

# Flying-fox Camp Management Policy 2015

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# **Executive summary**

Three species of flying-fox occur in New South Wales (NSW): the grey-headed, black and little red. NSW Health advises that the public should avoid direct contact with flying-foxes as there is always the possibility of being scratched or bitten and it leading to infection.

Additional health and amenity impacts also exist for people who are in close proximity to camps including loss of sleep and noise impacts. Appropriate management of flying-fox camps to mitigate the impacts of flying-fox camps on people is necessary. The overriding purpose of this policy is to minimise these impacts while avoiding unnecessary harm to flying-foxes.

Management of flying-foxes also requires recognition that, as native fauna, they are protected in NSW under the *Biodiversity Conservation Act 2016* (NSW) (BC Act) and, in the case of the grey-headed flying-fox, listed as a threatened species in Schedule 1 of the BC Act (NSW) and the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).

The policy will empower land managers, primarily local councils, to work with their communities to manage flying-fox camps effectively. It provides the framework within which the Office of Environment and Heritage (OEH) will make regulatory decisions. Land managers have two options for seeking authorisation to carry out camp management actions: carry out actions in accordance with the Flying-fox Camp Management Code of Practice 2018 (Code of Practice), or obtain a licence from OEH. The policy strongly encourages local councils and other land managers to prepare camp management plans for sites where the local community is affected.

Flying-foxes are highly intelligent animals that are part of a complex and interdependent natural system. As long-range pollinators, they are critical for the survival of valuable forests. However, loss of foraging and roosting habitat has meant that flying-foxes increasingly occur in camps in urban centres. Camp management plans will outline a set of camp management actions from low-impact activities, such as tree lopping to the creation and maintenance of buffers. Camp dispersal can be used as a way to remove impacts on local communities. Camp dispersal will be allowed in accordance with this policy and as part of an approved camp management plan. Outside of urban camp management, shooting to scare or kill animals may be authorised for orchardists pursuant to the NSW Government's *Policy and Procedural Guidelines for the Mitigation of Commercial Crop Damage by Flying-Foxes*.

OEH will provide support for land managers to expedite the development of plans at priority sites.

The objectives of the Flying-fox Camp Management Policy 2015 are to:

- address the potential impacts of flying-fox camps on human health and amenity
- minimise the impact of camps on local communities
- provide a balance between conservation of flying-foxes and their impacts on human settlements
- clarify roles and responsibilities for OEH, local councils and other land managers such as managers of Crown lands
- provide options for land managers to undertake actions in accordance with the Code of Practice, or obtain upfront licensing to manage flying-foxes
- enable land managers and other stakeholders to use a range of suitable management responses to sustainably manage flying-foxes

- require land managers to consider the behaviours, habitat and food requirements of flying-foxes when developing and implementing camp management plans
- improve understanding of the relationship between new development and existing flying-fox camps
- implement an adaptive management approach to camp management based on evidence collected as a result of the policy
- enable long-term conservation of flying-foxes in appropriate locations by encouraging land managers to establish and protect sufficient food supplies and roosting habitat.

#### This policy incorporates:

- policy objectives
- information on managing flying-fox camps
- guidance on how to write a camp management plan to enable a longer-term approach to management
- how OEH will regulate flying-fox camp management
- respective roles and responsibilities.

This policy is supported by additional resources addressing management options including disturbance, licensing and flying-fox ecology. Case studies of camp management and information on health issues are also available on the OEH website.

# 1. Introduction

This document sets out the framework for managing flying-fox populations in NSW. It is intended to provide clear and concise information about the conservation status of flying-foxes, set out the legislative and licensing rules that apply, and provide advice and guidance to assist the community, land managers and government to work together to manage flying-fox camps.

Three species of flying-fox occur in NSW: the grey-headed, black and little red. Flying-fox camps can contain any one or a combination of the three species.

All three species are protected in NSW, as are all native animals, under the *Biodiversity Conservation Act 2016* (BC Act). The grey-headed flying-fox is also listed as vulnerable to extinction in Schedule 1 of the BC Act. This means licences or approvals may be needed to harm all three species or to undertake actions in or near camps that are likely to harm grey-headed flying-foxes (see Section 7 on streamlining legislative requirements).



#### Grey-headed flying-fox

Protected in NSW under the *Biodiversity Conservation Act 2016* and listed as 'vulnerable' in Schedule 1 of the BC Act

Listed as 'vulnerable' under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999



#### **Black flying-fox**

Protected in NSW under the Biodiversity Conservation Act 2016



#### Little red flying-fox

Protected in NSW under the Biodiversity Conservation Act 2016

Figure 1 Summary of flying-fox legislation in NSW

Flying-foxes play an important role in pollination and seed dispersal for many plants. Each species is considered a single population across its range.

Flying-foxes can be unpredictable and exhibit complex behaviour. They often travel at night and congregate during the day in flying-fox 'camps' where they rest and socialise, and in which they may give birth and care for their young. Each flying-fox camp is unique in its location, characteristics and community, and therefore requires a site-specific response to management.

Between November 2013 and November 2018, there have been at least 160 grey-headed flying-fox camps in NSW that varied in size from a handful of individuals to more than 100,000 individual animals at times. The size of the daytime population will change throughout the year, depending on food sources.

Individual animals may return to the same roost site seasonally. In times of food scarcity, flying-foxes will adapt their diets. This means that they can congregate very close to homes and generate amenity issues, health concerns, nuisance and damage to significant vegetation.

The NSW Government is collaborating with the Australian, Queensland, Victorian, South Australian and ACT governments and the CSIRO to assess grey-headed flying-fox population numbers and distribution. In 2013, the National Flying-fox Monitoring Program (NFFMP) commenced. It aims to establish a reliable benchmark on the size of flying-fox populations and has monitored population trends, as well as population dynamics. It involves quarterly counts at all known daytime roost sites of grey-headed flying-foxes across the species' national range.

The primary focus of the census is on grey-headed flying-foxes, with counts also taking into account numbers of black and little red flying-foxes where they occur with or near grey-headed flying-fox camps.

National results from the census are available on the Australian Government's <u>Department of the Environment and Energy website</u>. These results will also inform future decisions on the continued listing of grey-headed flying-foxes under the BC Act.

This work will enable governments to better understand the conservation status of these species and enhance management options.

# 1.1 Flying-foxes and health

Flying-fox camps in public places, such as parks, school grounds and residential areas, can sometimes raise concerns about possible health risks for community members. Concerns include flying-fox infections, noise, odour and the impact of flying-fox droppings on houses, cars and washing.

Human infections with viruses borne by flying-foxes are very rare. In Australia, as at April 2018, there have been three confirmed cases of Australian Bat Lyssavirus in humans. All were in Queensland. There have been seven confirmed cases of Hendra virus in humans, also all in Queensland.

## 1.1.1 Australian Bat Lyssavirus

Australian Bat Lyssavirus is found in the saliva of infected animals. The virus can only be spread to other animals and people through the bite or scratch of a flying-fox. Australian Bat Lyssavirus is not spread through flying-fox urine or droppings.

Detailed NSW Health advice on managing health risks associated with Australian Bat Lyssavirus is available at <u>Rabies and Australian bat lyssavirus infection fact sheet</u>.

#### 1.1.2 Hendra Virus

There is no evidence that people can catch Hendra directly from flying-foxes. It is believed that horses catch the Hendra virus when they eat food which has recently been contaminated with an infected flying-fox's urine, saliva or birth products.

Hendra virus can be transmitted from infected horses to humans following close contact with body fluids, like blood and saliva, from infected horses.

Detailed NSW Health advice on managing human health risks associated with Hendra virus is available at Hendra virus fact sheet.

Detailed NSW Department of Primary Industries (DPI) advice on managing equine health risks associated with Hendra virus is available on the NSW DPI website at <u>Hendra virus</u>.

## 1.1.3 Scratched/bitten by a flying-fox

If anyone is bitten or scratched by a flying-fox in Australia the wound should immediately be washed gently but thoroughly with soap and water for at least five minutes, an antiseptic, such as povidone-iodine should be applied, and a doctor should be consulted as soon as possible.

Members of the community should not handle flying-foxes unless they have been trained, vaccinated against Australian Bat Lyssavirus and use the proper protective equipment.

If an injured or distressed flying-fox is found, the animal should not be handled. The NSW Wildlife Council website <a href="www.nwc.org.au">www.nwc.org.au</a> provides public information on who to contact for wildlife rescues or call your local wildlife rescue service such as WIRES on 1300 094 737.

## 1.1.4 Living near flying-fox colonies

There have been no reports of any infections with Hendra virus acquired by wildlife handlers from working with flying-foxes. There is only one report of Australian Bat Lyssavirus infection in a wildlife handler who is thought to have been bitten by an insectivorous bat. There are no reports of these infections acquired from living in close proximity to flying-fox camps. This indicates that living near a flying-fox camp does not pose a significant risk for infection with these viruses.

Direct handling of flying-fox droppings should be avoided. The health risks associated with flying-fox droppings relate mainly to the small potential risk to humans of gastrointestinal or lung diseases. Flying-foxes may carry a range of bacteria in their guts and, similar to domestic pets and birds, their droppings may contaminate the environment and potentially cause illness in humans if swallowed.

Droppings from many animals including flying-foxes may end up on roofs. These contaminants can then be washed into rainwater tanks when it rains. NSW Health recommends against drinking water from rainwater tanks where there is public drinking water available. Advice on safely managing rainwater for drinking purposes where there is no alternative supply is available on the NSW Health website at Rainwater tanks

#### 1.1.5 Odour

The main odour associated with flying-foxes is the scent male flying-foxes use to mark their territory. While this smell may be offensive to some people, it does not represent a risk to human health

## 1.1.6 Schools near flying-fox camps

Schools in close proximity to flying-fox camps should encourage students to stay away from the flying-foxes, their droppings and urine. Children should always wash their hands with soap and water after playing outside as a matter of good hygiene.

## 1.1.7 Pets and flying-foxes

Pets should be kept away from flying-foxes if possible. If a pet becomes sick after contact with a flying-fox, seek advice from a veterinarian.

# 2. Policy objectives for flying-fox camp management

The objectives of the 2015 Flying-fox Camp Management Policy are to:

- address the potential impacts of flying-fox camps on human health and amenity
- minimise the impact of camps on local communities
- provide a balance between conservation of flying-foxes and their impacts on human settlements
- clarify roles and responsibilities for OEH, local councils and other land managers such as managers of Crown lands
- provide options for land managers to undertake actions in accordance with the Flyingfox Camp Management Code of Practice 2018 (Code of Practice), or obtain upfront licensing to manage flying-foxes
- enable land managers and other stakeholders to use a range of suitable management responses to sustainably manage flying-foxes
- require land managers to consider the behaviours, habitat and food requirements of flying-foxes when developing and implementing camp management plans
- improve understanding of the relationship between new development and existing flyingfox camps
- implement an adaptive management approach to camp management based on evidence collected as a result of the policy
- enable long-term conservation of flying-foxes in appropriate locations by encouraging land managers to establish and protect sufficient food supplies and roosting habitat.

# 3. Managing flying-fox camps

Flying-foxes are part of a complex and interdependent natural system, and their behaviours are complex and hard to predict. This presents difficulties for communities and land managers. For example, flying-foxes will roost in non-native trees, including invasive weeds and forage for food in urban locations. Their response to management intervention can be unpredictable. In particular, while our level of knowledge is improving all the time, there may be undesirable impacts arising from the dispersal of a camp.

Where flying-fox camps are in close proximity to urban settlements and are causing amenity issues through noise, odour, prevalence of flying-fox droppings, or health concerns (including mental health), proactive management of camps is recommended.

In recognition of these impacts, and to streamline regulatory approaches that are permissible within the current legislative framework, OEH has developed a management approach on which a hierarchy of options is based on a principle of using the lowest form of intervention required. This approach should be incorporated into a camp management plan, as outlined in Section 4.

This approach requires:

- routine camp management actions (Level 1 actions)
- creation of buffers (Level 2 actions)
- camp disturbance or dispersal (Level 3 actions).

# 3.1 Routine camp management actions (Level 1 actions)

Routine camp management actions should be clearly identified as Level 1 camp management actions in the camp management plan.

These include:

- removal of tree limbs or whole trees that pose a genuine health and safety risk, as determined by a qualified arborist
- weed removal, including removal of noxious weeds under the Biosecurity Act 2015 or species listed as undesirable by a council
- trimming of understorey vegetation or the planting of vegetation
- minor habitat augmentation for the benefit of the roosting animals
- mowing of grass and similar grounds-keeping actions that will not create a major disturbance to roosting flying-foxes
- application of mulch or removal of leaf litter or other material on the ground.

# 3.2 Creation of buffers (Level 2 actions)

Creation of buffers can be effective as management actions to nudge flying-fox populations away from urban settlements. The intention is to create a physical or visual separation from the camp and actively manage vegetation structure and composition to discourage flying-foxes from roosting close to built areas.

#### Actions include:

- clearing or trimming canopy trees at the camp boundary to create a buffer
- disturbing animals at the boundary of the camp to encourage roosting away from human settlement

# 3.3 Camp disturbance or dispersal (Level 3 actions)

Camp dispersal is an action that aims to intentionally move entire camps from one location to another by clearing vegetation or dispersing animals through disturbance by noise, water, smoke or light.

Camp dispersal can remove impacts on local communities and is supported by this policy. However, camp dispersal is challenging for a number of reasons:

- it can be expensive and can have uncertain outcomes
- dispersal may result in relocating the animals rather than resolving the issue. Past
  disturbances in Australia have sometimes failed to remove flying-foxes from the area or
  have resulted in flying-foxes relocating to other nearby areas where similar community
  impacts have occurred
- attempts to disperse camps are often contentious
- disturbing flying-foxes may have an adverse impact on animal health
- the cumulative impacts of flying-fox camp dispersals may negatively impact on the conservation of the species and the ecosystem services flying-foxes provide.

Dispersal actions need to be carefully planned and consider climatic and seasonal conditions. Land managers should consider appointing a coordinator and working with other flying-fox experts.

Dispersal is not recommended:

- from the time when the resident female flying-foxes are heavily pregnant until the young can fly independently (generally between August and May)
- when uncharacteristic seasonal climatic conditions have resulted in a large proportion of the NSW flying-fox population temporarily occurring in one or a few local camps
- when daytime temperatures are extremely high or expected to be extremely high (over37 degrees Celsius)
- when it is likely that, due to proximity, flying-foxes disturbed from a camp will join camps in nearby towns or form 'satellite' camps.

Camp management plans will generally also include other camp-specific triggers for when dispersal activities must be suspended or terminated. These triggers will relate to effectiveness and animal welfare.

# 3.4 Management of orchard impacts using shooting

Shooting is not appropriate for managing flying-fox camps in towns and urban areas. Discharge of firearms for the purpose of animal control in public urban areas would present significant public safety risks and would be unlikely to be permitted pursuant to the *Firearms Act 1996* or section 95 of the *Crimes Act 1900*. In addition, the potential for injured flying-foxes or abandoned juveniles to be dispersed in urban areas as a result of urban culling presents an unacceptable public health risk.

Shooting may however be approved in rural and peri-urban areas in some circumstances for use by orchardists to scare or kill animals. The 2009 report of the NSW Flying-fox Licensing Review Panel (DECC 2009), an independent review panel, found shooting to be effective in reducing levels of crop damage in certain circumstances. However, when larger numbers of flying-foxes visit orchards, shooting may prove ineffective. The most cost-effective long-term crop protection strategies were found to require netting.

Regulation of shooting in such circumstances is guided by the NSW Government's *Policy* and *Procedural Guidelines for the Mitigation of Commercial Crop Damage by Flying-Foxes* which is available at <u>Policy and procedural guidelines for the mitigation of commercial crop</u> damage by flying-foxes.

# 4. How to write a camp management plan

Camp management plans are the essential tool for managing flying-fox camps. They provide the means of delivering the objectives of this policy. This proactive approach will facilitate camp management actions done in accordance with the Code of Practice, and streamline licence application processes where necessary.

Camp management plans are generally prepared by local government or public authorities who manage land, and set out the short-term, medium-term and long-term strategy for the management of specific flying-fox camps. They provide strategic guidance on managing flying-fox camps that is consistent with relevant policy and legislative provisions. Camp management plans should consider the full range of available options, following the hierarchy of options outlined in Section 3, and seek to balance community concerns with environmental outcomes and neighbourhood amenity. Plans should also include contingencies to manage unsuitable new camps. The camp management plan should be aligned with the community engagement strategy and be publicly exhibited.

The suggested process or approach for developing a camp management plan is outlined in Figure 2.

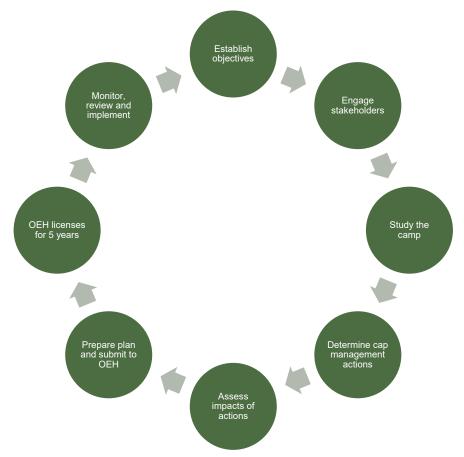


Figure 2 Key steps for developing a camp management plan

A <u>camp management plan template</u> is available. This template has been designed to enable camp management plans to provide for a longer-term approach to management of flying-fox camps through integrating management and licensing considerations.

The template requires the following sections to be included as part of the camp management plan:

- overview includes establishing objectives and the purpose and intention of the plan.
- **context** provides information on the camp area, history of the camp, classification of land, management responses to date and key stakeholders.
- **community considerations** identifies issues that have led to the plan being developed, including specific impacts of the camp on the local community which may include health, amenity and safety concerns relating to the camp.
- ecological considerations provides information on flying-fox ecology.
- identifying camp management actions identifies available camp management actions and categorises them as Level 1 (routine camp management actions), 2 (creation of buffers) or 3 (camp disturbance or dispersal).
- **assessment of impacts** considers licensing requirements and matters to be considered when assessing a licence application.
- **implementation** outlines how the camp management plan will be implemented including roles and responsibilities, planning for actions, timing, costs, monitoring and adaptive management and the plan review period.

To allow for a streamlined approach to licensing, the camp management plan template also contains an application form for any necessary statutory approvals that may be required by OEH (see Section 7).

# 5. Engaging the community

OEH encourages community engagement and education as an integral part of a land manager's response to flying-fox conflicts.

Early and effective community engagement and education have benefits for both communities and land managers. These benefits include improving understanding of the behaviour of flying-foxes, the ecological role they play and what needs to be considered when managing a camp. Effective engagement and education are necessary to ensure that a solution acceptable to the community is developed. Without community engagement and support, it will be difficult for a land manager to effectively manage this environmental issue.

Engagement encompasses a wide variety of interactions, both formal and informal, and can be as varied as information sharing or encouraging collaboration in decision making processes.

Engagement with stakeholders and communities should be tailored to the particular circumstances. OEH can advise on the preparation and implementation of a community engagement and education strategy in partnership with other agencies or organisations that share responsibility for addressing community needs and concerns.

See our additional resources on community engagement and references for case studies.

# 6. Other issues to consider

# 6.1 Consideration of flying-fox camps when planning future development

Most flying-fox camps are not occupied continuously. The location of camp sites can also change from year to year. It is recommended that land managers consider the location of historically and currently occupied camps or potential flying-fox camps early in strategic planning processes, particularly when planning future residential areas, schools or other sensitive infrastructure.

When planning the development of greenfield areas, the presence of existing flying-fox camps should be recognised through local environmental planning controls (e.g. appropriate land use zoning and development control plans). This should include ensuring that new development proposals give consideration to appropriate buffers and that any additional hazard reduction activities that become necessary will be able to occur without being unduly impacted on by existing camp locations.

Sites that have the potential to function as flying-fox maternity camps should be a priority for conservation. Where possible, efforts should be made to revegetate and regenerate these areas.

# 6.2 Adopting a long-term objective to support habitat creation

The long-term vision of the policy is to help ensure the conservation of flying-foxes by enabling land managers to establish and protect sufficient and appropriately located food supplies and roosting habitat while avoiding undesirable interactions with the community.

Due to the loss of foraging and roosting habitat, flying-foxes increasingly occur in orchards and camps in urban centres which can lead to conflict with people. Many of these conflicts occur irregularly, with little or no warning, and are often extreme. The irregular and intense nature of these conflicts generates frustration and can result in ineffective short-term and reactionary management approaches.

Longer-term strategies are needed to reduce the dependency of flying-foxes on resources in urban areas and orchards by conserving and establishing flying-fox habitat elsewhere.

# 7. How will OEH regulate flying-fox camps?

OEH will regulate flying-fox camps through two options provided to land managers: authorisation under the Flying-fox Camp Management Code of Practice for public land managers, and licensing for private land managers.

The Code of Practice provides a defence under the *Biodiversity Conservation Act 2016* (BC Act) for public land managers as long as camp management actions are carried out in accordance with the Code of Practice.

OEH will continue to regulate flying-fox camps on private land through the licensing of flying-fox camp management actions under the BC Act. The upfront preparation of a camp management plan will facilitate the application process. Public land managers may still apply for a licence.

Note that a land manager may apply for a licence under the BC Act to disturb or disperse a flying-fox camp before a camp management plan has been completed if there is an immediate and significant issue.

Note that in NSW generally, all three species roost together. Approvals will be prepared to permit management of all three species collectively. In some cases, a camp may only include black or little red flying-foxes. Where this is the case, a general licence under the BC Act may apply.

# 8. Are other approvals required?

# 8.1 Approval under Australian Government legislation

Camp management actions undertaken in or near camps of grey-headed flying-foxes may also require approval under Australian Government legislation.

The NSW Government is continuing to work closely with the Australian Government to develop a one-stop shop for environmental approvals. For more information on the Commonwealth approval regime visit <u>Flying-foxes</u>.

Depending on the circumstances and the nature of the actions, additional approvals, permits or consents may be required under other NSW legislation to carry out actions identified in a camp management plan.

# 9. Roles and responsibilities

Governments, land managers and communities all have a role to play in managing flying-fox camps and need to work together to develop management approaches that are acceptable to the community.

The following figure outlines the key roles for land managers and local government, OEH, the Australian Government and the community in working on flying-fox camp management issues.



Figure 3 Key roles for land managers, local government, OEH, Australian Government and community

# 9.1 Seek assistance from OEH if required

OEH supports local government, public authority land managers and individual land holders to select the appropriate level of intervention for their situation. As outlined in Section 4, activities may be low-impact such as trimming vegetation in the camp, more active in terms of modifying vegetation and habitat, or targeted at disturbing or dispersing populations in certain circumstances.

When required, OEH will assign a support officer to advise on statutory requirements and assist land managers or local governments in developing flying-fox camp management plans and engaging with the community.

OEH also coordinates NSW's involvement in the National Flying-fox Monitoring Program, which entails coordination of quarterly census counts of flying-fox populations in February,

May, August and November each year. The results of the census are used to support research into the ecology of flying-foxes including habitat selection and population dynamics.

Human health and safety has to come first. While risks are very low, OEH strongly recommends that people avoid contact with and handling of any flying-fox. If someone is bitten or scratched, they should wash the wound, apply antiseptic and seek medical advice immediately. A post-exposure vaccine can be administered and is likely to be most effective if administered early. OEH will identify any emerging issues in relation to health and safety and will consult with management authorities to develop risk reduction strategies.

## 9.2 Additional resources

Detailed advice and guidance on preparing a camp management plan is provided in the camp management plan template.

Should land managers require support in selecting the right approach for their situation, local OEH contact details are provided at <a href="https://www.environment.nsw.gov.au">www.environment.nsw.gov.au</a>.

This policy is supported also by additional resources addressing management options (including camp disturbance), licensing, monitoring and flying-fox ecology and a link to a spatial viewer that identifies camp locations. There are case studies of camp management and health issues on the OEH website at Flying-foxes.

# Appendix: Standard conditions for flying-fox management approvals

Some conditions and restrictions will apply as part of licensing. Typical examples of licence conditions that will be applied include:

- For all plans:
  - actions are to be undertaken in accordance with the description provided in the approved camp management plan
  - care should be taken to avoid incidental harm to flying-foxes present while camp management actions are undertaken.
- Where creation of buffers is proposed, particular conditions are likely to include:
  - pruning or removing of flying-fox roosting habitat should occur at night or at other times when the flying-fox camp is vacant
  - any tree lopping, trimming or removal of trees is undertaken under the supervision of a suitably qualified arborist.
- Where dispersal is proposed, particular conditions are likely to include:
  - population counts of surrounding flying-fox camps should be undertaken immediately prior to camp dispersal or disturbance being undertaken and continue at least once a week while actions are undertaken
  - dispersal activities should not be undertaken when the resident female flying-foxes are heavily pregnant and until the young can fly independently
  - dispersal activities should not be undertaken when daytime temperatures are extremely high or expected to be extremely high (over 37 degrees Celsius).