style-type: none"> Personnel Facilities equipment 	<ul style="list-style-type: none"> Wildlife responders notified. Response agencies notified. Human health and safety plan 	<ul style="list-style-type: none"> Wildlife reconnaissance teams All agencies 	<ul style="list-style-type: none"> Communication systems Mapping resources Wildlife rescue equipment
Dealing with live casualties	<ul style="list-style-type: none"> Search and collection Primary treatment Remote site stabilisation Wildlife transport Wildlife evidence processing: <ul style="list-style-type: none"> Live wildlife Dead wildlife Medical examination and triage Stabilisation 	<ul style="list-style-type: none"> Develop wildlife response plan. Develop search and collection plan: <ul style="list-style-type: none"> Teams Sectors Methods Equipment Rehabilitation facility procurement <ul style="list-style-type: none"> Location Power and water resources Security Develop euthanasia policy. Develop care protocols. Volunteer management guidelines 	<ul style="list-style-type: none"> Activate wildlife response plan. Site safety and health plan Health and safety training for volunteers Dead wildlife collection authorisation Equipment procurement authorisation 	<ul style="list-style-type: none"> Safety Officer Wildlife Response team Transport team Stabilization team Veterinarians Dead wildlife processing team Volunteers Volunteer manager Logistics and finance liaison Facilities manager/team 	<ul style="list-style-type: none"> Capture equipment Transport vehicle, equipment, communication system Veterinary supplies Volunteer area Communication systems Waster and hazardous material disposal
Demobilization	<ul style="list-style-type: none"> Scaled demobilization of resources 	<ul style="list-style-type: none"> Develop demobilisation plan and timeline: <ul style="list-style-type: none"> Personnel Equipment Facilities services 	<ul style="list-style-type: none"> Assessment of current response levels resource needs 	<ul style="list-style-type: none"> All associated wildlife personnel in a staged manner 	<ul style="list-style-type: none"> All wildlife facilities, equipment, and services in a staged manner
Post demobilization	<ul style="list-style-type: none"> Post monitoring 	<ul style="list-style-type: none"> Develop post monitoring plan 	<ul style="list-style-type: none"> Monitoring scope and resources 	<ul style="list-style-type: none"> Data management team 	<ul style="list-style-type: none"> Post monitoring equipment