NAAS STREET/MILLBROOK PARK, TENTERFIELD
FLYING-FOX CAMP MANAGEMENT PLAN

Plan prepared for

TENTERFIELD SHIRE COUNCIL

by

Greenloaning Biostudies Pty Ltd.

September 2023

Report No. 2306001

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or recommendations contained within the report are based only on the circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted.

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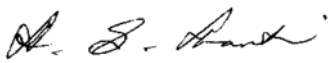
Signed:	
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We also acknowledge input by the NSW Department of Planning, Industry and Environment, and consultants Ecosure, in developing the template which was used as a guide for this Flying-fox Camp Management Plan.

Greenloaning Biostudies

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Glossary of Terms

ABLV	Australian bat lyssavirus
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BFF	Black Flying-fox (*Pteropus alecto*)
Code of Practice	Flying-fox Camp Management Code of Practice 2018 (NSW)
DPIE	Department of Planning, Industry and Environment (NSW)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
FFCMP	Flying-fox Camp Management Plan
GHFF	Grey-headed Flying-fox (*Pteropus poliocephalus*)
LGA	Local Government Area
SEPPs	State Environmental Planning Policies
TEC	Threatened Ecological Community
the Template	Flying-fox camp management plan template 2019

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SUMMARY

Background and Camp History

Greenloaning Biostudies Pty Ltd has been engaged by Tenterfield Shire Council (Council) to prepare a Flying-fox Camp Management Plan for the Naas Street/Millbrook Park, Tenterfield flying-fox camp. The Management Plan considers the potential adverse impacts on nearby residents and community facilities from the flying-foxes roosting, and/or breeding at the Naas/Millbrook Park Street site, and to provide measures to minimize those impacts, whilst not threatening the survival of the local Flying-fox population. The aim of the Flying-fox Camp Management Plan is to provide a framework for flying-fox management, practical strategies, and protocols to ensure risks to flying-foxes and individuals and impacts on nearby residents and facilities are minimised.

The main camp area is in Millbrook Park, in an avenue of mature planted Plane trees along Naas Street and part of the southern sector of Polworth Street. The flying-foxes have also occupied both native and exotic trees in the northern sector of Millbrook Park, immediately adjacent to a large, residential care facility (Millrace Hostel) and the Tally Ho Motel. Significantly, this is not a historical flying-fox camp, only being occupied for approximately four years. Flying-fox numbers in the camp are reported to have risen from approximately 250-300 flying-foxes in May 2020, and about 2,000 in the warmer months in 2020, to very large numbers (estimated by one resident to be 10,000-15,000) in late 2022/early 2023. During this period, the camp was also observed to be a breeding colony for the first time, with many flying-fox pups born in November 2022.

Key Impacts and Concerns/Issues for Residents

The impact of 10,000 - 15,000 flying-foxes roosting and breeding in an urban park and adjacent to residential areas, has been reported to be severe by local residents, with impacts associated with noise, odour, excrement and general effects on lifestyle. Based on the outcomes from the community engagement process, as well as earlier complaints to Council, the following issues have been identified when high numbers of flying-foxes were present:

- flying-foxes extending roosting into nearby gardens, causing emotional stress from severe levels of excrement, noise and odour in immediate proximity;
- overcrowding of flying-foxes in all available spaces, including residents' gardens, resulting at times in stressed/injured or dead flying-foxes within the gardens; creating risks for children and pets;
- overcrowding of flying-foxes within the park and public spaces, creating risks for the local community and for visitors, particularly children, coming into close contact with juvenile/stressed/injured/dead flying foxes.
- flying-fox excrement on vehicles and/or the presence of flying-foxes preventing normal park usage; and
- overcrowded, stressed flying-foxes roosting very low to the ground and inadvertently coming into contact with residents/community members/visitors

Key Concerns for Flying-foxes

During spring/summer 2022-2023, when flying-fox numbers were greatest, severe overcrowding of the camp was reported, with flying-foxes roosting in all smaller trees in the park, in trees in residents' gardens, in the paddock immediately south of Naas Street and low down on tree trunks and timber

bollards in the park. In this context, the following issues and concerns have been identified in relation to flying-fox welfare:

- overcrowding of flying-foxes in all available spaces, increasing the risk of disease transfer, increased stress levels and abortion/mortality of pups;
- intrusion of flying-foxes into residents' private spaces, with potentially increased stress levels in flying-foxes from adverse reactions from highly stressed/emotional residents and/or attacks from pets;
- risk of injury to/death of flying foxes associated with unauthorised actions by residents/community members; and
- increased risk of injury to flying foxes associated with overcrowding, roosting low to the ground and low-flying movements between roost branches and at dusk fly out

Management Issues and Actions

Issues

Camp management issues relate to the camp location in an established, non-bushland urban park/residential setting, and the non-historical nature of the camp, with increasing population levels, especially in the past 12 months. In this context, the key management issues identified comprise:

- recent establishment of the camp after severe fires in the region and beyond, and associated uncertainty regarding the likely future use of the camp, and value to the flying-foxes;
- lack of existing suitable adjacent habitat into which flying-foxes could be encouraged to move;
- lack of nearby areas suitable for habitat enhancement over time, which also would not encourage the extension/movement of impacts into other parklands and residential areas;
- limited options for park habitat modification, without entirely altering the established amenity of the park and local area;
- lack of available buffer area and practical constraints in establishing a buffer area without vegetation removal;
- strong desire by residents to retain existing Plane trees and park amenity (when flying-foxes are not present); and
- lack of Council funds to support property modifications/purchase and service subsidy options.

Actions

On the basis of current practical issues associated with the camp, and uncertainty as to whether the camp will continue to be populated at the levels experienced in the 2022/2023 season, the Level 1 management actions proposed at this stage comprise;

- continuing and enhancing public education and awareness, including increasing signage, particularly around the time of the expected return of the flying-foxes in October;
- offering service subsidies/ property modification to residents if funding could be sourced;
- routine park/camp maintenance activities, including;
    - regular mowing of park area and roadside verges;
    - at least weekly removal of leaf litter whilst flying-foxes are in residence, and immediately following their autumn/winter departure.
    - cleaning paths of excrement and posing a safety hazard to the community;

  - installing one or more cameras to monitor the activities of visitors and locals, to minimise the risks of anyone (particularly children) trying to handle a flying-fox which may be ill, or a pup, and on/low to the ground; and
  - routine garden maintenance and weed control.

All actions will be subject to standard protocols to minimise disturbance to the flying-foxes.

- developing protocols to manage incidents that could be experienced at the Naas Street/Millbrook Park camp; and
- promoting further research into flying -fox ecology and movement patters if funding could be sourced.

No Level 2 or Level 3, actions are proposed for the Naas Street/Millbrook Park camp at this stage. However, it is recognised that key objectives of the Flying-fox Camp Management Policy ((OEH 2018) include to:

1) *address the potential impacts of flying-fox camps on human health and amenity;*
2) *minimise the impact of camps on local communities;*
3) *provide a balance between conservation of flying-foxes and their impacts on human settlements.*

The above objectives cannot reasonably be met via proposed Level 1 Management Actions if flying-foxes continue to occupy the Naas Street/Millbrook Park camp at the 2022-2023 season population levels. Impacts on human health and amenity will not be alleviated to an acceptable level, and there will continue to be substantial issues with flying-fox welfare associated with severe camp overcrowding and potential adverse human-flying-fox interactions.

From an adaptive management approach, dispersal options therefore must remain as a potential management action for future consideration, subject to a detailed, approved Dispersal Management Plan. If such a Plan becomes necessary, it will be based on updated camp population data and the latest research, and funding would need to be sourced. Based on current information, the best chance of dispersal success could be a form of early dispersal, with Council being alerted by residents to the first influx of flying-foxes, which would then be subject to dispersal actions.

1 OVERVIEW

1.1 Background to the Flying-fox Camp Management Plan

Greenloaning Biostudies Pty Ltd (Greenloaning) has been engaged by Tenterfield Shire Council (Council) to prepare a Flying-fox Camp Management Plan (FFCMP) for the Naas Street/Millbrook Park, Tenterfield flying-fox camp (latitude -29.0453 and longitude 152.0193).

The FFCMP is required to consider the potential adverse impacts on nearby residents and community facilities from the flying-fox colony roosting, and/or breeding at the Naas/Millbrook Park Street, Tenterfield site, and to provide appropriate measures to minimize those impacts, whilst not threatening the survival of the local Flying-fox population.

This FFCMP has been prepared to be consistent with:

- The NSW Flying-fox Camp Management Policy 2015 (OEH, 2018);
- The Flying-fox Camp Management Code of Practice 2018 (NSW Government 2018); and
- The National Recovery Plan for the Grey-headed Flying-fox (Commonwealth of Australia 2021).

The format of this FFCMP also has been based on the 'Flying-fox Camp Management Plan – expanded Template' (State of NSW and Department of Planning, Industry and Environment 2019), with modifications to sections as relevant to the Naas Street/Millbrook Park camp.

1.2 Objectives

The identified objectives of this FFCMP are as follows:

- Developing strategies to minimise adverse impacts on the local community, whilst protecting flying-foxes from adverse impacts, particularly on breeding activity;
- Addressing community concerns and the impacts of the flying-fox camp on amenity, public health and safety;
- Defining roles and responsibilities in terms of implementation of the FFCMP and ongoing practical management measures;
- Effectively communicate with stakeholders during planning and implementation of management activities;
- Providing appropriate actions for colony habitat management;
- Ensuring flying-fox welfare is a priority during all management works, whilst recognising and taking into account concerns of, and impacts on local residents and the community;
- Improving community understanding of the flying-foxes, including their behaviours, habitat and food requirements, and their critical ecological role;
- Implementing an adaptive management approach to camp management based on evidence collected; and
- Facilitating long-term conservation of flying-foxes and their habitat in appropriate locations by encouraging the establishment and protection of food resources and roosting habitat elsewhere within Tenterfield Shire LGA.

To achieve the above objectives, it is the overall aim of the FFCMP to provide an effective framework for flying-fox management, practical strategies, and protocols to ensure risks to flying-foxes and

individuals and impacts on nearby residents and facilities are minimised to the most practical level achievable.

2 CONTEXT

2.1 Camp Area

The main camp area is located within Millbrook Park, in an avenue of mature planted trees along Naas Street and part of the southern sector of Polworth Street. The flying-foxes have also occupied both native and exotic trees in the northern sector of Millbrook Park, immediately adjacent to a large, residential care facility (Millrace Hostel) and the Tally Ho Motel. For the purposes of this FFCMP, this northern camp area is referred to as the secondary camp. It also is understood that at the time of peak occupation of the camp in late 2022/early 2023, and prior to the commencement of the preparation of this FFCMP, flying-fox roosting habitat extended into local residents' gardens. Millbrook Park per se is bordered by the busy New England Highway (A15) in the east, Naas Street to the south, Polworth Street to the west and Millrace Hostel to the north. The planted street trees along the southern side of Nass Street, however, also form part of the main camp area.

The main flying-fox camp is mapped according to the State Vegetation Type Mapping (SVTM) as supporting the native Plant Community Types (PCTs) (refer to **Figure 1.2**):

- 3396 - Northwest Flats Box-Blakely's Red Gum Forest; and
- 4079 - Northern Hinterland Grassy River Oak Forest.

However, there is no native vegetation community still occurring in this location, the exotic tree species that dominates the main camp area comprising large mature Plane Trees (*Platanus x acerifolia/ Acer pseudoplatanus*), as illustrated in the photographs provided in **Appendix A**. There are also other planted exotic tree species bordering the Plane Trees and fringing Polworth Street (refer to Appendix A)

The secondary camp areas (**Figure 1.2** - immediately south of the Millrace Hostel) are mapped according to the SVTM as predominantly supporting two PCTs, viz:

- 3361 - Tenterfield Plateau Stringybark-Apple Forest; and
- 4079 - Northern Hinterland Grassy River Oak Forest.

Although there is some evidence of remnants of the original plant communities in this location, there are also exotic tree species , as indicated in the photographs provided in **Appendix A**.

2.2 Camp History

The Naas Street/ Millbrook Park Flying-fox Camp is not depicted on maps associated with the National Flying-fox Monitoring Program (NFFMP), and therefore has not been subject to regular population monitoring under this program. The nearest NFFMP camps, as shown on **Figure 1.3,** are located at:

- Stanthorpe, Queensland – 46 kilometres directly north;
- Mallanganee, NSW – 70 kilometres directly east;
- Copmanhust, NSW – 90 kilometres to the south-east; and
- Inverell, NSW – 120 kilometres to the south-west.

There also are other unmapped camps in the region, such as at Ashford, approximately 90 km south-west of Tenterfield, and potentially other unknown ones.

Information from the Tenterfield Shire Council and from local residents indicates that the Naas Street/ Millbrook Park Camp has only been occupied for approximately four years, although the first flying-fox arrivals in the vicinity apparently arrived a few years earlier, comprised relatively few individuals

and were not roosting within Millbrook Park. These individuals were first observed in very large planted conifers in a residential garden to the north of the Tally Ho Motel and Millrace Hostel (pers. comm. local resident).

Council records indicate that there were approximately 250-300 flying-foxes present in Millbrook Park in May 2020, and about 2,000 in the warmer months. Numbers are reported by local residents to have been increasing since this time, with very large numbers (estimated by one resident to be 10,000-15,000) present in late 2022/early 2023. During this period, it has been reported by local residents that the flying-foxes were not only roosting in all levels of the large Plane Trees and other large trees in the park, but also were roosting in the smaller trees in the park and in various trees in residents' gardens and in the paddock immediately south of Naas Street. Flying-foxes were even observed, and videoed, hanging from the timber bollards lining the park boundary on the norther side of Naas Street (pers. comm. local residents). The camp over the 2022/2023 period was also observed to be a breeding colony for the first time, with many flying-fox pups born in November 2022.

Numbers of flying-foxes had dropped by the time the preparation of this FFCMP had commenced at the end of February 2023, with the flying-fox population estimated at that time to be 4,000-4,500 These estimates were based on two survey methods, viz; the 'ground count' method (Wescott & McKeown 2013) and direct dusk flyout counts. Full details of the procedures undertaken, and subsequent results are provided in **Appendix B** of the FFCMP. The numbers of flying-foxes continued to drop during March to May 2023, with approximately 2,250-3,300 and 1,500-1,700 estimated to be present in mid-April and early May respectively, using the same procedures referred to above. Most of the flying-foxes had left the camp and environs by the 18th of May, and all flying-foxes had left the camp by late May/early June 2023 (pers. comm. local residents, 18th May/6th June 2023).

The two species of bats which have been recorded recently using the Naas Street/Millbrook Park Camp are the Grey-headed Flying-fox (*Pteropus poliocephalus*) (GHFF) and the Black Flying-fox (*Pteropus alecto*) (BFF). Of these two species, the GHFF appears to be the predominant species, based on recent observations for the purpose of this FFCMP, and on recent wildlife carer records (pers. comm. wildlife carer 12th April 2023). The GHFF is listed as vulnerable under the New South Wales *Biodiversity Conservation Act 2016* (BC act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Black Flying-fox (BFF) is not listed as a threatened species in NSW or in Commonwealth legislation but is a protected animal. The third species which occurs in New South Wales, the Little Red Flying-fox (*Pteropus scapulatus*), has not been shown as present in the recent studies within the Naas Street/ Millbrook Park, Tenterfield camp. The focus of this FFCMP is thus on the two species known to use the camp, and particularly on the threatened GHFF.

2.3 Land Tenure

As indicated in section 2.1 of this FFCMP, the main areas of the camp are situated within Millbrook Park, or within the trees planted along the Naas Street road verge. These areas are all under the control of Tenterfield Shire Council. However, when the population numbers are very high, the use of habitat extends onto private land, including the Millrace Hostel, Tally Ho Motel and local residents' gardens and paddocks.

2.4 Reported Issues Related to the Camp

Prior to the preparation of this FFCMP, there had been a number of issues raised concerning the camp. The key issues were directly associated with the combination of the location of the camp and the increasing numbers of flying-foxes using the camp. The primary concerns, as reported by Council, were:

- Some residents close to the camp feeling extremely unhappy about the level of impact from the flying-foxes;
- Reports of flying-foxes being subject to targeted disturbances; and
- Reports of flying-foxes having to be taken into care by wildlife carers.

It was thus recognized that the presence and size of the camp was causing disruption and even hostility within the local community.

2.5 Management Responses to Date

Management responses from Council to date have comprised the following:

- Liaison with DPE officers regarding the issues with the camp and resident concerns;
- Discussions with some residents regarding their concerns;
- Discussions with local wildlife career regarding their concerns;
- Removing park seating/tables from the vicinity of the camp;
- Erecting signage in the vicinity of the camp regarding the flying-foxes;
- Considering options for trimming/removing trees closest to impacted residences; and
- Securing funding for this FFCMP.

Figure 1.1 Location of Naas Street/ Millbrook Park, Tenterfield Flying-fox Camp in the context of the Tenterfield Urban Area

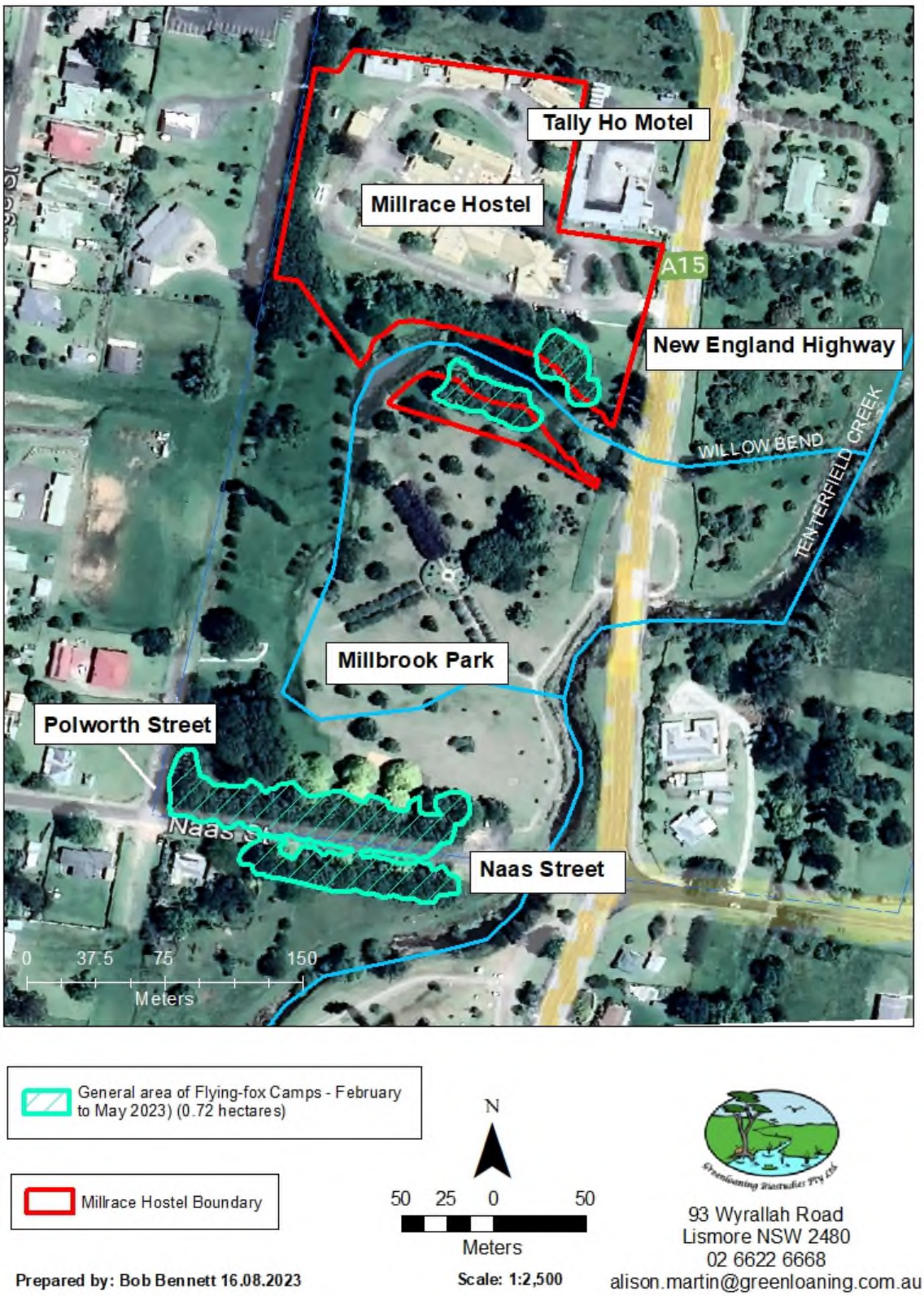


Figure 1.2 Location and Camp Areas - Naas Street/ Millbrook Park, Tenterfield Flying-fox Camp (Greenloaning Biostudies observations February to May 2023

Figure 1.3 Plant Community Types (Department of Planning and Environment, 2022. State Vegetation Type Map (December 2022)) and Naas Street/Millbrook Park, Tenterfield flying-fox camp areas (Greenloaning Biostudies – February to May 2023).

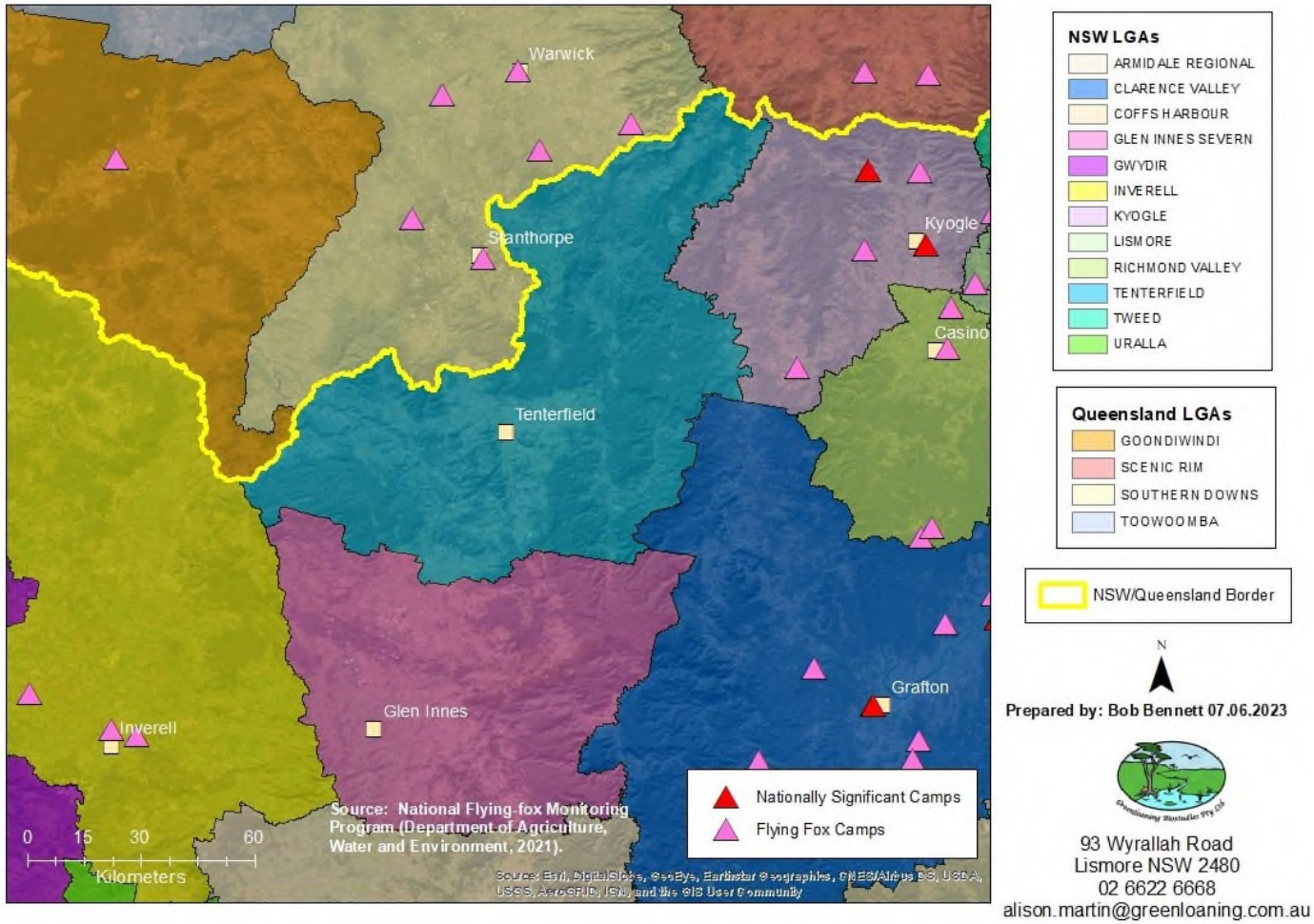


Figure 1.4 Flying-fox Camps recorded for the National Flying-fox Monitoring Program in the wider vicinity of the Naas Street/Millbrook Park, Tenterfield Camp (Department of Agriculture, Water and Environment, 2021).

3 COMMUNITY ENGAGEMENT

A primary objective of the FFCMP was to minimise impacts to the community, while conserving flying-foxes and their habitat, and to address community concerns and the impacts of the flying-fox camp on amenity, public health and safety. The first step in achieving this objective was to undertake community consultation, as described in this section, to identify and describe the reported impacts on nearby residents and park users.

3.1 Stakeholders

The key stakeholders relevant to this FFCMP comprise:

- Tenterfield Shire Council;
- Local residents subject to direct severe impacts from the camp
- Local residents subject to lesser/irregular impacts from the camp
- Users of Millbrook Park; and
- Local wildlife carers.

Visiting tourists have some stakeholder association, but impacts on visitors are transitory, the main concern being protecting tourists from risks associated with coming into direct contact with the flying-foxes (refer to Section 6.2.1 for more details).

3.2 Engagement Methods

The first stage of community consultation involved on-site impromptu discussions with local residents living in close proximity to the camp. Phone discussions and a meeting also were held with a local wildlife carer. Subsequently, Greenloaning and Council developed a flyer advising residents in close proximity to the camp about an initial meeting to discuss their issues relating to the resident flying-foxes refer to **Appendix C**. Council undertook a letterbox drop for such residents, and the meeting subsequently was held on the 1st May 2023. Present at that meeting were:

- Bruce Mills, Senior Advisor Communications & Economic Development, Tenterfield Shire Council;
- Alison Martin, Principal Ecologist, Greenloaning Biostudies;
- Twelve residents from the nearby area and other affected locations; and
- One Tenterfield Shire Councillor

In conjunction with the development of the meeting flyer, a Community Feedback Form was developed and was provided as printed copies to the meeting attendees. The form also was made available on-line via Council's website. Attendees at the meeting were encouraged to air their views on the presence of the flying-fox camp, describe impacts they were experiencing/had experienced and to provide any suggestions as to mitigation measures which would assist/alleviate their particular situation.

The initial meeting was followed by a public workshop and information session, with residents advised of the workshop via social media (refer to **Appendix C**). The workshop was held on the 27th of May 2023, and was conducted by Tenterfield Shire Council, in conjunction with Greenloaning Biostudies. Attendees at that workshop were:

- Bruce Mills, Senior Advisor Communications & Economic Development, Tenterfield Shire Council;
- Deputy-mayor, Cr John Macnish;

- Alison Martin, Principal Ecologist, Greenloaning Biostudies; and
- Six residents, including a representative for the Millrace Hostel.

At the workshop, residents and other stakeholders, initially were given a PowerPoint presentation on the background to the FFCMP, including educational material on health risks, the role of flying-foxes in the environment and the nature of a flying-fox camp. An outline of the contents of the presentation is provided in **Appendix C.** Attendees were then encouraged to discuss the levels of impacts they were experiencing and options available for mitigation/management. They also were encouraged to complete a Community Feedback Form, either at the workshop, or online.

A subsequent informal meeting was held with one concerned resident on the 6th of June to discuss the overall issues and ongoing status of the camp.

3.3 Community Feedback – Management Options

3.3.1 Adverse Impacts on Residents/the Community

A summary of the main feedback received is as follows:

- ten valid submissions were made via the hard copy Community Feedback Form;
- one valid submission was made via the online Community Feedback Form; and
- at least 10 verbal submissions were made via direct discussions on-site or at the various meetings/workshop.

The overall feedback from the community received via the community engagement process favoured flying-fox camp management measures that would remove the camp from the current location. In the context of residents comprehending that dispersal is a last resort option, extremely expensive and with a low chance of success, and 'nudging' the camp into nearby habitat is not really a practical option, measures to achieve the following are considered most applicable:

- ensuring the risk of transmission of flying-fox pathogens, viruses and disease remains low
- reducing the impact of noise and odour on nearby residents and businesses
- reducing the impact of flying-fox excrement
- not impacting on the visual appeal or recreational opportunities at the site.

Of the residents providing feedback on being adversely affected by the camp, all identified an impact on lifestyle, ranging up to 'extreme' (refer to **Table 3.1**). The second most common impact identified was 'odour,' followed by concerns about health risks. The main area of direct impact, encompassing constant diurnal and nocturnal impacts from noise, odour and high levels of excrement, based on the feedback received, is indicated on **Figure 3.1**. Areas likely to be subject more to impacts from large numbers of flying-foxes flying over properties during their dusk camp exodus, are also indicated on **Figure 3.1**, with impacts from noise and odour being more variable in these areas. Verbal communications from some residents suggested odour issues were worse during damp conditions. Noise impacts for some residents were so severe as to cause sleep deprivation and associated emotional stress. When camp numbers were at their highest (October 2022 to January 2023), excrement was also identified as a major issue, with the level of excrement preventing any normal use of outside areas, including grazing by horses in the paddock immediately south of the main camp area along Naas Street.

Table 3.1 Issues identified by residents in proximity to Naas Street/Millbrook Park**, Tenterfield Flying-fox Camp.**

Issues Identified						
Resident Number	**Noise**	**Odour**	**Tree Damage**	**Impact on Lifestyle**	**Impact on Recreational Pursuits**	**Health Risks**
1	Yes	Yes	Yes	Severe	Yes	Yes
2	Yes	Yes		Severe	Yes	Yes
3	Yes	Yes		Severe		Yes
4		Yes	Yes	Severe		Yes
5	Yes	Yes		Severe		
6	Yes	Yes		Extreme		Yes
7				Severe	Yes	Yes
8		Yes		Yes		
9	Yes	Yes	Yes	Yes		
10	Yes	Yes	Yes	Yes		Yes
11	Extreme	Extreme	Severe	Extreme	Extreme	Extreme
Number	**8**	**10**	**5**	**11**	**4**	**8**
Percent	**73**	**91**	**45**	**100**	**36**	**73**

3.3.2 Impacts on Flying-foxes

Feedback from a local wildlife career, who was a carer during the influx of the large numbers of predominantly GHFF into the camp in late 2022 and the subsequent birthing and creching period, identified the following issues in relation to flying-fox welfare:

- deliberate disturbance of the colony by seriously distressed residents causing additional stress to the breeding colony;
- a number of pups requiring being taken into care as a result of potentially a cold snap, and/or disturbance to the colony;
- mortality of flying-foxes and pups as a result of potentially a cold snap, and/or disturbance to the colony; and
- potential deliberate violence against pups by persons unknown, causing such injuries as broken jaws and pup mortality.

It was also noted from verbal discussion that the flying-foxes generally were disturbed by such additional activities as:

- loud vehicles travelling up Naas Street; and
- other loud machinery noises such as mowers, chainsaws.

The extent of adverse impacts on the colony would be expected to vary according to the timing of the disturbance. Any impacts during the breeding season particularly could cause stress to individuals if breeding females and pups are present, and potentially have serious adverse impacts on the breeding success of the colony, or at least a portion thereof. Based on the available data for the camp, including the following relevant information:

- Flying-foxes commence entering the camp in mid-late October (local resident, pers. comm.);
- Numbers decreased markedly in the camp between late February and April;

- Pups were recorded for the first time in November 2022 (local wildlife carer, pers.com.);
- No dependent pups were observed in late February 2023; and
- Black flying-foxes do not appear to be other than occasionally represented in the camp,

The key times to avoid adverse disturbance would be October to March, coinciding with the key time when dependent young are born (as referred to above), or are likely to be present (Australian Museum, 2021).

Full details from the community feedback process are provided in **Appendix C**

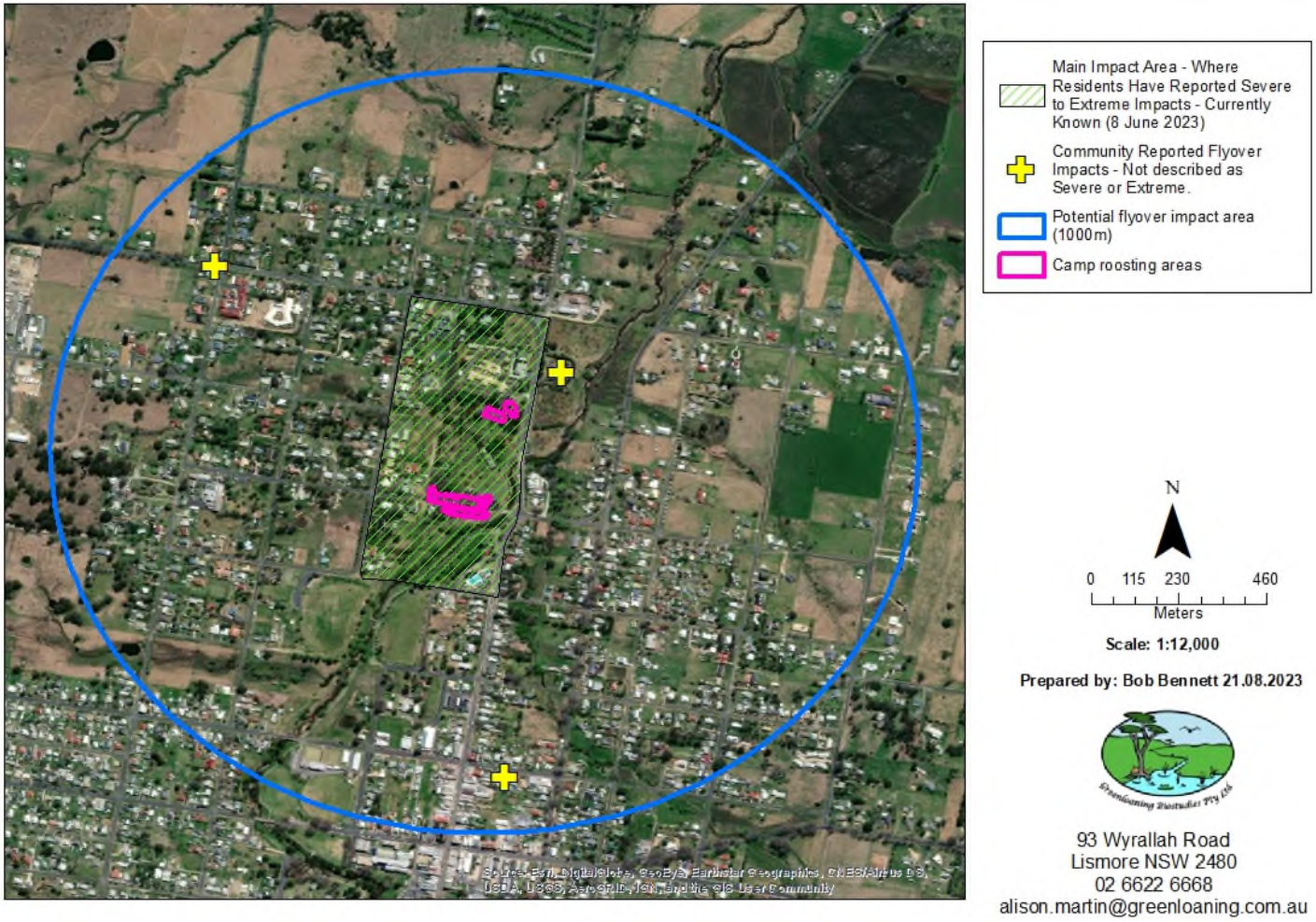
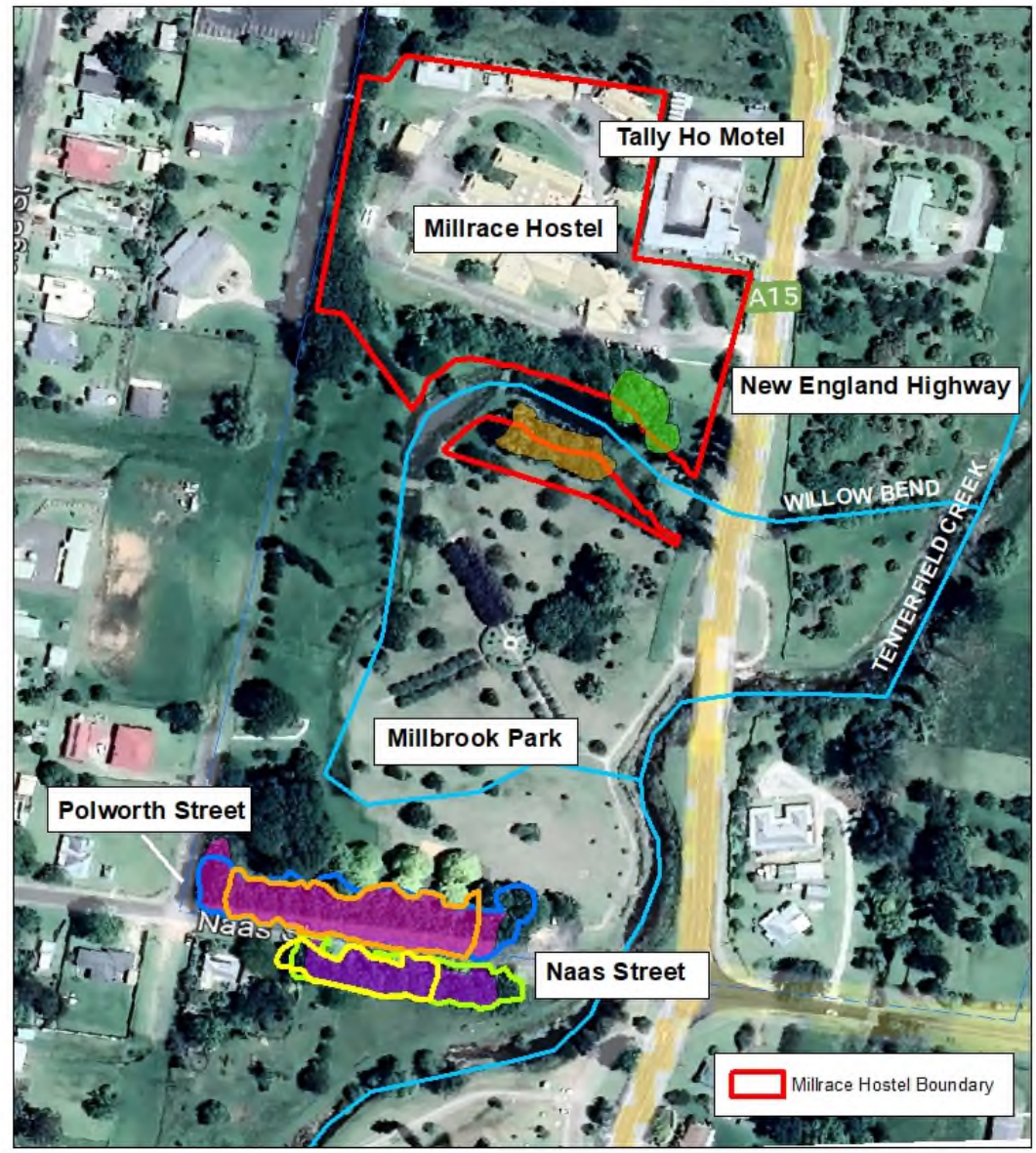


Figure 3.1 Known Areas of Impact on Residents and Community Facilities from Millbrook Park Flying-fox Park



Main camp - Extent North - May (2,521.3 m2)
Main camp - Extent South - May (1,107.3 m2)
Main Camp Extent North - April (3,513.7 m2)
Main Camp Extent South - April (1,788.3 m2)
Main Camp Extent North - February (3,131.1 m2)
Main Camp Extent South - February (1,446.5 m2)
Secondary Camp - February (917.25 m2)
Secondary Camp Extension (across creek within Millrace Hostel grounds) - February (714.62 m2)

N

0 25 50 100
Meters

Scale: 1:2,500

Prepared by:
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16.08.2023

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Figure 3.2 Roost and Habitat Survey Locations and Flying-fox Habitat (Greenloaning Biostudies – February to May 2023

4 LEGISLATION AND POLICY

4.1 State

4.1.1 Flying-fox Camp Management Policy

The Flying-fox Camp Management Policy (the Policy) provides a framework for land managers, particularly local councils, to work with local communities for effective management of flying-fox camps, and for the state government to make regulatory decisions.

The key objectives of the Policy, as relevant to the Naas Street/Millbrook Park Camp 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;
- 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; and
- implement an adaptive management approach to camp management based on evidence collected as a result of the policy.

The Policy provides details on a hierarchy of management options, subdivided into three types of actions, viz:

- Level 1 Actions – routine camp maintenance actions;
- Level 2 Actions – creation of buffers; and
- Level 3 Actions – camp disturbance or dispersal.

A key aspect of the Policy is to encourage the preparation of Camp Management Plan by local councils in cases where there are adverse effects on the local community from the camp. It is stated in the Policy that management actions provided in a management plan are authorised by the State Government under the Flying-fox Camp Management Code of Practice (FFCMPCOP), provided all management actions carried out are in accordance with the FFCMCOP. Level 3 actions by private landholders require a licence from the State Government if disturbance or dispersal of flying-foxes is proposed.

4.1.2 Biodiversity Conservation Act 2016

The GHFF is listed as threatened under the *Biodiversity Conservation Act 2016* (BC Act) and the BFF is also a protected species under the Act. A person who harms, or attempts to harm an animal of a threatened species, an animal that is part of a threatened ecological community, or a protected animal, is guilty of an offence under Pt 2, Div. 1, cl 2.1 of the BC Act. If a proposed action at the Naas Street/Millbrook Park camp comprises any of the following actions, a biodiversity conservation licence under Pt 2, Div. 2, cl 2.10 of the BC Act may be required:

a. harm to an animal that is a threatened species, or part of a threatened population; or

b. damage to habitat of a threatened species, population or ecological community.

An assessment of impacts is required for the GHFF if the species may be impacted by actions proposed in the FFCMP. A biodiversity conservation licence will be granted if the state government determines that that a significant impact on the GHFF is unlikely.

4.1.3 Prevention of Cruelty to Animals Act 1979

It may be an offence under this Act if there is evidence of unreasonable/unnecessary torment associated with management activities. Unauthorised activities which cause such torment also would be subject to the provisions of this act.

4.1.4 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) aims to encourage 'proper management, development and conservation of resources, for the purpose of the social and economic welfare of the community and a better environment.' The Naas Street/Millbrook Park Camp is located on existing public parkland and Council owned areas (road verges etc), as well as extending onto private land when flying-fox numbers are very high. As such, the camp is not subject to any development applications and the EP&A Act is not specifically relevant to this FFCMP.

4.2 Commonwealth

4.2.1 Environment Protection and Biodiversity Conservation Act 1999

'The Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides protection for the environment, specifically Matters of National Environmental Significance (MNES).' As the grey-headed flying-fox (GHFF) is listed as a vulnerable species under the EPBC Act, it is automatically considered as a MNES, and the species' population is regarded as 'single national population.' If there is likely to be a significantly impact on an MNES, a referral to the Commonwealth is required under the EPBC. The Referral guideline for management actions in GHFF and SFFcamps (DoE 2015) (the Guideline) which has been developed defines a nationally important GHFF camp as one that has either:

- contained ≥10,000 GHFF in more than one year in the last 10 years; or
- been occupied by more than 2500 GHFF permanently or seasonally every year for the last 10 years.

As the Naas street/Millbrook Park Camp is likely to have supported potentially ≥10,000 GHFF only in the past 12 months, and has no historical presence for 10 years, by definition the camp cannot, at this stage, be considered a nationally important camp. Specific mitigation standards that would apply to management actions, if the camp does become listed as a nationally important camp, comprise the following:

- The action must not occur if the camp contains females that are in the late stages of pregnancy or have dependent young that cannot fly on their own;
- The action must not occur during or immediately after climatic extremes (heat stress event, cyclone event), or during a period of significant food stress;
- Disturbance must be carried out using non-lethal means, such as acoustic, visual and/or physical disturbance or use of smoke;
- Disturbance activities must be limited to a maximum of 2.5 hours in any 12-hour period, preferably at or before sunrise or at sunset;
- Trees are not felled, lopped or have large branches removed when flying-foxes are in or near to a tree and likely to be harmed;
- The action must be supervised by a person with knowledge and experience relevant to the management of flying-foxes and their habitat, who can identify dependent young and is

aware of climatic extremes and food stress events. This person must assess the relevant conditions and advise the proponent whether the activity can go ahead consistent with these standards and

- The action must not involve the clearing of all vegetation supporting a nationally important flying-fox camp. Sufficient vegetation must be retained to support the maximum number of flying-foxes ever recorded in the camp of interest.

5 FLYING-FOX ECOLOGY AND BEHAVIOUR

The following sections have been extracted directly from the 'Flying-fox Camp Management Plan – expanded Template' (the Template) (State of NSW and Department of Planning, Industry and Environment 2019) (sections within quotation marks), with some additions with relevance to the Naas Street/Millbrook park camp, including reference to recent literature. Species profiles and details on reproductive behaviour extracted from the Template are provided in Appendix D.2.

5.1 Ecological Role and Value

'Flying-foxes make a substantial contribution to ecosystem health through their ability to move seeds and pollen over long distances (Southerton et al. 2004). This directly assists gene movement in native plants, improving the reproduction, regeneration and viability of forest ecosystems (DEE 2019b). Some plants, particularly *Corymbia* spp., have adaptations suggesting they rely more heavily on nocturnal visitors such as bats for pollination than daytime pollinators (Southerton et al. 2004).

Grey-headed flying-foxes may travel 100 kilometres in a single night with a foraging radius of up to 50 kilometres from their camp (McConkey et al. 2012) and have been recorded travelling over 500 kilometres in two days between camps (Roberts et al. 2012). In comparison bees, another important pollinator, move much shorter foraging distances of generally less than one kilometre (Zurbuchen et al. 2010).

Long-distance seed dispersal and pollination make flying-foxes critical to the long-term persistence of many plant communities (Westcott et al. 2008; McConkey et al. 2012), including eucalypt forests, rainforests, woodlands and wetlands (Roberts et al. 2006). Seeds that are able to germinate away from their parent plant have a greater chance of growing into a mature plant (DES 2018). Long-distance dispersal also allows genetic material to be spread between forest patches that would normally be geographically isolated (Parry-Jones & Augee 1992; Eby 1991; Roberts 2006). This genetic diversity allows species to adapt to environmental change and respond to disease pathogens. Transfer of genetic material between forest patches is particularly important in the context of contemporary fragmented landscapes.'

Recent studies by Wellbergen et al (2020) provide further insight to the dispersal capabilities of flying-foxes, with individuals found to travel long distances over a year and to travel via a network of 755 roosts. Inter-roost travel for instance for GHFF tracked individuals was 2268 KM -2564 KM /year.

'Flying-foxes are considered 'keystone' species given their contribution to the health, longevity and diversity among and between vegetation communities. These ecological services ultimately protect the long-term health and biodiversity of Australia's bushland and wetlands. In turn, native forests act as carbon sinks (Roxburgh et al. 2006), provide habitat for other animals and plants, stabilise river systems and catchments, add value to production of hardwood timber, honey and fruit (e.g. bananas and mangoes; Fujita 1991), and provide recreational and tourism opportunities worth millions of dollars each year (DES 2018).'

5.2 Flying-foxes in Urban Areas

'Flying-foxes appear to be roosting and foraging in urban areas more frequently. There are many possible drivers for this, as summarised by Tait et al. (2014):

- loss of native habitat and urban expansion
- opportunities presented by year-round food availability from native and exotic species found in expanding urban areas
- disturbance events such as drought, fires, cyclones

- human disturbance at non-urban roosts or culling at orchards
- urban effects on local climate
- refuge from predation
- movement advantages, e.g. ease of manoeuvring in flight due to the open nature of the habitat or ease of navigation due to landmarks and lighting.'

In this context, it is noted that, based on the community feedback, the first flying-foxes in the general area of the camp were observed in January 2019 (refer to **Table C1**, **Appendix C)**. This was during a time of increasing severe drought conditions in eastern Australia, culminating in the devastating fires during late 2019 and early 2020. The general spoken consensus amongst residents was that the main influx of flying-foxes was following these fires. The impact of these fires on flying-fox foraging habitat is illustrated by **Figure 5.1** and **Figure 5.2**, which show the extent of fires in relation to flying Fox camps in the general region of Tenterfield, and the extent of potential foraging habitat for flying-foxes (Eby et al 2019) affected by the fires in 2019/2020. This indicates that a substantial proportion of areas mapped as potential foraging habitat for flying-foxes was burnt, and such habitat is still recovering.

Additionally, it is noted that flying-fox dispersal actions were being conducted in Stanthorpe, approximately 45 km north of Tenterfield, in March 2019. The effect of drought on habitat, severe habitat damage from fire and roost dispersals in nearby areas could all be likely contributing factors to the establishment of the camp in Tenterfield. What is not known is whether the flying foxes using the roost over the spring and summer months will relocate to former roost sites as foraging habitat recovers.

5.3 Under Threat

'Flying-foxes roosting and foraging in urban areas more frequently can give the impression that their populations are increasing. However, the Grey-headed Flying-fox is in decline across its range and in 2001 was listed as vulnerable by the NSW Government through the *Threatened Species Conservation Act 1995* (now BC Act).

At the time of listing, the species was considered eligible for listing as vulnerable, as counts of flying-foxes over the previous decade suggested the national population had declined by up to 30%. It was also estimated the population would continue to decrease by at least 20% in the next three generations given the continuation of the current rate of habitat loss, culling and other threats.

The main threat to grey-headed flying-foxes in New South Wales is clearing or modification of native vegetation. This removes appropriate roosting and breeding sites and limits the availability of natural food resources, particularly winter–spring feeding habitat in north-eastern NSW.

Studies by Eby et al (1999) for instance, found that *during a time of general food scarcity, but when abundant floral resources were available in restricted patches of coastal vegetation* (in NSW), the GHFF population was focused on these small habitat patches.

'The urbanisation of the coastal plains of south-eastern Queensland and northern NSW has seen the removal of annually-reliable winter feeding sites, which is continuing.

There is a wide range of ongoing threats to the survival of the grey-headed flying-fox, including:

- habitat loss and degradation
- conflict with humans (including culling at orchards)
- infrastructure-related mortality (e.g. entanglement in barbed wire fencing and fruit netting, power line electrocution, etc.)
- exposure to extreme natural events such as cyclones, drought and heatwaves.

Flying-foxes have limited capacity to respond to these threats and recover from large population losses due to their slow sexual maturation, low reproductive output, long gestation and extended maternal dependence (McIlwee & Martin 2002).'

5.4 Camp Characteristics

As described in section 2.1 and 2.2 in this FFCMP, the Naas Street/Millbrook Park flying-fox camp is located fully with in an urban area and in close proximity to a number of local residents, including an aged care facility (Millrace Hostel). A large proportion of the roosting habitat is also within a public park. Much of the areas surrounding Tenterfield comprise cleared grazing land, but there are substantial native forest areas in most directions within five to 50 km. Much of the potential habitat for the GHFF however, as discussed in section 5.3, was severely burnt in 2019/2020, such as the Torrington area approximately 40 km south-west of Tenterfield (refer to **Figure 5.2).**

In the context of the description of general characteristics which tend to be favoured by flying-foxes for roost sites, the nature of the Naas Street/Millbrook Park camp site supports the majority of these characteristics as follows:

- closed canopy >5 metres high – YES, the Plane Trees have a dense canopy and are approximately 20 m high;
- dense vegetation with complex structure (upper, mid- and understorey layers) - NO, in terms of complexity of tree layers, with smaller trees with a dense canopy below the Plane Trees. There is however no true understory;
- within 500 metres of permanent water source – YES, there is a permanent creek running through the edge of the park;
- within 50 kilometres of the coastline or at an elevation <65 metres above sea level - **NO,** Tenterfield is located approximately 140 km west of the coast and the camp is at an elevation of approximately 840 m;
- level topography (<5° incline) – NO, Naas Street slopes gently from west to east, with much of the camp area almost flat;
- greater than one hectare to accommodate and sustain large numbers of flying-foxes – NO, if all of the trees within the park and along Naas Street are included, the area is approximately 1 ha.

Given the numbers of flying-foxes reported by local residents to be occupying the camp in 2022/early 2023, the recommendation that the size of the patch be approximately 3 times the area occupied by flying foxes at any one time, would not have been met by the Naas Street/Millbrook Park camp site.

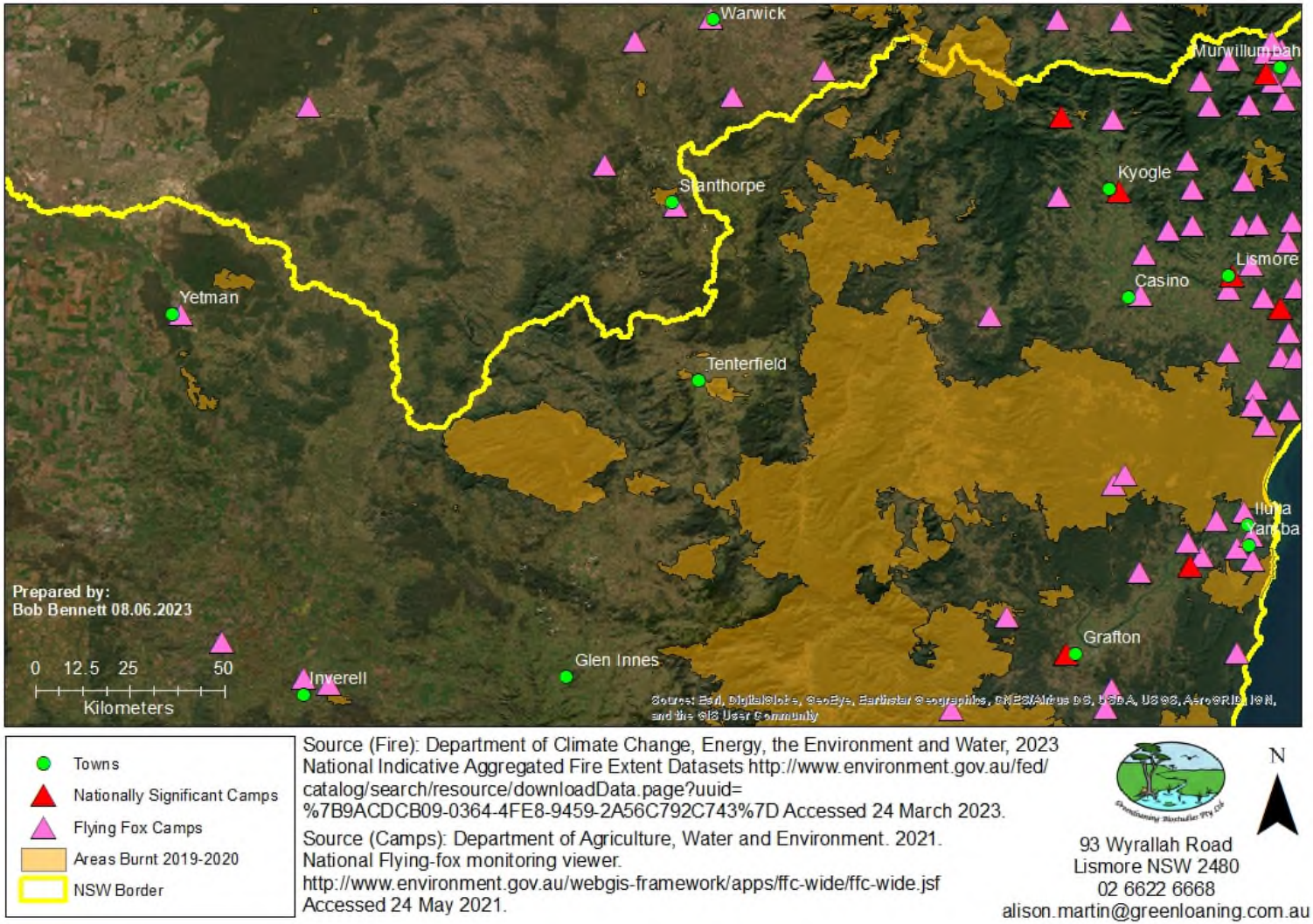
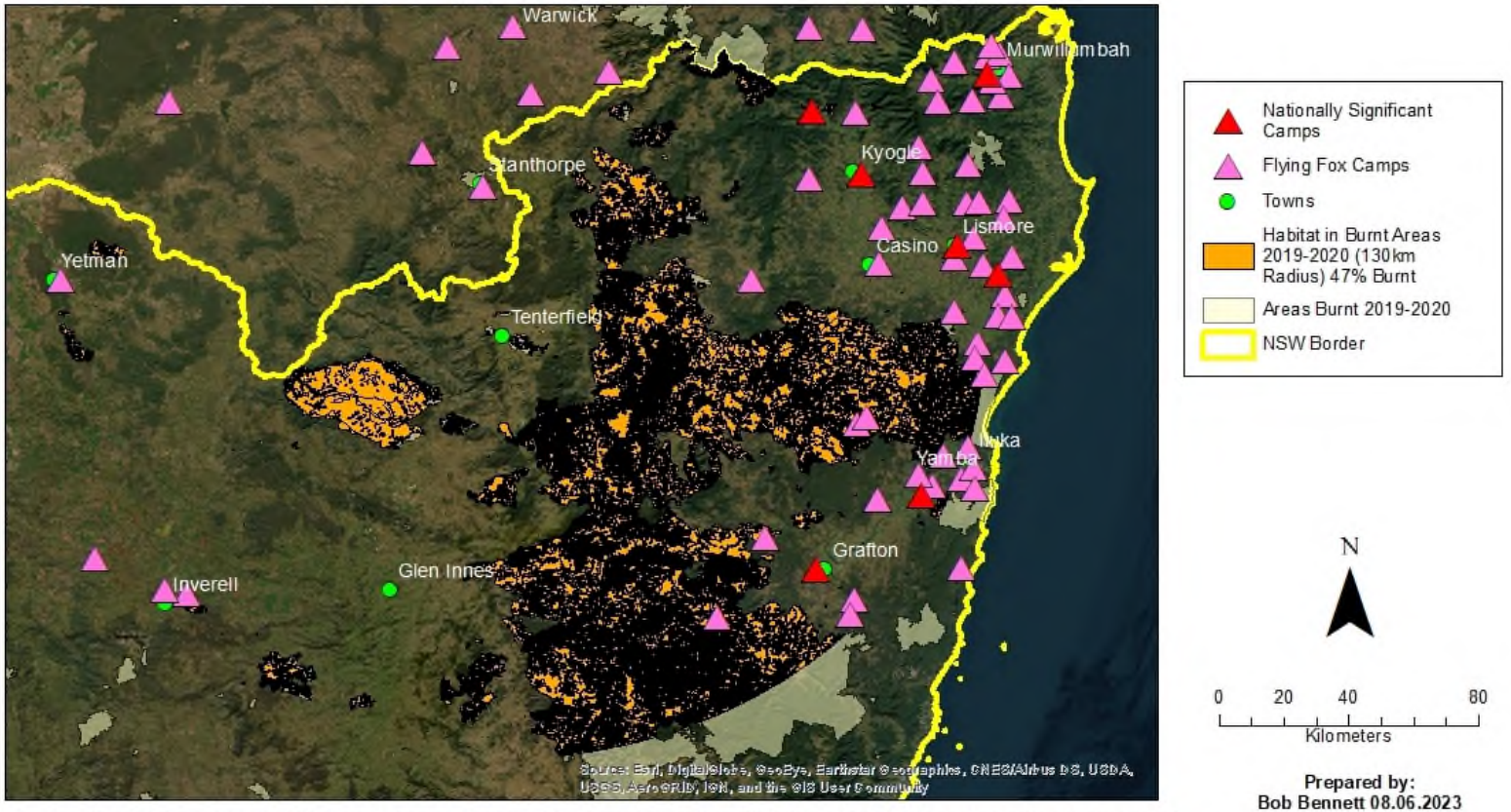


Figure 5.1 Areas in the general region around Tenterfield burnt in the 2019/2020 fires and locations of known flying-fox camps



Source (Fire): Department of Climate Change, Energy, the Environment and Water, 2023. National Indicative Aggregated Fire Extent Datasets http://www.environment.gov.au/fed/catalog/search/resource/downloadData.page?uuid=%7B9ACDCB09-0364-4FE8-9459-2A56C792C743%7D Accessed 24 March 2023.

Source (Camps): Department of Agriculture, Water and Environment. 2021. National Flying-fox monitoring viewer. http://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf Accessed 24 May 2021.

Source (Habitat): Eby, P., Sims, R. and Bracks, J. 2019. Flying fox Foraging Habitat Mapping NSW: a seamless map for assessing temporal and spatial patterns of habitat quality for flying foxes. Report to Local Government Association New South Wales.

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Figure 5.2 Potential flying-fox habitat in the general region around Tenterfield and burnt in the 2019/2020 fires

6 HUMAN AND ANIMAL HEALTH

6.1 Disease and Flying-foxes and the Effects of Stress

6.1.1 Background

Following sections as extracted directly from the 'Flying-fox Camp Management Plan – expanded Template' are indicated by quotation marks.

'A recent study at several camps before, during and after disturbance (Edson et al. 2015) showed no statistical association between Hendra virus prevalence and flying-fox disturbance; however, the consequences of chronic or ongoing disturbance and harassment and its effect on Hendra virus infection were not within the scope of the study and are therefore unknown.

The effects of stress are linked to increased susceptibility and expression of disease in both humans (AIHW 2012) and animals (Henry & Stephens-Larson 1985; Aich et al. 2009), including reduced immunity to disease. Therefore, it can be assumed that management actions that may cause stress (e.g. dispersal), particularly over a prolonged period or at times where other stressors are increased (e.g. food shortages, habitat fragmentation, etc.), are likely to increase the susceptibility and prevalence of disease within the flying-fox population, and consequently the risk of transfer to humans.

Furthermore, management actions or natural environmental changes may increase disease risk by:

- forcing flying-foxes into closer proximity to one another, increasing the probability of disease transfer between individuals and within the population resulting in abortions and/or dropped young if inappropriate methods are used during critical periods of the breeding cycle. This will increase the likelihood of direct interaction between flying-foxes and the public, and potential for disease exposure
- adoption of inhumane methods with the potential to cause injury which would increase the likelihood of the community coming into contact with injured/dying flying-foxes.'

6.2 Concerns Relevant to the Naas Street/Millbrook Park Flying-fox Camp

The situation at the Naas Street/Millbrook Park camp, with increasing numbers of flying foxes and especially the very large numbers reported over the spring summer 2022/2023 period, is cause for concern for local residents, the community and the flying-fox population. The key concerns in relation to this situation have been identified in the following sections.

6.2.1 Concerns for Local Residents/the Community

The following concerns have been identified from the resident meeting and workshop feedback forms, and from discussions with residents and community members as described in Section 3.2:

- flying-foxes extending roosting into nearby gardens, causing emotional stress associated with severe levels of excrement, noise, odour in immediate proximity;
- overcrowding of flying-foxes in all available spaces, including residents' gardens, resulting at times in stressed/injured or dead flying-foxes within the gardens; creating risks if children or pets come into close contact;
- overcrowding of flying-foxes within the park area and public spaces, creating risks for the local community and for visitors to the park, particularly children, coming into close contact with stressed/injured/dead flying foxes, including juveniles. Visitors and park users also were concerned about flying-fox excrement affecting parked vehicles and/or the presence of the flying-foxes preventing their normal use of the park; and

- overcrowded, stressed flying-foxes roosting very low to the ground and inadvertently coming into contact with residents/community members/visitors (refer to photographs in **Appendix A).**

6.2.2 Concerns for Flying-foxes

The following concerns have been identified through the on-site studies, literature reviews and discussions with local wildlife carers:

- overcrowding of flying-foxes in all available spaces, increasing the risk of disease transfer, increased stress levels and abortion/mortality of pups;
- intrusion of flying-foxes into residents' private spaces, with potentially increased stress levels in the flying-foxes associated with adverse reactions from highly stressed/emotional residents and/or attacks from pets;
- risk of injury to/death of flying foxes associated with unauthorised actions by residents/community members; and
- increased risk of injury to flying foxes associated with overcrowding, roosting low to the ground and low-flying movements between roost branches and at dusk fly out.

7 CAMP MANAGEMENT OPTIONS

The comprehensive list of camp management options, including Level I, Level 2 and Level 3 actions, as provided in section 8.1 of the Template, is provided in full in **Appendix E** of this FFCMP. These options have all been considered as part of the preparation of this FFCMP, and are discussed fully in section 8. Below, in Table 7.1, is an analysis of these management options, modified as required from Table 3 provided in the Template to reflect the potential management measures relevant to this FFCMP.

Table 7.1 Analysis of Management Options

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Level 1 actions				
Education and awareness programs	Fear of disease Noise Smell Faecal drop Risks to motorists/ flying-foxes	$5000 -This would include brochures and signs at the park around the flying-fox roost area.	Low cost, promotes conservation of flying-foxes, particularly to visitors and residents/community not directly/severely impacted, can be undertaken quickly, will not impact on ecological or amenity value of the site. Increased signage will also potentially be useful in advising the public on both safety precautions and what are unauthorised actions	Education and advice itself will not mitigate all issues and will not be seen as at all assisting severely affected residents.
Property modification	Noise Smell Faecal drop Health/ wellbeing Property devaluation Lost rental return	Tens of thousands of dollars for individual properties. For example, double-glazing, sound insulation and air-conditioning.	Property modification can be an effective way to reduce amenity impacts of a camp without dispersal (and associated risks), is relatively low cost, promotes conservation of flying-foxes, can be undertaken quickly, will not impact on the site, may add value to the property.	May be cost-prohibitive for private landholders, will not fully mitigate amenity issues in outdoor areas, lifestyle and mental health issues for severely affected residents. Unlikely to mitigate effects on property values from the presence of the camp. Likely to need financial assistance from authorities

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Fully-fund/ subsidise property modification	Noise Smell Faecal drop Health/ wellbeing Property devaluation Lost rental return	Tens of thousands of dollars for individual properties. For example, double-glazing, sound insulation and air-conditioning.	Potential advantages as per property modification, but also overcomes the issue of cost for private landholders.	Council will need to apply for funding. Costs to the land manager will vary depending on the criteria set for the subsidy including proximity to site, term of subsidy, level of subsidy. Potential for community conflict when developing the criteria, and may lead to expectations for similar subsidies for other issues.
Service subsidies including rate rebates	Noise Smell Faecal drop Health/well being Property devaluation Lost rental return	Potentially many thousands of dollars cost to Council in foregone rates and service charges, including for water. Not just for residents in the immediate vicinity but potentially for residents further afield who claim to be impacted.	May encourage tolerance of living near a camp for those not as severely affected, promotes conservation of flying-foxes, can be undertaken quickly, will not impact on the site, would reduce the need for property modification for those not as severely affected,	Highly unlikely to be considered as sufficiently beneficial to those severely affected. May be costly across multiple properties and would incur ongoing costs, may set unrealistic community expectations for other community issues, effort required to determine who would receive subsidies.
Routine camp management including management of leaf and faecal dropping debris	Health/ wellbeing	$10,000 + /year additional costs to Council for leaf and faecal dropping collections.	Will allow property maintenance, could improve public perception of the site, will assist in minimising safety risks to the public.	Will not mitigate amenity impacts for nearby landholders.

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Alternative habitat creation enhancement	All	Very high cost to establish new habitat which could include land purchase, fencing, planting and on-going maintenance for weed and pest control.	Only an advantage if areas are available for habitat creation/enhancement nearby.	Not a practical alternative as no suitable habitat adjacent or nearby. Regeneration of the nearby creek area will not provide alternative habitat in the short term, with long lead time for trees to grow/mature and no guarantee of eventual and on-going use by flying-fox colony. Such habitat creation will only serve to encourage flying-foxes to continue to roost within unsuitable residential areas, and potentially encourage greater numbers
Provision of artificial roosting habitat	All	N/A	Only advantageous if there are suitable low conflict and vegetated areas adjacent or nearby,	Not a practical alternative as no suitable and vegetated low conflict areas adjacent or nearby.
Protocols to manage incidents	Health/well being	Unknown cost as with much of the management /actions	Low cost, will reduce actual risk of negative human/pet–flying-fox interactions, promotes conservation of flying-foxes, can be undertaken quickly, will not impact the site.	Will not generally mitigate amenity impacts. Largely dependent on the goodwill and time of wildlife volunteers to collect and care for injured flying-foxes / abandoned pups in the nearby parks/roads – where the animals may be seen to pose a health risk, albeit small, to humans and horses.

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Research	All	Unknown high cost.	Supporting research to improve understanding may contribute to more effectively mitigating all impacts, promotes flying-fox conservation. Knowing where flying-foxes are moving to and from in relation to the camp could be highly useful information.	Cannot be undertaken quickly, management trials may require further cost input. Needs to be undertaken by qualified scientists / research organisation(s) with established links to government departments/officers who understand /endorse studies with view to act on findings. Council would need to seek funding for such research. Not considered practical by Council
Appropriate land use planning	All	High cost to identify, acquire and rehabilitate degraded sites	Potential option for the future if flying-foxes continue to frequent Tenterfield urban areas in order to reduce future conflict, promotes flying-fox conservation. Identification of degraded sites that may be suitable for long-term rehabilitation for flying-foxes could facilitate offset strategies should clearing be required under Level 2 actions.	Not immediately applicable to this camp, given its location within an existing and long established urban landscape. Long term rehabilitation of degraded sites is likely to be problematic in terms of providing preferred flying-fox habitat that would be used, and also would require funding source for Council.
Property acquisition	All for specific property owners Nil for broader community	Potentially >$4,000,000 to acquire residential properties in the immediate vicinity, if owners are prepared to sell.	Will reduce future conflict with the owners of the acquired property.	Owners may not want to move, only improves amenity for those who fit criteria for acquisition and wish to move, very expensive.
Do nothing	Nil	Nil	No resource expenditure.	Will not mitigate impacts and will not be considered acceptable by the affected community.

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Level 2 actions				
Buffers through vegetation removal	Noise Smell Health/well being Property devaluation Lost rental return	>$3,000/tree for removal	Will reduce impacts to closest residents to some extent, can be undertaken quickly, limited maintenance costs.	Will severely impact the amenity of the park, will not generally eliminate impacts, vegetation removal/trimming strongly opposed by some residents. Likely to encourage further overcrowding of flying-foxes Expensive for such large, tall trees
Buffers without vegetation removal	Noise Smell Health/well being	$20,000 +	May discourage flying-foxes immediately adjacent to residences	All types of visual and noise deterrents would require regular moving/varying to be effective, as reported in the Template, p 32. Only localised effects would be expected. A moderately effective buffer .of 100 m would require most of the park to be subject to installation of deterrents. Tree climbers would be required to move deterrents. Mounting of canopy water sprinklers at this stage has been assessed as logistically very difficult and very expensive.
Noise attenuation fencing	Noise Smell Health/well being Property devaluation Lost rental return	N/A		Will not eliminate impacts, impractical for the site where flying-foxes are roosting high above the level of residences and fencing
Level 3 actions				
Nudging	All	N/A	Not practical for the site – no suitable 'nudging' habitat available	Not practical for the site – no suitable 'nudging' habitat available.

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Passive dispersal through vegetation management	All at that site but not generally appropriate for amenity impacts only (see Section 8)	>$3,000/tree	If successful could mitigate impacts to some extent at that site, compared with active dispersal: less stress on flying-foxes, less ongoing cost, less restrictive in timing with ability for winter vegetation removal.	Strongly opposed by some residents and not favoured as a solution by most. Costly, and will severely impact amenity of the site as a public park, risk of removing habitat before outcome known, potential to splinter the camp creating problems at other locations (although less than active dispersal), potential welfare impacts, disturbance to community, negative public perception, unknown conservation impacts, unpredictability makes budgeting and risk assessment difficult, may increase disease risk.
Passive dispersal through water management (restricting access to nearby water)	N/A	N/A	Not practical for this site.	Not practical for this site. Not practical to cover adjacent creek habitat.

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Active dispersal	All if successful	Not estimated at this stage. Costs would be determined as part of a Dispersal Management Plan if dispersal is a proposed action in the future	If successful, would mitigate all impacts at the site. Often stated as the preferred method for impacted community members. Most community members favoured 'removal' of the camp, but understood the difficulties and legislative constraints for Council in planning and achieving effective dispersal	Long term use of the site not as yet established, and it is possible the influx of large numbers of flying-foxes (5,000 10,000 plus) is a temporary phenomenon. Dispersal would be expected to be very costly, is often unsuccessful, with ongoing dispersal generally required unless combined with habitat modification/ Potential to splinter the camp, creating problems in other locations. Potential for significant animal welfare impacts and disturbance to community. Negative public perception and unknown conservation impacts. Unpredictability makes budgeting and risk assessment difficult, may increase disease risk, potential to impact on aircraft safety for aircraft using Tenterfield airport.

Management option	Relevant impacts	Cost (estimates only)*	Advantages	Disadvantages
Early dispersal before a camp is established at a new location	All at that site	Not estimated at this stage. Costs would be determined as part of a Dispersal Management Plan if early dispersal (as per Section 8.3 of this FFCMP) is a proposed action in the future	Potential advantages as per other dispersal methods, but more likely to be successful with early alert of initial influx of flying-foxes from residents.	Ecological ramifications unknown. Not desirable to be attempting to disperse heavily pregnant females, given the flying-foxes have tended to return in October over the past 4 years, unless immediate deterrent of first arrivals is effective in discouraging return of large numbers. Potential disadvantages as per other dispersal methods, but possibly less costly and lower risk than dispersing camp when fully occupied. Potential to increase pressure on flying-foxes that may have relocated from another dispersed camp, which may exacerbate impacts on these individuals.

- Estimates provided in conjunction with Council

8 PLANNED MANAGEMENT APPROACH

An overview of the planned management approach is provided in **Table 8.1**, as adapted and amended from Table 4 provided in the Template. Further details on the proposed management actions are provided in Section 8.1.

Table 8.1 Overview of Planned Management Approach for Naas Street/Millbrook Park Camp

Issue	Management aim	Success measures	Management actions		
			Level 1 actions	**Level 2 actions**	**Level 3 actions**
Issues and Management for Impacts on Residents					
Noise from flying-foxes	Mitigate noise impacts	Reasonable level of amenity achieved based on independent assessment	• Encourage residents to undertake property modification (including providing subsidies if possible)	• Nil applicable at this stage as residents not in favour of tree trimming or removal to create a buffer. Practical issues with establishing an effective buffer (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)
Flying-foxes overhanging pathways/ residential properties	Reduce potential for flying-foxes overhanging pathways/ properties	Minimising roosting flying-foxes overhanging areas frequented by residents/the public (such as road verges along Naas Street)	• Divert/temporarily close off areas beneath roosting flying-foxes • Encourage residents to keep their pathway garden vegetation well maintained • Encourage Millrace Hostel management to consider options for tree trimming	• Nil - Trimming overhanging vegetation in park not desired/practical in park area (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)

Issue	Management aim	Success measures	Management actions		
			Level 1 actions	**Level 2 actions**	**Level 3 actions**
Faecal drop	Mitigate impacts of faecal drop	Reduce impacts of faecal drop by 80% (e.g. minimal financial impact of cleaning through subsidies)	• Education and awareness - increased signage in roost area • Property modification (including providing subsidies if possible) • Subsidise services to reduce impacts • Provide removable cover for public swimming pool • Regular removal of leaf letter under roost when flying-foxes are in the camp	• Nil - Buffers not applicable (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)
Smell	Mitigate impacts of smell	Reasonable level of amenity achieved based on independent assessment	• Education and awareness programs • Property modification (including providing subsidies if possible)	• Nil – not applicable (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)
Fear of disease	Promote awareness that actual disease risk is low	All concerned community members have received and have access to factual information on disease	• Education and awareness programs • Protocols to prevent incidents • Encourage Millrace Hostel management to consider options for tree trimming	• Nil – not applicable (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)

Issue	Management aim	Success measures	Management actions		
			Level 1 actions	**Level 2 actions**	**Level 3 actions**
Health/ wellbeing impacts	Mitigate health and wellbeing impacts	Reduce complaints by 50%	• Education and awareness programs • Property modification (including subsidies) to prevent wellbeing impacts associated with noise • Protocols to prevent incidents • Routine management actions to improve the site	• Nil – not applicable (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)
Property devaluation	Reduce economic loss associated with potential property devaluation	Property value not being impacted for owners that purchased property prior to camp formation, as assessed through independent valuation	• Property modification (including subsidies) • Subsidise services to reduce impacts • Offset through funding or incentives (e.g. rate reduction)	• Nil – not applicable (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)
Lost rental return	Reduce economic loss associated with lost rental return	Rental return is not being impacted for owners that purchased property prior to camp formation, as assessed through an independent valuation	• Property modification (including subsidies) • Subsidise services to reduce impacts • Offset through funding or incentives (e.g. rate reduction) • Appropriate land use planning • Dense planting to create screens at residential boundaries • Revegetate to create alternative habitat	• Nil – not applicable (refer to section 8.2.1)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)

Issue	Management aim	Success measures	Management actions		
			Level 1 actions	**Level 2 actions**	**Level 3 actions**
Issues and Management for Impacts on Flying-foxes					
Risk of increased stress/ /injury from roosting intrusions into residents' gardens	Minimise risk of injured/ dead flying-foxes on residents' properties	No reports of injured/ dead flying-foxes on residents' properties from local residents or carers	• Encourage and support local residents/businesses to undertake garden maintenance procedures as may be appropriate for individual properties, e.g. netting fruit trees/potential forage attractant shrubs/small trees/ vegetation trimming/removal as may be appropriate on their properties	• Nil – not applicable (refer to section 8.2)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)
Risk of increased stress/ /injury from unauthorised actions by local residents	To provide appropriate support to local residents and information on consequences of illegal actions such that the likelihood of such actions is minimised	No reports of adverse incidents with flying-foxes attributable to deliberate human actions	• Run an information campaign to ensure all residents and business owners/managers are aware of what actions would be deemed illegal, and the potential consequences of such actions, both to flying-foxes and humans	• Nil – not applicable (refer to section 8.2)	Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)

Issue	Management aim	Success measures	Management actions		
			Level 1 actions	**Level 2 actions**	**Level 3 actions**
Risk of increased injury from vehicle strikes associated with over-crowding leading to low level roosting and flying.	Minimise the risk of vehicle strikes	No reports of vehicle strikes from local residents or carers	• Inclusion of warning signs for motorists before risk area on NAAS Street	• N/A, as if flying-foxes return in very large numbers, it can be expected they will extend roosting locations to lower portions of tree trunks, small trees etc., as was reported to be the case in late spring/summer 2022/2023 (refer to section 8.2)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 - refer to Section 8.3.for more detail)
Disturbance to flying-foxes increasing stress levels from noisy park and road verge maintenance activities	Minimise levels of disturbance to flying-foxes	Maintenance activities don't disturb flying-fox camp to observable levels, such that the majority of flying-foxes remain roosting as they were prior to the commencement of the activity.	• As per standard measures provided in the Template and reproduced in Section 9.1, viz; commence noisy activity at furthest distance for the camp to facilitate flying-foxes getting used to the disturbance; use least noisy equipment where possible • Whilst camp is occupied, reduce mowing frequency to minimum level while maintaining public safety frequency will depend on seasonal conditions)	• Nil – not applicable (refer to section 8.2)	• Level 3 actions are not proposed at this stage to mitigate this issue, but may need to be considered as adaptive management if flying-foxes return in large numbers (≥ 5,000-10,000) (after monitoring population October -March 2023-2024 -refer to Section 8.3.for more detail)

8.1 Proposed Level 1 Actions

8.1.1 Education and Awareness

Council will continue with public education and awareness programs, via additional signage, particularly in the area of the camp, and via Council website/newsletter and social media. Particular attention to appropriate communication would need to be given around the time of the expected return of the flying-foxes in October. Residents and the public will also be encouraged to keep Council informed as to the return and movements of the flying-foxes.

8.1.2 Property Modifications without Subsidies

Council will continue to encourage residents, via the education and awareness programs to adopt actions on their properties to mitigate impacts. Relevant actions would include;

- netting fruit trees/blossom-bearing trees/tall shrubs/specific trees to minimise the potential for flying-foxes to be attracted into gardens for feeding;
- planting fragrant flowering garden plants (but non-forage species) to mask odour; and
- maintaining garden plants as much as practical around pathways and use areas.

However, the level of impacts from the flying-foxes, to close residents, if flying-foxes are present in the number experienced in the 2022-2023 season would require more substantial mitigation measures via subsidies (refer to section 8.1.3).

Property modifications to Council facilities (for which Council would seek funding), would potentially include:

- installing removable covers for the swimming pool, which is in immediate proximity to the camp;
- Installing additional covered picnic/barbeque facilities in open areas at appropriate distances from the main roosting locations, where the flying-foxes can be viewed safely;
- Installing (removable) covers over existing pathways subject to unacceptable levels of flying-fox excrement; and
- Constructing a covered pathway on one side of Naas Street to enable local residents still to walk without fear of urine/excrement falling on them.

8.1.3 Property Modifications with Subsidies

Property modification for local residents and businesses (particularly the Millrace Hostel and Tally Ho Motel) entailing more substantial modifications would be unlikely to be an option for most unless via subsidies (for which Council would need to seek funding). Such subsidies, to be taken up at the discretion of individual residents/businesses, would include:

- Covering pathways, outdoor eating/seating/children's play areas, driveways/parking areas, clothes lines (as may be appropriate);
- Double-glazing of windows to reduce noise impacts;
- Installation of air conditioning to avoid the need for open windows etc for air flow and thus reduce the impacts from noise and odour;
- Covering rainwater tanks and installing water filtration systems; and

8.1.4 Service subsidies

Service subsidies for local residents, as an alternative to property subsidies (on a case by case basis) (for which Council would need to seek funding), could include:

- Washing clothes;
- Cleaning outside areas/cars;

- Assistance with power bills;
- Rate and water rate reductions.

8.1.5 Routine camp maintenance.

Routine maintenance actions relevant to the Millbrook Camp comprise:

- Regular mowing of park area and roadside verges;
- For reasons of basic hygiene, at least weekly removal of leaf litter whilst flying-foxes are in residence, and immediately following their Autumn/Winter departure. Consideration could be given to the construction of a large, sealable compost facility on-site for the deposition of the litter;
- Cleaning of any paths subject to unacceptable levels of excrement and posing a safety hazard (slips and falls);
- Installation of one or more remote monitoring cameras to monitor the activities of visitors and locals to minimise the risks of anyone (particularly children) trying to handle a flying-fox which may be ill, or a pup, and on/low to the ground; and
- Routine garden maintenance and weed control within the park (such gardens are in areas removed from the roost locations).

As indicated in both **Table** 8.1 and Section 9.1, any routine maintenance activities, or other activities generating noise levels with potential to disturb the bats, will be subject to the following procedures as may be appropriate to the requirements of Council, the community and/or the flying-foxes:

- Avoidance of the activity during the critical breeding and creching period for the flying-foxes if possible;
- Reduction in frequency of routine activities as may be practical;
- Commencement of the activity furthest from the camp, with gradual approach towards camp ; and
- Cessation of activity if flying-foxes are unduly disturbed (>30% of camp in flight and in flight for > 5 minutes – refer to Table 8.2).

8.1.6 Revegetation and Land Management to Create Alternative Habitat/ Artificial Habitat

Although revegetation, habitat enhancement/creation can be desirable and practical options in relation to some camps, such measures, or the creation of artificial habitat management actions, are not appropriate for the Naas Street/Millbrook Park site, based on the following factors:

- The camp is located in exotic vegetation in an urban landscape and manicured park setting and there is no potential for habitat enhancement measures within this vegetation. Nor is it desirable to encourage the flying-foxes into the area;
- The camp already adjoins local residential areas, an aged care facility and motel, and flying-foxes have also extended roosting into these areas in the previous 12 months. There is therefore no option for habitat enhancement in such locations;
- There is no suitable adjacent or nearby habitat for creating/enhancing habitat. The option of regenerating/revegetating the nearby Tenterfield Creek, as suggested by government personnel, is not a desirable or practical option for the following reasons:
    - **i)** As shown on **Figure 1.1** and **Figure 1.2**, the creek runs through other sectors of Tenterfield urban area and to the south/south-west of Millbrook Park, runs adjacent to, inter alia, other residences, playing fields, a bowling club, caravan park and showground. Encouraging the flying-foxes to move into the riparian area would be

expected to extend, or move the issues already associated with the camp into other sectors of the urban environment; and

ii) Regeneration of habitat would be long-term and in no way has the potential to mitigate impacts for many years.

- As stated in the Template, '[t]his management option involves constructing artificial structures to augment roosting habitat in current camp sites or to provide new roosting habitat. It is thought that the structure of the vegetation below and around the ropes is important.' Given the recent level of impacts on both residents and flying-foxes, it is not desirable to encourage further roosting of flying-foxes within the current campsite, nor encourage roosting in adjacent creek habitat within the urban area, it is not proposed to include this management option as part of the management measures for the Naas Street/Millbrook Park camp.

8.1.7 Protocols to Manage Incidents

Protocols to manage incidents will be developed, based on the potential scenarios that could be experienced relevant to the Naas Street/Millbrook Park camp. The protocols will cover such scenarios as:

- A member of the public or park worker inadvertently being scratched or bitten by a flying-fox;
- Severe weather conditions that cause flying-fox deaths/injuries/pups to be dropped; or
- An incident reported regarding human/flying-fox interaction with adverse impacts on the flying-fox/foxes.

8.1.8 Participation in Further Research

Council is keen to promote further research into flying -fox ecology, particularly at a local and regional level, but would need to seek funding to foster such research. Of particular interest, as expressed by residents, is where flying-foxes travel to when they leave Tenterfield, and conversely what camps they come from when they return in October.

8.1.9 Property Acquisition

Property acquisition may become a desirable option for some residents if the camp continues to be occupied, particularly at the levels experienced in Spring/Summer 2022/2023. Although this option would be effective in removing impacts for those residents prepared to have their properties purchased, and more certain than attempting camp dispersal, there are substantial issues associated with pursuing this measure, viz;

- Costs would be very high, with 23 property owners/managers to date identifying multiple impacts and 8 noting severe to extreme impacts. Assuming only 8 residents wish to be bought out, with a conservative median estimate of $500,000/property, the cost to Council would be $4,000,000. It is noted Council has no funds to acquire any properties impacted by flying-foxes;
- No residents to date have expressed any desire to have their properties purchased;
- Purchasing private properties in the area would not alleviate impacts on the park area, other residents and the general community; and
- Council would incur further costs in needing to maintain purchased properties.

8.9.10 Do Nothing

The management options open to Council are currently very limited, owing to both limitations to practical measures appropriate for the location and financial restrictions. Council, however, is not adopting a 'do nothing' approach and is fully aware of the extent of impacts associated with the camp,

both on the Tenterfield community and on the flying-foxes. In the short term, Council is proposing to undertake some Level 1 measures, as outlined above, and once additional data is obtained from the 2023-2024 season, reassess what other options may be appropriate.

8.2 Level 2 Options

At this stage, no Level 2 management actions are proposed for the Naas Street/Millbrook Park site, as explained in the flowing sections.

8.2.1 Buffers with Vegetation Trimming or Removal

Based on the following factors, the establishment of buffers is not considered a practical option for the Naas Street/Millbrook Park Camp:

- The camp already adjoins local residential areas, an aged care facility and motel, and flying-foxes have also extended roosting into these areas in the previous 12 months. Trimming or lopping of trees in the park is strongly opposed by some residents and also is considered by the author of this report and Council as unlikely to be effective, as when large numbers of flying foxes were present they were using all levels of large and small trees, tree trunks and timber bollards adjacent to Naas Street (refer to photographs in **Appendix A**).
- As well as being strongly opposed by local residents, removal of trees in the park to create a buffer also is not a practical option. As stated in the Template, '[b]uffers greater than 300 metres are likely to be required to fully mitigate amenity impacts (SEQ Catchments 2012). The usefulness of a buffer to mitigate odour and noise impacts generally declines if the camp is within 50 metres of human habitation (SEQ Catchments 2012).'

  Given the population level of the camp during the 2022-2023 season, removing all trees within a 50 m buffer area, as well as removing much of the park vegetation, would be expected to create further overcrowding of the flying-foxes and also encourage them to extend further into residents' gardens. If a larger buffer of 100 m was created by tree removal, which is still 200 m less than the recommended 300 m buffer, the majority of trees within the park would be removed (refer to **Figure 8.1**). This is recognized as an unacceptable impact on the park's and area's amenity, as well as representing a Level 3 passive dispersal action (refer to Section 8.3).

8.2.2 Buffers without Vegetation Removal

The use of deterrents to create buffers, including visual, noise, smell and water sprinklers, has been considered, but has been discounted as likely to be appropriate for the following reasons;

- Practical constraints – qualified arborists wold be needed to install deterrent items, and then move such items, as the roost trees in the park are very tall;
- Financial constraints – engaging arborists regularly, as well as installing a canopy sprinkler system wold be very expensive; and
- Impacts on flying-foxes during the breeding season – regular intrusion of arborists into the height space of the flying-foxes wold be likely to increase stress levels and disturbance of the colony and increase the risks of abortion or dropped pups. It also is noted that, as per the Template,' [n]ote that any deterrent with a high risk of causing inadvertent dispersal may be considered a Level 3 action.'

8.2.3 Noise Attenuation Fencing

As the height of roosting flying-foxes is concentrated well above the height of residents' houses, as well as being in close proximity to the residences/hostel/motel accommodation, the installation of

noise attenuation fencing is not considered likely to be an effective measure in relation to mitigating the Naas Street/ Millbrook Park camp impacts. No such measure therefore is proposed.

8.3 Level 3 Options: Disturbance or Dispersal

As for level 2 actions, no Level 3 actions are proposed for the Naas Street/Millbrook Park camp at this stage. There is no suitable and unoccupied adjacent habitat, and nudging the camp therefore is not a practical option. Similarly, passive dispersal, involving gradual removal of vegetation, is not proposed, given the unacceptable impacts on the park amenity (refer to Section 8.3.1 and Figure 8.1). Active dispersal actions, including early dispersal, are not proposed at this stage for the following reasons:

1) Dispersal is recognized as a 'last resort' action, and should only be undertaken when all other management measures have proven to be ineffective;
2) The Naas Street/ Millbrook Park camp is not a historical camp and has only been established since the severe bushfires in 2019-2020. Moreover, very large numbers of flying-foxes (c. ≥10,0000 – 15,000) were only recorded in the previous 12 months. It therefore is premature to consider expensive, higher risk dispersal actions, when it is uncertain that the flying-foxes will continue to use the Naas Street/ Millbrook Park area;
3) Dispersal could potentially have substantial animal welfare issues, given that the camp was used as a breeding camp in 2023, with females arriving in October and presumably in their last trimester. In this context, as per the Flying-fox Camp Management Policy 2015 ((OEH, 2018), 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). This period covers the time when the flying foxes have tended to occupy the Naas Street/Millbrook Park camp; and
4) Expanding on the concept of 'early disturbance,' which focuses on dispersal on flying-foxes before they establish a camp at a new location, the potential for early dispersal of flying-foxes returning to the Naas Street/ Millbrook Park, also could potentially have substantial animal welfare issues (refer to point 3 above).

Notwithstanding the above, key objectives of the Flying-fox Camp Management Policy ((OEH 2018) include to:

4) *address the potential impacts of flying-fox camps on human health and amenity;*
5) *minimise the impact of camps on local communities;*
6) *provide a balance between conservation of flying-foxes and their impacts on human settlements.*

It is recognised that the above objectives cannot be met to a reasonable extent via the proposed Level 1 Management Actions if flying-foxes continue to occupy the Naas Street/Millbrook Park camp at the population levels which occurred in the 2022-2023 season. Impacts on human health and amenity will not be alleviated to an acceptable level, and there will continue to be substantial issues with flying-fox welfare associated with severe camp overcrowding and potential adverse human-flying-fox interactions.

From an adaptive management approach, dispersal options therefore must remain as a potential future management measure to be considered. Any dispersal actions will need to be the subject of a detailed, approved Dispersal Management Plan. If such a Plan becomes necessary, it will need to be based on the latest data on the camp population and the latest research/information on flying-fox camp dispersals and flying-fox welfare. Based on current information, the best chance of success could be a form of early dispersal, with Council being alerted by residents to the first influx of flying-

foxes, which would then be subject to dispersal actions Funding also would need to be sourced to support both a Dispersal Management Plan and dispersal actions..

Figure 8.1 Indication of Extent of Clearing if Vegetation Removal Employed to Create Buffers

8.4 Stop Work Triggers

The following measures are drawn from the Template and adapted as appropriate for the site.

The management program will cease and will not recommence or progress to subsequent levels without consulting the Department if:

- any of the animal welfare triggers occur on more than two days during the program, such as unacceptable levels of stress (refer to **Table 8.2** below, reproduced from **Table 5** in the Template)
- there is a flying-fox injury or death
- a new camp/camps appear to be establishing
- impacts are created or exacerbated at other locations
- there appears to be potential for conservation impacts (e.g. reduction in breeding success identified through independent monitoring)
- standard measures to avoid impacts (detailed in Section 8 of this FFCMP) cannot be met.

Management may also be terminated at any time if:

- unintended impacts are created for the community around the camp
- allocated resources are exhausted.

Table 8.2 Planned Action for Potential Impacts on Flying-fox Welfare During Any Proposed Management Works*

Welfare trigger	Signs	Action
Unacceptable levels of stress	If any individual is observed: • panting • saliva spreading • located on or within two metres of the ground	• Works to cease for the day
Fatigue	In situ management • more than 30% of the camp takes flight • individuals are in flight for more than five minutes • flying-foxes appear to be leaving the camp	• In situ management • Works to cease and recommence only when flying-foxes have settled* / move to alternative locations at least 50 metres from roosting animals
Injury/death	• a flying-fox appears to have been injured/killed on-site (including aborted foetuses) • any flying-fox death is reported within one kilometre of the dispersal site that appears to be related to the dispersal • loss of condition evident	• Works to cease immediately and the Department notified • Rescheduled • Adapted sufficiently so that significant impacts (e.g. death/injury) are highly unlikely to occur, as confirmed by an independent expert (see Appendix 1) • Stopped indefinitely and alternative management options investigated.
Reproductive condition	• females in final trimester • dependent/crèching young present	• Works to cease immediately and the Department notified • Rescheduled • Stopped indefinitely and alternative management options investigated.

***** A person with experience in flying-fox behaviour will monitor for welfare triggers and direct works in accordance with the criteria above.

9 ASSESSMENT OF IMPACT TO FLYING-FOXES

At this stage, it is expected that all management measures proposed will comply with the standard measures to avoid impacts as presented in section 10.3 of the Template and provided, with minor amendments, in section 9.1 below. No habitat is to be cleared, no Level 2 or Level 3 actions are proposed at this stage, and if dispersal options need to be considered in the future, then relevant actions would need to take into account the potential impacts on the flying-foxes and a comprehensive impact assessment undertaken as per the Template Sections 10.1 and 10.2.

9.1 Standard Measures for all Management Actions to be Undertaken at/in the Vicinity of the Camp

The standard measures provided in this section have been drawn directly from the Template, as suggested in Section 10.3 of the Template. Specific additional text relevant to the Naas Street/Millbrook Park camp has been added in **bold**.

1 All personnel will be appropriately experienced, trained and inducted. Induction will include each person's responsibilities under this Plan. **This applies to managers, park maintenance crew, including gardeners and any contractors.**
2 All personnel will be briefed prior to the action commencing each day and debriefed at the end of the day. **This applies particularly to park maintenance crews, including gardeners and any contractors.**
3 Works will cease and the Department consulted in accordance with the 'stop work triggers' section of the Plan.
4 Large crews will be avoided where possible. **This applies particularly to park maintenance crews, including gardeners and any contractors**
5 The use of loud machinery and equipment that produces sudden impacts/noise will be limited. Where loud equipment (e.g. chainsaws, leaf blowers, mowers) is required they will be started away from the camp and allowed to run for a short time to allow flying-foxes to adjust. **This applies particularly to park/road verge maintenance crews, including gardeners and any contractors**
6 Any activity likely to disturb flying-foxes so that they take flight will be avoided **as much as possible** during the day during the sensitive GHFF/BFF birthing period (i.e. when females are in their final trimester or the majority are carrying pups, generally **October, when the flying-foxes return to the camp** – December) and avoided altogether **if possible** during crèching (generally November/December to February) (**refer to points 4 and 5 above, and point 7 below**).
7 Where works cannot be done at night after fly-out during these periods, it is preferable they are undertaken in the late afternoon close to or at fly-out. If this is also not possible, a person experienced in flying-fox behaviour will monitor the camp for at least the first two scheduled actions (or as otherwise deemed to be required by that person) to ensure impacts are not excessive and advise on the most appropriate methods (e.g. required buffer distances, approach, etc.). **Currently there are no proposed night works for the park area, but this measure is included in case an unforeseen incident requires such works.**
8 The Department will be contacted immediately if LRFF are present between March and October or are identified as being in their final trimester/with dependent young.
9 Non-critical maintenance activities will ideally be scheduled when the camp is naturally empty, **viz: May -mid-October, based in information to date**).
10 **Any park maintenance** works, **or installation of signage/educational material** will not take place in periods of adverse weather including strong winds, sustained heavy rains, extreme

heat, cold temperatures or during periods of likely population stress (e.g. food shortages). Wildlife carers will be consulted to determine whether the population appears to be under stress.

11 **Any park maintenance** works, **or installation of signage/educational material** will be postponed on days predicted to exceed 35°C (or ideally 30°C), and for one day following a day that reached ≥35°C. If an actual heat stress event has been recorded at the camp or at nearby camps, a rest period of several weeks will be scheduled to allow affected flying-foxes to fully recover.

12 If impacts at other sites are considered, in the Department's opinion, to be a result of management actions under this Plan, assistance will be provided by the proponent to the relevant land manager to ameliorate impacts. Details of this assistance are to be developed in consultation with the Department. **At this stage, such a scenario seems unlikely, but the measure has been retained form a precautionary approach;**

13 Any proposed variations to works detailed in the Plan must be approved, in writing, by the Department before any new works occur.

14 The Department may require changes to methods or cessation of management activities at any time.

15 Ensure management actions and results are recorded to inform future planning.'

9.2 Human Safety Measures

Specific protocols will be developed to handle any incidents with flying-foxes and minimizing disturbance/risks to flying-foxes, as referred to in Section 1.2, **Table 7.1** and Section 8.1.7. However, with regard to human safety, such protocols also would incorporate the following standard safety measures as provided in Section 10.3.1 of the Template:

1 All personnel to wear protective clothing including long sleeves and pants; additional items such as eye protection and a hat are also recommended. People working under the camp should wash their clothes daily. Appropriate hygiene practices will be adopted such as washing hands with soap and water before eating/smoking.

2 All personnel who may come into contact with flying-foxes will be vaccinated against ABLV with current titre.

3 A wash station will be available on-site during works along with an anti-viral antiseptic (e.g. Betadine) should someone be bitten or scratched.

4 Details of the nearest hospital or doctor who can provide post-exposure prophylaxis will be kept on-site.

10 PLAN ADMINISTRATION

10.1 Monitoring of the Camp

It is important that the camp population be monitored in the first year during the time that the flying-foxes are returning to the camp and over the birthing and creching period for both the GHFF and BFF to determine the following:

1) confirming which species are present and population numbers of each species;
2) checking whether the females are in their third trimester and subsequently that birthing has occurred, thus confirming it is a breeding colony for the second year in a row;
3) assessing overall population numbers;
4) assessing the condition of the colony and camp roosting habitat and determining whether there are flying-fox welfare concerns; and
5) Reassessing the level of impact on local residents and the community.

Initial monitoring surveys therefore are proposed for late October, November and December 2023, although the specific times will be dependent on the behaviour of the flying foxes, the actual time of their return to the camp and whether young are born. Subsequent monitoring schedules will be confirmed on the basis of the results from the initial surveys, but are proposed to comprise at least two monitoring sessions per year during the main birthing and creching period. If flying foxes however do not return to the camp, monitoring would be reduced to a simple check each year during the critical period.

10.2 Reporting

A summary monitoring report will be prepared on a yearly basis following the monitoring sessions for the relevant period. The report will provide updated data and mapping for the extent of the camp, flying-fox population levels, species present and use of the camp (roosting/breeding etc.). Updated information on the level of impact on local residents and the community from the camp, as well as data on the welfare of flying foxes using the camp will be included in the monitoring report. The practicality of the camp continuing in the long term will also be assessed and recommendations made as to any appropriate changes to management actions and the FFCMP.

10.3 Management Structure and Responsibilities

The overall management framework and responsible personnel are provided as per Table 6 in the Template in **Table 10.1** below.

Table 10.1 FFCMP Management Roles and Responsibilities

Role	Name	Required experience/approvals	Responsibilities/authority	Communication lines
Program Coordinator	Bruce Mills	Project management Human resource management Community engagement Reporting	Inform and consult with stakeholders and interested parties Community engagement Evaluate program Submit reports to DPIE/DEE Ensure all landowners have provided consent prior to works	Reports to: [insert] Direct reports: Project Manager
Project Manager	Bruce Mills/Alison Martin	Project management Team leadership and coordination Data management	Coordinate field teams and ensure all personnel are appropriately experienced and trained for their roles Induct all personnel to the program Collect and collate data Liaise with DPIE and DEE Liaise with wildlife carers/veterinarians (for orphaned/injured wildlife only)	Reports to: Program Coordinator Direct reports: Supervisor, Contractor
Supervisor	Personnel to be determined	Knowledgeable in flying-fox biology, behaviour and camp management (see Appendix 1 for detail) ABLV-vaccinated and trained in flying-fox rescue Team training, leadership and supervision	Pre- and post-management monitoring Surrounding camp monitoring Coordinate daily site briefings Coordinate daily activities Monitor flying-fox behaviour Rescue flying-foxes if required (and no carer/vet on-site) Determine daily works end point Participate in management activities	Reports to: Project Manager Direct reports: Team members, Observers/support
Team member	Personnel to be determined	Recommended ABLV-vaccinated (employer to assess risk)	Attend site briefings as may be required Participate in relevant management activities	Reports to: Supervisor Direct reports: Nil

Role	Name	Required experience/approvals	Responsibilities/authority	Communication lines
		Ideally, all team knowledgeable in flying-fox biology, behaviour and camp management; however, not required		
Contractor Arborist	To be determined if required	Relevant licences and experience in field	Conduct specified activities (e.g. tree trimming) Adhere to all directions given by Supervisor	Reports to: Project Manager Direct reports: Nil
Observer/support	Local carer as available	Approval to access site	Provide care of injured/orphaned wildlife (under licence) if required	Reports to: Supervisor Direct reports: Nil
Flying-fox expert	Alison Martin	See Appendix 1	On-site population assessment, monitor flying-fox behaviour and ensure compliance with the Plan	Reports to: Supervisor Direct reports: Nil

10.4 Adaptive Management

Given that the Naas Street/Millbrook Park camp is not a historical camp and only became established during a time of great stress for biodiversity in general, it is important to incorporate an adaptive management approach into the FFCMO. Thus, the results from the proposed 2023-2024 monitoring sessions will inform the subsequent decisions regarding whether the camp is considered as a viable long-term entity, or whether different management actions will be required, including early dispersal. Ongoing liaison with the local residents will form a very important part of the effective management of the camp. It is recognized that the closest residents are the first to know when the flying-foxes return and to observe their roosting and other behaviour on a daily basis. Changes in behaviour can thus be identified at an early stage and management actions adapted to suit these changes accordingly.

10.5 Funding Commitment

Council will need to seek funding for any measures other than routine park maintenance actions and education programmes.

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APPENDIX A: SITE PHOTOGRAPHS

Photograph A1 View of main camp from eastern edge, showing avenue of large Plane Trees and other exotic trees and Millbrook Park on the right. An educational sign about the flying-foxes is visible beneath the trees in the bottom right.

Photograph A2 View of main camp area from the south, showing the Plane Trees lining the southern side of Naas Street and flying-foxes visible in the upper branches

Photograph A3 Secondary camp in the north of Millbrook Park late February 2023. The grounds and trees in Millrace Hostel are visible across the creek in the central right of the photograph

Photograph A4 Flying-foxes roosting in upper branches of Plane Trees on northern side of Naas Street (February 2023). Sone damage to Plane Tree branches is evident

Photograph A5 Flying-foxes roosting in upper branches of Plane Trees on southern side of Naas Street (February 2023, showing moderate density of individuals at this time.

Photograph A6 South-western sector of Millbrook Park in February 2023, with flying-foxes roosting in trees in immediate proximity to local residence

Photograph A7 Flying-fox roosting low on tree trunk within Millbrook Park (photo supplied by local resident

Photograph A8 Flying-fox roosting low on tree trunk within Millbrook Park (photo supplied by local resident)

Photograph A9 Adult female flying-fox with pup roosting on bollard along Naas Street adjacent to Millbrook Park (photo supplied by local resident

Photograph A10 Juvenile flying-fox roosting on bollard along Naas Street adjacent to Millbrook Park (photo supplied by local resident)

APPENDIX B – FLYING-FOX CAMP SURVEY AND POPULATION ESTIMATE PROCEDURES

POPULATION ESTIMATE METHODS

B.1 Baseline Survey Procedures

B.1.1 General Approach

The monitoring of flying-foxes at the Naas Street/Millbrook Park, Tenterfield Flying-fox Camp was undertaken by a qualified ecologists on a number of occasions from February to May 2023 (a three-month period). Specific procedures undertaken are detailed below, but in general the methods for monitoring numbers were according to the guidelines provided in 'A monitoring method for the Grey-headed Flying-fox, *Pteropus poliocephalus'* (Westcott et al, 2011). As part of the preparation of the FFCMP, all available information on the subject flying-fox camp was collated. The baseline surveys were designed to help inform the management actions that are needed to ensure minimal impact on nearby residents and park users, and flying-foxes.

B.1.2 Site Inspection and Baseline Surveys

An initial site inspection and meeting with Council officers was held on the 26th of February 2023. Details of the characteristics of the Camp and an initial understanding of the impacts on residents were the key focus of the on-site discussions at this time. The two-fold purpose of the planned subsequent baseline surveys was:

- To establish a baseline of species present and counts of flying-foxes using the camp; and
- To determine the activity levels of flying-foxes.

Initially, it was proposed that at least three baseline surveys would be undertaken. The number of surveys was chosen as the minimum to allow for any detection of variations in general flying-fox activity levels or responses to disturbance.

The proposed baseline surveys were planned to incorporate, as far as possible, the following:

- identification of the species of flying-fox present;
- estimation of the number of each species using the diurnal 'ground count' procedure, as described in Westcott *et al*, 2011. this method allows counts to be undertaken concurrently with observations on the flying-fox behaviour, and repeated during a survey to increase the level of accuracy;
- identification of sections of camp used by each species (if more than one species is present);
- documentation of 'normal' bat activity, when most bats would be roosting in trees, rather than flying around and/or above the camp, in relation to time of day (refer to **Table B.1**);
- documentation of level and types of external disturbance factors;
- documentation of any 'disturbance' activity, when more than just a few bats are flying. the level of disturbance activity was categorised according to a set of pre-determined criteria (refer to **Table B.2)**, and overall risks to the camp population assessed using a risk assessment type matrix (**Table B.2**); and
- identification, if possible, of the source of such disturbance activity, including natural sources, e.g. as observed previously in other camps, a goanna entering the camp perimeter, or a raptor flying overhead.[1]

[1] A. Martin, pers. obs. Woodford, Nov. 2016.

A preliminary baseline survey subsequently was undertaken from approximately 11am to 1:15pm by Alison Martin, Principal Ecologists on the 26th of February 2023, the main procedures conducted comprising:

- identification of species present;
- use of a rangefinder to document the distance to numbers of individual flying-foxes in an observable tree (as per Westcott *et al*, 2011) (refer to section 2.1.3 for further details);
- preliminary investigation into the practicality of undertaking transects through the camp (as per Westcott *et al*, 2011);
- preliminary assessments of the extent of the camp and appropriate observation points; and
- initial dusk flyout counts from two observation points, (refer to **figure 2.1**).

Follow-up baseline surveys were undertaken on the following dates, with observation points varying according to roost locations and to maximise the effectiveness of counts as much as possible.

- 11th/12th of April 2023; and
- 30th April/1st of May 2023.

All observation locations are indicated on **Figure 2.1.**

B.1.3 Population Estimates

Two procedures were used to estimate the number of flying-foxes, one being direct counts from observing the flyout movements, as referred to in Section B.1.2. The flyout counts were conducted over approximately one hour on the 26th of February, 11th of March and 30th of April 2023, with observations commenced well before dusk and emergence of flying-foxes, and discontinued after no further flying-foxes emerged.[2] Counts were undertaken by two ecologists located at the observation points shown on **Figure 2.1**. These locations were selected to provide the best view of emerging flying foxes and to enable counts from as many flyout streams as possible.

The second population estimate procedure used was the ground count method, adapted from Westcott et al (2011) to fit with the site conditions. Given the narrow, linear nature of the camps at the time of surveys, it was unnecessary to undertake transects and observations could be made from several points along Naas Street and from within Millbrook Park. Transect sampling thus was discarded as an unnecessary procedure for baseline surveys and subsequent monitoring.

The ground counts thus entailed the following procedures :

1. a number of distance sightings to trees in which flying-foxes were roosting were taken from the edges of the camp site. the locations of these sighting points are shown on **figure 2.1.** the distance was calculating using **a** rangefinder (Sureshot PinLoc 5000)**;**
2. the number of each species of flying-fox roosting in each tree for which a sighting could be obtained was recorded;
3. the sighting area was then calculated by taking the distance measurements obtained from the range finder to develop an area polygon and the area of the polygon calculated;

[2] Note than for the flyout count on the 26th of February, a small number of flying-foxes were heard still remaining after the general flyout, but could not be observed. It was thought that these could have been a small group of juveniles. Similarly, some flying-foxes were heard on the 30th of April after there was insufficient light to observe any further flyouts. The numbers involved in each case however, would not be expected to affect the population estimates substantially.

4. the number of sightings within that area was used to calculate flying-fox density within the sighting area;
5. the density for the sighting area was then applied to the total area of the camp, as noted each survey time, to provide an overall population estimate for the camp.

During all surveys, binoculars were used to check the species which could be observed and determined.

The overall ground count estimate was compared with the estimates obtained from the flyout counts.

B.2 Results from Baseline Surveys

Only GHFF were observed to be present at the camp on the survey occasions in 2023, although the records for a local wildlife carer indicate there also were small numbers of breeding BFF over the 2022/2023 breeding period.

The 'ground count' method (Wescott & McKeown 2013), as described in Section B.1.3, in conjunction with the flyout counts, yielded the following results (refer to **Figure 2.1** for areas):

1. The population estimate for the main camp area on 26th February 2023 was 4,541 GHFF, whilst flyout counts yielded 4,000 (with some flying-foxes heard remaining in the camp);
2. On 12th April the ground count estimate was 2,250 animals, whilst flyout counts yielded 3319 flying-foxes; and
3. The total population estimated from ground counts for 1st May 2023, was 1,504 bats, whilst flyout counts yielded 1700 (with some flying-foxes heard remaining in the camp).

The results from the ground counts were generally comparable with the numbers obtained from the flyout counts, albeit with flyout counts yielding slightly higher numbers on two occasions and the ground count method higher numbers on one occasion.

Table B.1 Activity and Disturbance Criteria and Scores for Flying-fox Surveys

Non-disturbance Activity Level	Score	Disturbance Level and Score	Extent of Disturbance	Score	Types of Disturbance Potentially Causing Stress/Threats to Camp	Associated Level of Threat* (non-breeding
Most individuals inactive	1	Low	Localised sudden activity e.g. in 1 tree	1	Increased proximity of non-aggressive human to roost trees on edge of camp Unexpected, loud short-term noise	1
<10% active over camp	2	Low-Moderate	Individual in >1 tree suddenly active	2	Passive human entry into camp edges Unexpected, loud short-term noise Additional short term bright lighting briefly impeding/confusing normal flyout/fly-in behaviour	2
>10% but <30% active over camp	3	Moderate-High	<30% of bats suddenly active	3	Predator below e.g. goanna Repeated active human entry into camp Unexpected, loud and extended noise Machinery intruding into normal 'air space' of colony Additional bright lighting over an extended period impeding/confusing normal flyout/fly-in behaviour	3
≥30% active over camp	4	High	≥ 30% of bats suddenly active	4	Predator/perceived predator above Heat wave conditions	4

*Threat may be in the form of a physical threat to survival, or a perceived such threat causing adverse levels of stress

APPENDIX C – COMMUNITY FEEDBACK PROCEDURES AND OUTCOMES

C.1 Flier for Local Residents' Meeting

MILLBROOK FLYING-FOX CAMP

- **LOCAL RESIDENTS' MEETING**
- **MONDAY, 1 MAY 10:30am**
- **RSL PAVILION, 94 MOLESWORTH STREET**

Local residents directly affected by the flying-fox camp at Millbrook Park are invited to attend a meeting next Monday at the RSL Pavilion at 10:30am.

Alison Martin, from Greenloaning Biostudies, who is preparing a Flying-fox Camp Management Plan for Council will be at the meeting to discuss and document issues of concern to residents and suggestions for solutions.

A follow-up public workshop for interested residents to help develop the management plan will be held Thursday, 18 May at the same venue at 6:30pm.

Residents unable to attend the meeting can contact Alison Martin directly to put forward their views, by phone or e-mail:

0412 049 393 /Alison.Martin@greenloaning.com.au

RSVP for meetings: b.mills@tenterfield.nsw.gov.au

C.2 – Residents' Feedback Form

MILLBROOK FLYING-FOX CAMP

LOCAL RESIDENTS' FEEDBACK FORM

Please fill in the fields below as may be applicable to your situation. There will be a similar form provided on-line if you prefer to use a digital platform. The information you provide will be used to inform the Flying-fox Camp Management Plan (FFCMP) in a general context, but specific information will be kept confidential.

Name: (optional) ----------

Address: ----------

Have you experienced adverse impacts from the camp? (Y/N) ----------

If yes, what impacts have you experienced and to what extent (minimal/minor/moderate/severe/extreme) (add details as may be relevant):

Noise: ----------

Smell: ----------

Excrement on vehicles/garden furniture etc: ----------

Damage to fruit trees/ornamental trees: ----------

Other: ----------

When did you first notice any impacts, and have these increased/decreased?

Other than the flying-foxes vacating the camp completely, what actions would you see as alleviating impacts experienced at your residence, and to what extent would such actions assist (rate from 1 – a little, to 5-greatly? ----------

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Thank you for your assistance with this community engagement process. Any feedback is appreciated.

Please contact Alison Martin from Greenloaning Biostudies directly if you need to discuss further any matters relating to the FFCMP:

Mobile: 0412049393

e-mail: Alison.Martin@greenloaning.com.au

C.3 Workshop Notice

MILLBROOK FLYING-FOX CAMP – PUBLIC MEETING THUR, 18 MAY

A meeting to help develop the Millbrook Flying-Fox camp management plan will be held at the RSL PAVILION, 94 MOLESWORTH STREET at 6:30pm on Thursday, 18 May.

The meeting will hear from Alison Martin, of Greenloaning Biostudies, who is preparing the management plan for Council, and residents will be able discuss issues of concern and possible solutions.

Residents unable to attend the meeting can contact Alison Martin directly to put forward their views - by phone or email:

0412 049 393 Alison.Martin@greenloaning.com.au

RSVP for the 18 May meeting: b.mills@tenterfield.nsw.gov.au

C.4 – Resident Feedback Outcomes

Resident/ Community Member	Issues Identified							Suggested/Desired Solutions		
	Noise	Odour	Tree Damage	Impact on Lifestyle	Impact on Recreational Pursuits	Health Risks	Other	Move* Camp	Trim Trees	Other
1	Yes	Yes	Yes	Severe	Yes	Yes	Cars cannot be parked on road due to bat excrement Cannot use outside decks and radios left on day and night due to noise	Yes	No	
2	Yes	Yes		Severe	Yes	Yes	Excrement in town swimming pools, cannot park cars on road outside house Cannot leave washing on line overnight Footpaths and gardens covered in excrement			
3	Yes	Yes		Severe	Yes	Yes	Excrement on roofs, affecting water catchment for drinking and washing Impacts have been increasing FF getting tangled in fences FF utilising eucalypts No 9-11 George Street	Yes		

Resident/ Community Member	Issues Identified							Suggested/Desired Solutions		
	Noise	Odour	Tree Damage	Impact on Lifestyle	Impact on Recreational Pursuits	Health Risks	Other	Move* Camp	Trim Trees	Other
4		Yes	Yes	Severe		Yes	Impacting water quality on the property Impacts from FF activity has increased Value of property has decreased significantly Aged care residents affected by noise and smell	Yes	Yes	
5	Yes	Yes		Severe			Excrement on vehicles, garden furniture and people	Yes?		
6	Yes	Yes		Extreme		Yes	Unable to drink tank water Excrement on concrete around house always, and very hard to remove that renders outside areas unusable due to excrement This has been an increasing problem over last 3 years			

Resident/ Community Member	Issues Identified							Suggested/Desired Solutions		
	Noise	Odour	Tree Damage	Impact on Lifestyle	Impact on Recreational Pursuits	Health Risks	Other	Move* Camp	Trim Trees	Other
8		Yes		Yes			Concerned about children playing in yard with FF present and excrement everywhere			
9	Yes	Yes	Yes	Yes			Excrement on roof, footpaths, washing Increasing over last few years		Yes	
10	Yes	Yes	Yes	Yes		Yes	Excrement on outdoor furniture, vehicles and pathways Damage to iconic Tenterfield trees being denuded from the tops. FF impacts have been increasing over last 5 years and is affecting our mental health	Yes	Yes	
11	Extreme	Extreme	Severe	Extreme	Extreme	Extreme	Public safety impacted by low flying FF Trip hazards from branches on ground, children touching low hanging FF.	Yes	No	Double glazing windows for noise Airconditioning to help with odour

Resident/ Community Member	Issues Identified							Suggested/Desired Solutions		
	Noise	Odour	Tree Damage	Impact on Lifestyle	Impact on Recreational Pursuits	Health Risks	Other	Move* Camp	Trim Trees	Other
							Rescue helicopter compromised. Social impacts because friends and family avoid visiting Lifestyle compromised day and night for months Financial impacts due to property devaluation, electricity usage increase for fans and music playing to mitigate odour and noise Horses agisted rather than keep on our property Health concern for dogs and horses Mental health impacted due to sleep deprivation Cannot enjoy outside spaces Extra costs for cleaning and buying water			
12	Yes	Yes					Excrement on vehicles and garden furniture	Yes	Yes	Make areas unattractive to FF

Resident/ Community Member	Issues Identified							Suggested/Desired Solutions		
	Noise	Odour	Tree Damage	Impact on Lifestyle	Impact on Recreational Pursuits	Health Risks	Other	Move* Camp	Trim Trees	Other
							Exclude FF from Millrace environment First noticed in early Spring, currently none there			Regenerate area, Plane Trees respond well to lopping
13	Severe	Severe	Yes				Excrement on garden furniture and cars First noticed January 2019	Yes		Light up trees when FF come to roost

APPENDIX D – SPECIES PROFILES

D.1 Species profiles

D.1.1 Black flying-fox (Pteropus alecto)

Figure 1 Black flying-fox indicative species distribution (adapted from DPIE 2019a) (photo by, and inserted by A. Martin)

The black flying-fox (BFF) (Figure 1) has traditionally occurred throughout coastal areas from Shark Bay in Western Australia, across northern Australia, down through Queensland and into New South Wales (Churchill 2008; DPIE 2019a). Since it was first described there has been a substantial southerly shift by the BFF (Webb & Tidemann 1995).

They forage on the fruit and blossoms of native and introduced plants (Churchill 2008; DPIE 2019a), including orchard species at times.

BFF are largely nomadic animals with movement and local distribution influenced by climatic variability and the flowering and fruiting patterns of their preferred food plants. Feeding commonly occurs within 20 kilometres of the camp site (Markus & Hall 2004).

BFF usually roost beside a creek or river in a wide range of warm and moist habitats, including lowland rainforest gullies, coastal stringybark forests and mangroves. During the breeding season, camp sizes can change significantly in response to the availability of food and the arrival of animals from other areas.

D.1.2 Grey-headed flying-fox (Pteropus poliocephalus)

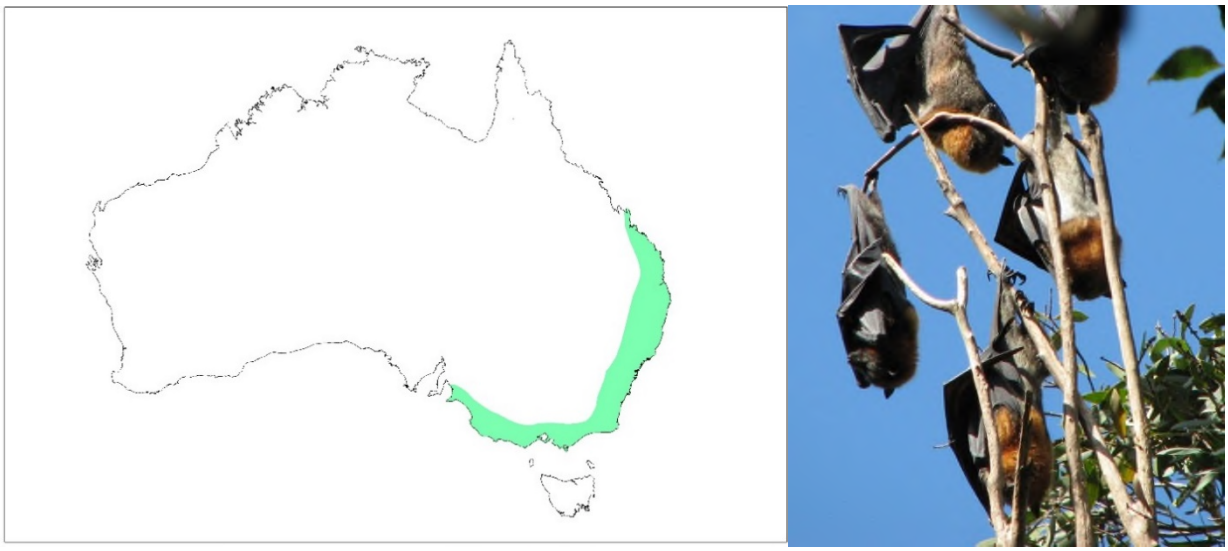

Figure 2 Grey-headed flying-fox indicative species distribution (adapted from DPIE 2019a) (photo by, and inserted by A. Martin)

The grey-headed flying-fox (GHFF) (Figure 2) is found throughout eastern Australia, generally within 200 kilometres of the coast, from Finch Hatton in Queensland to Melbourne, Victoria (DPIE 2019c). This species now ranges into South Australia and individual flying-foxes have been reported on the Bass Islands and mainland Tasmania (Driessen et al. 2011). It requires foraging resources and camp sites within rainforests, open forests, closed and open woodlands (including melaleuca swamps and banksia woodlands). This species is also found throughout urban and agricultural areas where food trees exist and will feed in orchards at times, especially when other food is scarce (DPIE 2019a).

All the GHFF in Australia are regarded as one population that moves around freely within its entire national range (Webb and Tidemann 1996; DoE 2015). GHFF may travel up to 100 kilometres in a single night with a foraging radius of up to 50 kilometres from their camp (McConkey et al. 2012). They have been recorded travelling over 500 kilometres over 48 hours when moving from one camp to another (Roberts et al. 2012). GHFF generally show a high level of fidelity to camp sites, returning year after year to the same site, and have been recorded returning to the same branch of a particular tree (SEQ Catchments 2012). This may be one of the reasons flying-foxes continue to return to small urban bushland blocks that may be remnants of historically used larger tracts of vegetation.

The GHFF population has a generally annual southerly movement in spring and summer, with their return to the coastal forests of north-east NSW and south-east Queensland in winter (Ratcliffe 1932; Eby 1991; Parry-Jones & Augee 1992; Roberts et al. 2012). This results in large fluctuations in the number of GHFF in New South Wales, ranging from as few as 20% of the total population in winter up to around 75% of the total population in summer (Eby 2000). They are widespread throughout their range during summer, but in spring and winter are uncommon in the south. In autumn they occupy primarily coastal lowland camps and are uncommon inland and on the south coast of New South Wales (DECCW 2009).

There is evidence the GHFF population declined by up to 30% between 1989 and 2000 (Birt 2000; Richards 2000 cited in DPIE 2019a). There is a wide range of ongoing threats to the survival of the GHFF, including habitat loss and degradation, culling in orchards, conflict with humans, infrastructure-related mortality (e.g. entanglement in barbed wire fencing and fruit netting, and power line

electrocution) and competition and hybridisation with the BFF (DECCW 2009). For these reasons it is listed as vulnerable to extinction under NSW and federal legislation (see Section 4).

D.2 Reproduction

D.2.1 Black and Grey-headed Flying-foxes

This section has been extracted directly from the Template.

'Males initiate contact with females in January with peak conception occurring around March to April/May; this mating season represents the period of peak camp occupancy (Markus 2002). Young (usually a single pup) are born six months later from September to November (Churchill 2008). The birth season becomes progressively earlier, albeit by a few weeks, in more northerly populations (McGuckin & Blackshaw 1991); however, out of season breeding is common, with births occurring later in the year.

Young are highly dependent on their mother for food and thermoregulation. They are suckled and carried by the mother until approximately four weeks of age (Markus & Blackshaw 2002). At this time, they are left at the camp during the night in a crèche until they begin foraging with their mother in January and February (Churchill 2008) and are usually weaned by six months of age around March. Sexual maturity is reached at two years of age with a life expectancy up to 20 years in the wild (Pierson & Rainey 1992).

As such, the critical reproductive period for GHFF and BFF is generally from August (when females are in their final trimester) to the end of peak conception around April. Dependent pups are usually present from September to March.'

APPENDIX E – CAMP MANAGEMENT OPTIONS – FULL VERSION FROM TEMPLATE

E Camp management options (as provided in the Template)

Below is an overview of commonly used management options to consider in the development of [a] Plan. These are categorised as Level 1, 2 or 3 in accordance with the Policy.

E.1 Level 1 actions: routine camp management

E.1.1 Education and awareness programs

This management option involves undertaking a comprehensive and targeted flying-fox education and awareness program to provide accurate information to the local community about flying-foxes.

Such a program would include managing risk and alleviating concern about health and safety issues associated with flying-foxes, options available to reduce impacts from roosting and foraging flying-foxes, an up-to-date program of works being undertaken at the camp, and information about flying-fox numbers and flying-fox behaviour at the camp.

Residents should also be made aware that faecal drop and noise at night is mainly associated with plants that provide food, independent of camp location. Staged removal of foraging species such as fruit trees and palms from residential yards, or management of fruit (e.g. bagging, pruning) will greatly assist in mitigating this issue. Approval from the local council may be required for the removal of some trees.

Collecting and providing information should always be the first response to community concerns in an attempt to alleviate issues without the need to actively manage flying-foxes or their habitat. Where it is determined that management is required, education should similarly be a key component of any approach. See also Section 3 and incorporate an education and awareness program into any community engagement plan.

An education program may include components shown in Figure 5.

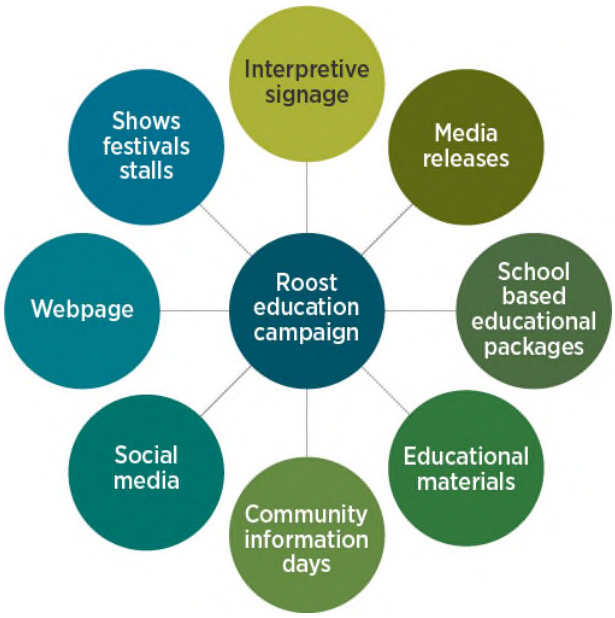

Figure 3 Possible components of an education program

By adopting these strategies, the likelihood of improving community understanding of flying-fox issues is high; however, the extent to which that understanding will help alleviate conflict issues is probably less so. Extensive education for decision-makers, the media and the broader community may be required to overcome negative attitudes towards flying-foxes.

It should be stressed that a long-term solution to the issue resides with a better understanding of flying-fox ecology and applying that understanding to careful urban planning and development.

E.1.2 Property modification without subsidies

The managers of land on which a flying-fox camp is located would promote or encourage the adoption of certain actions on properties adjacent or near to the camp to minimise impacts from roosting and foraging flying-foxes (note that approval may be required for some activities, refer to Section 4 for further information):

- Create visual/sound/smell barriers with fencing or hedges. To avoid attracting flying-foxes, species selected for hedging should not produce edible fruit or nectar-exuding flowers, should grow in dense formation between two and five metres (Roberts 2006) (or be maintained at less than five metres). Vegetation that produces fragrant flowers can assist in masking camp odour where this is of concern.
- Manage foraging trees (i.e. plants that produce fruit/nectar-exuding flowers) within properties through pruning/covering with bags or wildlife friendly netting, early removal of fruit, or tree replacement.
- Cover vehicles, structures and clothes lines where faecal contamination is an issue, or remove washing from the line before dawn/dusk.
- Move or cover eating areas (e.g. barbecues and tables) that are close to a camp or foraging tree to avoid droppings by flying-foxes.
- Install double-glazed windows, insulation and use air-conditioners when needed to reduce noise disturbance and smell associated with a nearby camp.
- Follow horse husbandry and property management guidelines provided at the Hendra virus webpage (DPIE 2019d).
- Include suitable buffers and other provisions (e.g. covered car parks) in planning of new developments.
- Consider removable covers for swimming pools and ensure working filters and regular chlorine treatment.
- Appropriately manage rainwater tanks, including installing first-flush systems.
- Avoid disturbing flying-foxes during the day as this will increase camp noise.

The cost would be borne by the person or organisation who modifies the property; however, opportunities for funding assistance (e.g. environment grants) may be available for management activities that reduce the need to actively manage a camp.

E.1.3 Property modification subsidies

Fully funding or providing subsidies to property owners for property modifications may be considered to manage the impacts of the flying-foxes. Providing subsidies to install infrastructure may improve the value of the property, which may also offset concerns regarding perceived or actual property value or rental return losses.

The level and type of subsidy would need to be agreed to by the entity responsible for managing the flying-fox camp.

E.1.4 Service subsidies

This management option involves providing property owners with a subsidy to help manage impacts on their property and the lifestyle of residents. The types of services that could be subsidised include clothes washing, cleaning outside areas and property, car washing or power bills. Rate reductions could also be considered.

Critical thresholds of flying-fox numbers at a camp and distance to a camp may be used to determine when subsidies would apply.

E.1.5 Routine camp maintenance and operational activities

Examples of routine camp management actions are provided in the Policy. 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 terrestrial and aquatic weeds under the Commonwealth 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.

Protocols should be developed **for carrying out operations that may disturb flying-foxes, which can result in excess camp noise. Such protocols could include limiting the use of disturbing activities to certain days or certain times of day in the areas adjacent to the camp and advising adjacent residents of activity days. Such activities could include lawn-mowing, using chainsaws, whipper-snippers, using generators and testing alarms or sirens.**

E.1.7 Revegetation and land management to create alternative habitat

This management option involves revegetating and managing land to create alternative flying-fox roosting habitat through improving and extending existing low conflict camps or developing new roosting habitat in areas away from human settlement.

Selecting new sites and attempting to attract flying-foxes to them has had limited success in the past, and ideally, habitat at known camp sites would be dedicated as a flying-fox reserve. However, if a staged and long-term approach is used to make unsuitable current camps less attractive, while concurrently improving appropriate sites, it is a viable option (particularly for the transient and less selective LRFF). **Supporting further research into flying-fox camp preferences may improve the potential to create new flying-fox habitat.**

When improving a site for a designated flying-fox camp, preferred habitat characteristics detailed in Section 6.4 should be considered.

Foraging trees planted amongst and surrounding roost trees (excluding in/near horse paddocks) may help to attract flying-foxes to the desired site. They will also assist with reducing foraging impacts in residential areas. Consideration should be given to tree species that will provide year-round food, increasing the attractiveness of the designated site. Depending on the site, the potential negative impacts to a natural area will need to be considered if introducing non-indigenous plant species.

The presence of a water source is likely to increase the attractiveness of an alternative camp location. Supply of an artificial water source should be considered if unavailable naturally; however, this may be cost-prohibitive.

Potential habitat mapping using camp preferences (see Section 6.4) and suitable land tenure can assist in initial alternative site selection. A feasibility study would then be required prior to site designation to assess the likelihood of success and determine the warranted level of resource allocated to habitat improvement.

E.1.8 Provision of artificial roosting habitat

This management option involves constructing artificial structures to augment roosting habitat in current camp sites or to provide new roosting habitat. Trials using suspended ropes have been of limited success as flying-foxes only used the structures that were very close to the available natural roosting habitat. It is thought that the structure of the vegetation below and around the ropes is important.

E.1.9 Protocols to manage incidents

This management option involves implementing protocols for managing incidents or situations specific to particular camps. Such protocols may include 'bat watch' patrols at sites that host vulnerable people, management of pets at sites popular for walking dogs, or preparation for heat stress incidents (when the camp is subjected to extremely high temperatures leading to flying-foxes changing their behaviour and/or dying).

E.1.10 Participation in research

This management option involves participating in research to improve knowledge of flying-fox ecology to address the large gaps in our knowledge about flying-fox habits and behaviours and why they choose certain sites for roosting. Further research and knowledge sharing at local, regional and national levels will enhance our understanding and management of flying-fox camps.

E.1.11 Appropriate land use planning

Land use planning instruments may be able to be used to ensure adequate distances are maintained between future residential developments and existing or historical flying-fox camps. While this management option will not assist in the resolution of existing land use conflict, it may prevent issues for future residents.

E.1.12 Property acquisition

Property acquisition may be considered if negative impacts cannot be sufficiently mitigated using other measures. This option will clearly be extremely expensive; however, is likely to be more effective than dispersal and in the long-term may be less costly.

E.1.13 Do nothing

The management option to 'do nothing' involves not undertaking any management actions in relation to the flying-fox camp and leaving the situation and site in its current state.

E.2 Level 2 actions: in situ management

E.2.1 Buffers

Buffers can be created through vegetation removal and/or the installation of permanent/semi-permanent deterrents.

Creating buffers may involve planting low-growing or spiky plants between residents or other conflict areas and the flying-fox camp. Such plantings can create a visual buffer between the camp and residences or make areas of the camp inaccessible to humans.

Buffers greater than 300 metres are likely to be required to fully mitigate amenity impacts (SEQ Catchments 2012). The usefulness of a buffer to mitigate odour and noise impacts generally declines if the camp is within 50 metres of human habitation (SEQ Catchments 2012); however, any buffer will assist and should be as wide as the site allows.

Buffers through vegetation removal

Vegetation removal aims to alter the area of the buffer habitat sufficiently so that it is no longer suitable as a camp. The amount required to be removed varies between sites and camps, ranging from some weed removal to removal of most of the canopy vegetation.

Any vegetation removal must be done using a staged approach, with the aim of removing as little native vegetation as possible. This is of particular importance at sites with other values (e.g. ecological or amenity), and in some instances, the removal of any native vegetation will not be appropriate. Thorough site assessment (further to desktop searches, see Appendix 4) will inform whether vegetation management is suitable (e.g. can impacts to other wildlife and/or the community be avoided?).

Removing vegetation can also increase visibility into the camp and noise issues for neighbouring residents, which may create further conflict.

Suitable experts (Appendix 1) should be consulted to assist selective vegetation trimming/removal to minimise vegetation loss and associated impacts.

The importance of under- and mid-storey vegetation in the buffer area also requires consideration. Under- and mid-storey vegetation should be retained in the buffer area of camps that are known or likely to be affected by heat stress events.

Buffers without vegetation removal

Permanent or semi-permanent deterrents can be used to make buffer areas unattractive to flying-foxes for roosting, without the need for vegetation removal. This is often an attractive option where vegetation has high ecological or amenity value.

While many deterrents have been trialled in the past with limited success, there are some options worthy of further investigation:

- Visual deterrents – Visual deterrents such as plastic bags, fluoro vests (GeoLINK 2012) and balloons (Ecosure 2016, pers. comm.) in roost trees have shown to have localised effects, with flying-foxes deterred from roosting within 1–10 metres of the deterrents. The type and placement of visual deterrents would need to be varied regularly to avoid habituation.
- Noise emitters on timers – Noise needs to be random, varied and unexpected to avoid flying-foxes habituating. As such these emitters would need to be portable, on varying timers and a diverse array of noises would be required. It is likely to require some level of additional disturbance to maintain its effectiveness, and ways to avoid disturbing flying-

foxes from desirable areas would need to be identified. This is also likely to be disruptive to nearby residents.

- Smell deterrents – Bagged python excrement has been hung in trees at some sites; however, its effectiveness as a deterrent remains unproven. The smell of certain deterrents may also impact nearby residents, while flying-foxes may become used to it.
- Canopy-mounted water sprinklers – This method has been effective in deterring flying-foxes during dispersals (Ecosure personal experience), and current trials in Queensland and New South Wales are showing promise for keeping flying-foxes out of designated buffer zones. This option can be logistically difficult (installation and water sourcing) and may be cost-prohibitive. Design and use of sprinklers needs to be considerate of animal welfare and features of the site; for example, misting may increase humidity and exacerbate heat stress events, and overuse may impact other environmental values of the site and/or lead to flying-foxes becoming habituated.

Note that any deterrent with a high risk of causing inadvertent dispersal may be considered a Level 3 action.

The use of visual deterrents, in the absence of effective maintenance, could potentially lead to an increase in rubbish in the natural environment.

The type, location and timing of deterrents need to be clearly described in your Plan so the Department can assess whether there is a considerable risk of inadvertently dispersing some or all of the camp.

Measures to prevent inadvertent dispersal should also be detailed to allow this assessment. For example, active deterrents such as canopy-mounted sprinklers should not be turned on during fly-in or fly-out, but rather used in short intervals during the day to encourage flying-foxes away from the area.

E.2.2 Noise attenuation fencing

Noise attenuation fencing could be installed in areas where the camp is particularly close to residents. This may also assist with odour reduction, and perspex fencing could be investigated to assist fence amenity. Although expensive to install, this option could negate the need for habitat modification, maintaining the ecological values of the site, and may be more cost-effective than ongoing management.

E.3 Level 3 actions: disturbance or dispersal

E.3.1 Nudging

Noise and other low-intensity active disturbance restricted to certain areas of the camp can be used to encourage flying-foxes away from high conflict areas. This technique aims to actively ‘nudge’ flying-foxes from one area to another, while allowing them to remain at the camp site.

Unless the area of the camp is very large, nudging should not be done early in the morning as this may lead to inadvertent dispersal of flying-foxes from the entire camp site. Disturbance during the day should be limited in frequency and duration (e.g. up to four times per day for up to 10 minutes each) to avoid welfare impacts. As with dispersal, it is also critical to avoid periods when dependent young are present (as identified by a flying-fox expert).

E.3.2 Dispersal

Dispersal aims to encourage a camp to move to another location, through either disturbance or habitat modification.

There is a range of potential risks, costs and legal implications that are greatly increased with dispersal (compared with in situ management as above). See Appendix 6 for more details. These include:

- impact on animal welfare and flying-fox conservation
- splintering the camp into other locations that are equally or more problematic
- shifting the issue to another area
- impact on habitat value
- effects on the flying-fox population, including potential increase in disease susceptibility and associated public health risk
- impacts to nearby residents associated with ongoing dispersal attempts
- excessive initial and/or ongoing effort and financial investment required
- negative public perception and backlash
- unsuccessful management requiring multiple attempts, which may exacerbate all of the above.

Despite these risks, there are some situations where camp dispersal may be considered. Dispersal can broadly be categorised as 'passive' or 'active' as detailed below.

Passive dispersal

Removing vegetation in a staged manner can be used to passively disperse a camp. This gradually makes the habitat unattractive to flying-foxes so they will disperse of their own accord over time with relatively little stress compared to active dispersal. This greatly reduces the risk of splinter colonies forming in other locations. Flying-foxes are more likely to move to other known sites within their camp network when not being forced to move immediately, as in active dispersal.

Generally, a significant proportion of vegetation needs to be removed in order to achieve dispersal of flying-foxes from a camp or to prevent camp re-establishment. For example, flying-foxes abandoned a camp in Bundall, Queensland once 70% of the canopy/mid-storey and 90% of the understorey had been removed (Ecosure 2011). Ongoing maintenance of the site is required to prevent vegetation structure returning to levels favourable for colonisation by flying-foxes. Importantly, at nationally important camps (defined in Section 4.2.1) sufficient vegetation must be retained to accommodate the maximum number of flying-foxes recorded at the site.

Vegetation removal may be preferable in situations where the vegetation is of relatively low ecological and amenity value, and alternative known permanent camps are located nearby with capacity to absorb the additional flying-foxes. While the likelihood of splinter colonies forming is lower than with active dispersal, if they do form following vegetation modification there will no longer be an option to encourage flying-foxes back to the original site. This must be carefully considered before modifying habitat.

There is also potential to make a camp site unattractive by removing access to water sources; however, at the time of writing this method had not been trialled so the likelihood of this causing a camp to be abandoned is unknown. It would also likely only be effective where there are no alternative water sources in the vicinity of the camp.

Active dispersal through disturbance

Dispersal is more effective in the short term when a wide range of tools are used on a randomised schedule, with animals less likely to habituate (Ecosure pers. obs. 1997–2015). Each dispersal team member should have at least one visual and one aural tool that can be used at different locations on different days (and preferably swapped regularly for alternate tools). The exact location of these and positioning of personnel will need to be determined on a daily basis in response to flying-fox movement and behaviour, as well as prevailing weather conditions (e.g. wind direction for smoke drums).

Active dispersal will be disruptive for nearby residents given the timing and nature of activities, and this needs to be considered during planning and community consultation.

This method does not explicitly use habitat modification as a means to disperse the camp; however, if dispersal is successful, some level of habitat modification should be considered. This will reduce the likelihood of flying-foxes attempting to re-establish the camp and the need for follow-up dispersal as a result. Ecological and aesthetic values will need to be considered for the site, with options for modifying habitat the same as those detailed for buffers above.

It should be noted that active dispersal generally requires ongoing dispersal attempts to prevent flying-foxes re-establishing the camp. The cost of ongoing dispersal attempts is likely to be prohibitive for most land managers.

Early dispersal before a camp is established at a new location

This management option involves monitoring local vegetation for signs of flying-foxes roosting in the daylight hours and then undertaking active or passive dispersal options to discourage the animals from establishing a new camp. Even though there may only be a few animals initially using the site, this option is still treated as a dispersal activity; however, it may be easier to achieve dispersal at these new sites than it would in an established camp. It may also avoid the considerable issues and management effort required should the camp be allowed to establish in an inappropriate location.

It is important that flying-foxes feeding overnight in vegetation are not mistaken for animals establishing a camp.

Maintenance dispersal

Maintenance dispersal refers to active disturbance following a successful dispersal to prevent the camp from re-establishing. It differs from initial dispersal by aiming to discourage occasional over-flying individuals from returning, rather than attempting to actively disperse animals that have been recently roosting at the site. As such, maintenance dispersal may have fewer timing restrictions than initial dispersal, provided that appropriate mitigation measures are in place (see Section 10).

E.4 Unlawful activities

E.4.1 Culling

Culling is addressed here as it is often raised by community members as a preferred management method; however, culling is contrary to the objects of the BC Act and will not be permitted as a method to manage flying-fox camps.