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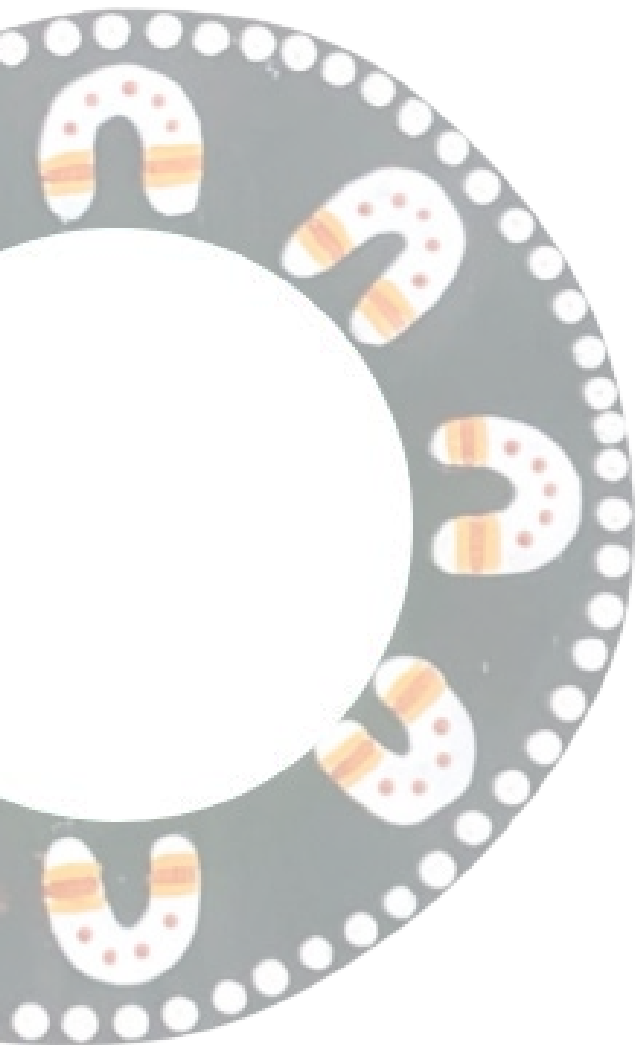
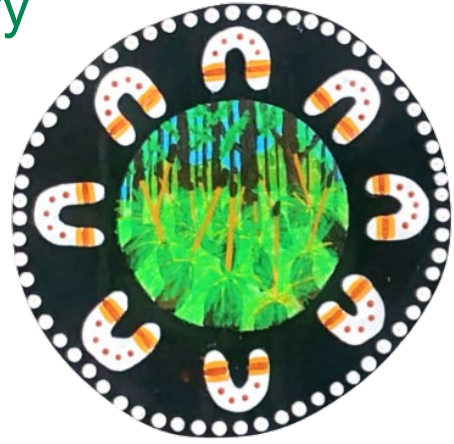
**ROSALIND PARK MANAGEMENT PLAN:  
COEXISTENCE WITH FLYING-FOX AND IBIS)**

June 2025

CITY OF GREATER BENDIGO

## Acknowledgement of Country

The City of Greater Bendigo and Ecosure acknowledge the Traditional Custodians of the lands and waters where we work. We pay deep respect to Elders past and present who hold the Songlines and Dreaming of this Country. We honour and support the continuation of educational, cultural and spiritual customs of First Nations peoples.



## Acknowledgements

We would like to thank City of Greater Bendigo for assistance during development of the Plan, particularly Chris Mitchell (Manager Parks & Open Space) and Kerina McIntyre (Coordinator Heritage Gardens and Amenity Landscapes). We gratefully acknowledge internal and external stakeholders for providing feedback during workshops and everyone who participated in the online survey. Feedback from this consultation has been used to inform the Plan.

## Acronyms, abbreviations, and definitions

ABLV	Australian Bat Lyssavirus
ATCW	Authority to Control Wildlife - <i>Wildlife Act 1975</i>
CoGB	The City of Greater Bendigo Council
DEECA	Department of Energy, Environment and Climate Action (Victoria)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EWP	Elevated work platform
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i> (Victoria)
GHFF	Grey-headed flying-fox ( <i>Pteropus poliocephalus</i> )
the Guideline	Referral guideline for management actions in grey-headed and spectacled flying-fox camps (DoE 2015)
HeV	Hendra Virus
Ibis	Australian white ibis ( <i>Threskiornis molucca</i> )
IMCG	Australian White Ibis Management Coordination Group
LGA	Local government area
MNES	Matters of National Environmental Significance – <i>Environment Protection and Biodiversity Conservation Act 1999</i>
NSW	New South Wales
Species expert	A species expert is a person knowledgeable about flying-fox and ibis behaviour and is able to demonstrate experience in successfully: (a) classifying species; (b) assessing population numbers; (c) identifying breeding cycles; (d) recognising signs of distress or harm
the Park	Rosalind Park
the Plan	Rosalind Park Management Plan: Coexistence with Flying-fox and Ibis (this will form part of the overall Rosalind Park Plan of Management, which will be developed by City of Greater Bendigo)
Qld	Queensland
Wildlife Act	<i>Wildlife Act 1975</i> (Victoria)

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# 1 Introduction

This Rosalind Park Management Plan: Coexistence with Flying-fox and Ibis (the Plan) provides the City of Greater Bendigo (CoGB) with a framework to manage flying-foxes and ibis within Rosalind Park (the Park). The Plan outlines strategies to foster coexistence, minimise human-wildlife conflict, maintain public use of the Park, whilst ensuring conservation of these ecologically important native species. This Plan will be part of an overall Rosalind Park Plan of Management, which will be developed by CoGB.

Two species of flying-foxes have been recorded roosting at Rosalind Park: the grey headed flying-fox (*Pteropus poliocephalus*; GHFF) and the little red flying-fox (*P. scapulatus*; LRFF) (Appendix 1). Rosalind Park is a daytime flying-fox roost, which is also known as a camp<sup>1</sup>. Flying-foxes leave their roosts at night to forage within a 25-50 km radius (Eby 1991, Roberts et al. 2012, Welbergen et al. 2020), which may include the Park at times, but the broader landscape is more important for foraging than the Park. GHFF have been recorded roosting at Rosalind Park since 2010 and is generally present year-round, with fluctuations in numbers following a seasonal trend, typically increasing in autumn and winter. LRFF are occasional visitors in the summer months. The Park is a maternity site for the GHFF but not the LRFF; the LRFF predominantly births and rears its young in northern Australia.

Australian white ibis (*Threskiornis molucca*; hereafter referred to 'ibis') regularly occupy the Park, primarily in the north-eastern extent of the Park where they nest (typically July to December).

Ongoing roost occupation and seasonal influxes of flying-foxes and ibis at the Park have resulted in conflict with some Park users and surrounding businesses, and difficulty for CoGB staff accessing and maintaining the Fernery. The main impacts experienced at the Park are noise, odour, and faecal drop with some concerns over potential health impacts. The Fernery has been closed to visitors while CoGB engaged with the state government and other stakeholders to ensure maintenance activities do not impact flying-foxes and ibis.

The Plan includes a range of short-, medium-, and long-term actions to minimise conflict between humans, flying-foxes and ibis at the Park. CoGB aims to conserve flying-foxes and the critical ecosystem services they provide whilst allowing the community to utilise the Park.

This Plan has been developed in line with relevant legislation and the Rosalind Park Masterplan and Management Framework (CoGB 2014), with input from the community, and other Rosalind Park stakeholders.

The CoGB recognises the ecological and cultural importance of flying-foxes and ibis in sustaining the region's unique biodiversity. The CoGB also acknowledges the impact flying-foxes and ibis may have on the community and is committed to implementing management actions that minimise impacts while also encouraging co-existence.

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<sup>1</sup>Camp is the term generally used in Victoria to describe a flying-fox roost; in this Plan 'roost' is used for simplicity to describe the site for both flying-foxes and ibis.

## 1.1 Objectives

Objectives of the Plan are to:

- outline suitable short-, medium- and long-term management strategies for the Park, with consideration to the dynamic nature of the roost (e.g. seasonal influxes, ibis nesting), that minimise negative impacts experienced by the community and CoGB staff
- outline strategies to maintain public use and heritage values of the Park and the Fernery whilst ensuring public safety and animal welfare
- ensure management options reflect CoGB's intention to manage impacts and conserve GHFF in the local government area (LGA), and support ways for the community to co-exist with flying-foxes
- outline actions to maintain a sustainable level of ibis at the Park
- facilitate ongoing engagement with Traditional Owners, community, community groups, government, and other stakeholders
- foster community understanding and appreciation of flying-foxes and ibis including their ecological role
- ensure compliance with legislation.

## 1.2 Legislation overview

All native wildlife, including the GHFF, LRFF, and ibis, are protected in Victoria under the *Wildlife Act 1975* (Wildlife Act). The GHFF is also listed as vulnerable under the *Flora and Fauna Guarantee Act 1988* (FFG Act) and the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

### 1.2.1 Authority to control wildlife

Anyone wishing to control wildlife in Victoria must have authorisation from the Department of Energy, Environment and Climate Action (DEECA). Under the Wildlife Act, an Authority to Control Wildlife (ATCW) is required to 'wilfully scare, harass, disperse, trap or relocate wildlife' noting that 'routine activities such as mowing or other activities which may cause wildlife to be unintentionally disturbed do not require an authorisation under the Wildlife Act' (DEECA 2022).

Under the Wildlife Act, harming a native species can result in a significant fine or imprisonment. Further penalties may apply under the *Prevention of Cruelty to Animals Act 1986*.

### 1.2.2 Nationally important roosts

As a Commonwealth-listed species, the GHFF is a Matters of National Environmental Significance (MNES) (DoE 2013). The Park is classified as a nationally important GHFF roost. To be considered a nationally important GHFF roost, it must have had more than one influx of 10,000 GHFF within the last 10 years, and/or have been occupied by more than 2,500 GHFF permanently or seasonally for the last 10 years. These criteria are stated in the 'Referral guideline for management actions in grey-headed and spectacled flying-fox camps' (the Guideline) (DoE 2015).

The following actions in or near GHFF roosts are defined in the Guideline as being unlikely to require referral under the EPBC Act because they are unlikely to have a significant impact, include:

- minor, routine roost management at any roost
- clearing some vegetation or other indirect impacts on nationally-important flying-fox camps that are carried out in accordance with the mitigation standards
- clearing vegetation, dispersal of animals, in situ flying-fox management or other impacts on flying-fox roosts, that are not nationally important flying-fox roosts, that is carried out in accordance with state or territory regulatory requirements.

Referral is required if a significant impact to GHFF or any other MNES is considered likely. Self-assessable criteria are available in the Significant Impact Guidelines 1.1 (DoE 2013) to assist in determining whether a significant impact is likely; otherwise consultation with the Commonwealth is required.

## 2 Site context and values

The Park Precinct is located immediately to the north of the Bendigo City-centre and is an important area for residents and visitors. The Park provides a range of opportunities for the community and surrounding businesses, including as a key venue for events such as:

- Fireworks on New Years Eve (Dec/Jan)
- Easter Festival (Mar/Apr)
- Wine Festival (Apr)
- Electric Wonderland Winter Festival (Jun-Jul)
- Bloom (Sep-Oct)
- Christmas Tree and Carols (Dec)
- Private events and weddings (year-round).

The Park was added to the Victorian Heritage Register in 2000 for its historic, archaeological, aesthetic, botanical, and architectural significance to Victoria.

Flying-foxes are a significant animal to the Jarra people, as they are known as peace-keepers. Information on this Dreaming story can be found [online](#).

### 2.1.1 The Fernery

The Fernery, located in the north-eastern corner of the Park, is a historically significant area of the Park. The Fernery is an open-air botanical display surrounded by heritage-listed river red gums (*Eucalyptus camaldulensis*). Once a natural billabong along the Bendigo Creek, the Fernery was planted in the late 1800's with native Victorian ferns and a palm collection, and constructed with water features, bridges, rockeries, and gravel paths (Friends of Bendigo Botanic Garden n.d.). The Fernery is shaded by the river red gums and other surrounding trees, providing a cool microclimate for the ferns and wildlife, including the GHFF. The Fernery has been referred to as one of the biggest open-air ferneries in the southern hemisphere and has a history of being used as a wedding venue (C. Mitchell 2023, pers. comm.). The Fernery has been closed to visitors while CoGB engage with state government and other stakeholders to ensure maintenance activities do not cause harm to flying-foxes and ibis, which would be in breach of the Wildlife Act.

## 2.2 Roost history

### 2.2.1 Flying-foxes

Flying-foxes were first recorded roosting at the Park in March 2010. Since then, GHFF have occupied the Park on a permanent basis with seasonal fluctuations. The Park has been monitored regularly since November 2012 as part of the National Flying-Fox Monitoring Program (see further detail in Section 2.5) (see Vanderduys et al. 2024). Generally, there are higher numbers during autumn and winter (Figure 1). There have been two notable large influxes in October 2010 (~30,000 GHFF) and May 2023 (~38,000 GHFF). The Park is a maternity roost as breeding and birthing has been documented (DEECA 2023a, Ecosure 2024). Small numbers of LRFF have been recorded occasionally at the Park, typically in the summer months.

The roost is generally located in the north-eastern extent of the Park, around the Fernery (Figure 2). When numbers have increased, the roost has extended across the majority of the eastern half of the Park.

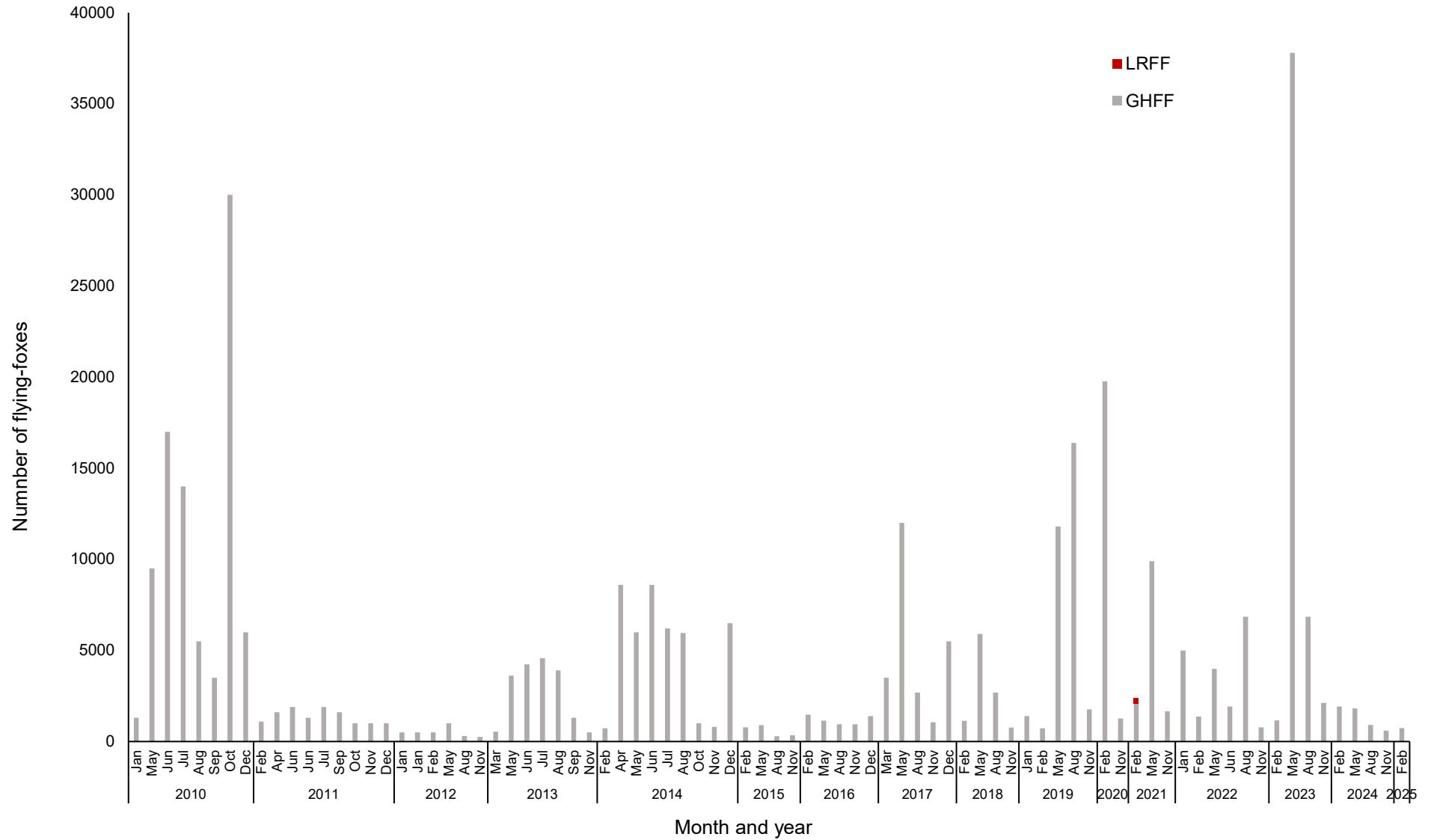


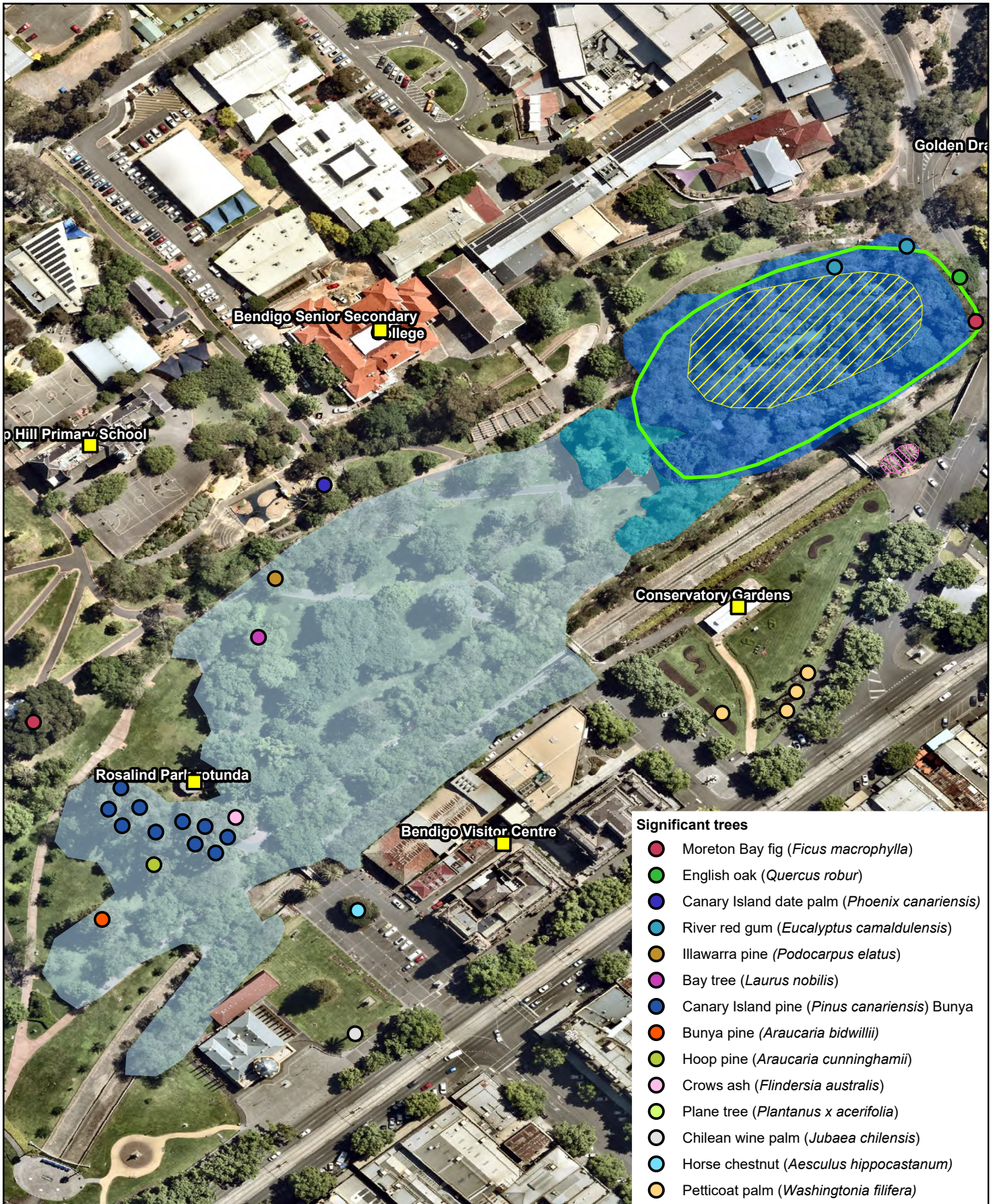
Figure 1 Rosalind Park flying-fox roost population monitoring from 2010 2025 (Source: DEECA 2025)

### 2.2.2 Australian white ibis

While no formal monitoring of ibis numbers at the Park has occurred, an increase in numbers has been noted since 2020 (K. McIntyre 2023, pers. comm.). Recently, there has been anecdotal reports that up to 200 ibis can be present in the Park at any given time. ibis roost and nest in the Park, predominately in the north-eastern area (in the Fernery) and within the Canary Island date palms (*Phoenix canariensis*) around the Park (Figure 2). ibis are generally seen foraging within the semi-natural areas of the Park, such as along Bendigo Creek and grassed areas. There has also been reports of ibis pulling food out of the bins within the Park (K. McIntyre 2023, pers. comm.).

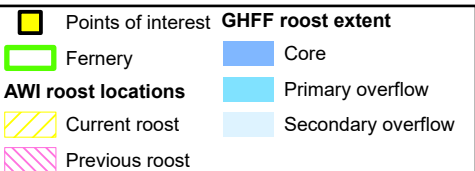
There is currently no formal monitoring of ibis in the LGA, however their numbers are reported to be increasing, including at the Epsom water reclamation plant (C. Mitchell 2023, pers. comm.). Some known ibis colonies within the LGA have been impacted by developments over the last few years (K. McIntyre 2023, pers. comm.). It seems likely that some of the ibis dispersed from these sites relocated to the Park and that this has contributed to their increase in numbers. Ibis are also known to forage at Eaglehawk Landfill, which is approximately four kilometres from the Park.

Increased numbers of ibis in the Fernery has resulted in increased smell and mess (e.g. faecal mess, vegetation debris, deceased birds), and has made it difficult for CoGB staff to undertake maintenance within the Fernery. Ibis related impacts at the Park peak around October through to summer, which aligns with an increase in ibis roosting and nesting numbers.



**Figure 2: Site context**

City of Greater Bendigo  
 Rosalind Park Flying-fox and Ibis Management Plan



## 2.3 Impacts

Impacts currently associated with flying-foxes, ibis, and the Fernery being closed include:

- amenity due to odour, noise, and mess
- disruption to private and community events, especially during large influxes of GHFF
- concern regarding aircraft collision with flying-foxes due to the close proximity of Bendigo Hospital helicopter landing pad
- increased nutrient levels within the water canals located in the Fernery
- concerns about potential impacts to heritage-values (including damage to heritage-trees)
- damage to ferns in the understorey from nutrient loading and ibis directly removing plantings
- community members and CoGB staff being unable to access the Fernery, especially during peak GHFF influxes (e.g. autumn/winter and summer during potential heat stress events for GHFF) and as ibis numbers increase
- increased maintenance required by CoGB staff
- shifting GHFF extent due to ibis occupation in the Fernery
- peripheral impacts on business (visitation) and residents (clothes washing).

## 2.4 Site assessment

A site assessment was conducted 10-13 December 2024 by Ecosure Ecologists. The site assessment included walking around the entirety of the Park precinct with CoGB staff, taking note of GHFF and ibis presence, locations of roosting/nesting, general numbers of each species, general observations of site use, vegetation, amenities, and surrounding land use.

Approximately 1,500 GHFF were present in the north-eastern extent of the Park (Figure 2), and many dependent young were observed throughout the roost. Faecal mess was noted along footpaths and on fencing/gates where roost trees and food trees were overhanging.

Approximately 100 ibis were present in the north-eastern extent of the Park, foraging was observed in grassed areas and the creek, and approximately 15-20 nests were observed in palm trees and the Fernery. Significant faecal droppings were noted underneath ibis nesting areas, on footpaths, fencing, and gates surrounding the Fernery. Ibis nesting was also observed in a Canary Island date palm in the nearby Camp Hill Primary School playground (Figure 2).

Several trees have been lost in the Fernery and in other areas of the Park due to storm events, drought, and natural attrition due to old age. Additional damage has occurred with tree limbs failing due which is likely in part due to roosting flying-foxes and nesting ibis. These changes have led to a significantly more open canopy, which is less suitable for fern species. The altered, warmer, microclimate due to increased sunlight associated with the reduced tree canopy presents a significant challenge to maintaining the heritage listed Fernery in the short- to medium-term as replacement trees are grown.

Ibis are anecdotally noted flying between Rosalind Park and the Bendigo Transfer Station to feed. A site visit was undertaken at the Bendigo Transfer Station to assess ibis numbers and infrastructure. There were approximately 350 ibis loafing and feeding at the Bendigo Transfer Station, where they were able to freely access the general waste sorting area.

## 2.5 Previous management actions

The following actions have been implemented for flying-foxes and ibis at the Park:

- CoGB commissioned a discussion paper outlining management options available for the Park GHFF roost (Practical Ecology 2017). Following this, a GHFF Management Plan was developed (Practical Ecology 2019) outlining CoGB's strategy to maintain the Park as a roosting site, whilst minimising impacts experienced by the community at the Park.
- DEECA and CoGB have conducted quarterly counts as part of the National Flying-fox Monitoring Program. These counts are done following methods outlined in Westcott et al. 2011.
- CoGB undertakes general maintenance to preserve and maintain values of the Park. This includes a regular cleaning schedule where footpaths and park assets (fencing, park benches, etc.) are pressure cleaned to remove faecal mess.
- CoGB undertakes regular tree health assessments by a qualified arborist to ensure safety of park users and maintain the integrity of heritage listed trees.
- CoGB, DEECA, and the Central Victorian Bat Alliance have undertaken community engagement to inform the community of the ecological importance of flying-foxes (including the [Bat Buddies](#) program held at the Park).
- CoGB have removed ibis nest and eggs in palms surrounding the Park under an ATCW.
- DEECA and CoGB have been trialling the use of canopy-suspended cable system to provide additional roosting habitat for flying-foxes and a sprinkler cooling system aiming to reduce the impact of heat stress events for the GHFF within the Park (Section 2.5.1).
- COGB commissioned an updated Park management options report to assess the current situation, which included the additional challenge of nesting ibis (Ecosure 2024). This report assessed all available management options, including flying-fox dispersal which was deemed unsuitable and is not included in this Plan (see Appendix 2). The options report and consultation with the community and other stakeholders identified suitable management actions which are detailed in this Plan.

### 2.5.1 Flying-fox cable and cooling system

In 2020, as part of a trial to reduce GHFF heat stress mortality, and to reduce damage to vegetation from roosting, DEECA installed a cooling sprinkler system around the Fernery area. Cables were erected in mature elm and oak trees to provide additional roosting habitat for GHFF, with the intention to reduce direct pressure from roosting on the vegetation. GHFF have not been recorded using these installed cables to date (K. McIntyre 2023, pers. comm.).

A cooling system was installed, where water pipes were erected in mature trees with a misting sprinkler attached in the tree canopy. When temperatures exceed 35°C, the cooling system is turned on to provide a cooling effect for the roost.

### 3 Community and stakeholder consultation

Early and ongoing community engagement has benefits for both communities and land managers. Early and ongoing community engagement ensures that land managers are aware of community needs and the community understands CoGB’s responsibility to conserve wildlife and their important ecological roles.

This Plan was developed with input from the community via an online survey and engagement with internal and external stakeholders. Feedback through this consultation process has been summarised below and incorporated into management actions in Section 4.

#### 3.1 Community survey

The survey was hosted on the CoGB Let’s Talk platform from November 11 to December 2, 2024. Hard copy surveys were also available at CoGB buildings. The survey was advertised prior to and during the open period via the CoGB website and media release.

The survey was completed by 308 community members from within the LGA. Some respondents lived within 300 m of the Park (1% within 100 m and 3% 100-300 m), with most (81%) living more than 1 km away. Eighty-six respondents (28%) work and/or own a business near the Park (within 1 km). The majority (76%) of respondents visit the Park at least once per month, with the remainder either visiting sporadically (19%) or never (5%) (Figure 3).

Multi Choice | Skipped: 1 | Answered: 307 (99.7%)

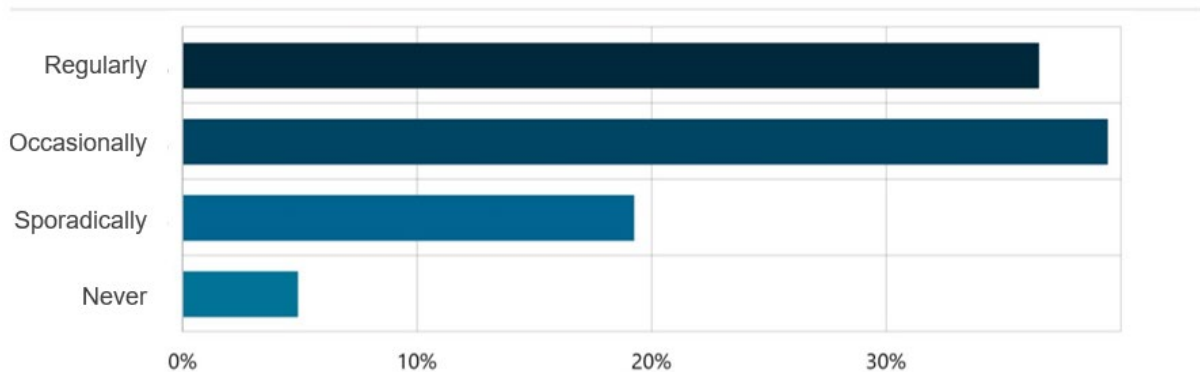


Figure 3 Rosalind Park visitation amongst survey respondents

Of the 305 responses to the question ‘How would you rate your interactions with flying-foxes at Rosalind Park?’, more than half chose negative (62%), a quarter chose positive (25%), and the remainder were neutral (13%) (Figure 4).

Of the 301 responses to the question ‘How would you rate your interactions with ibis at Rosalind Park?’, half were neutral (51%), followed by negative (38%), and the remainder positive (11%) (Figure 5).

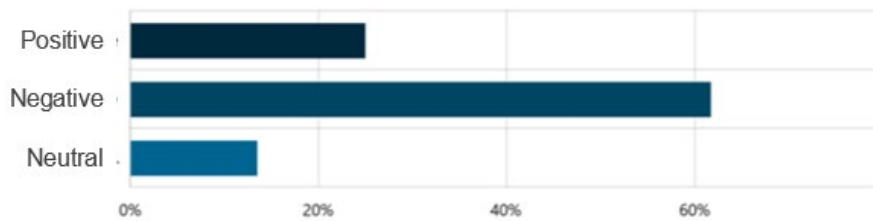


Figure 4 Responses to the question 'How would you rate your experience or interactions with flying-foxes at Rosalind Park?'

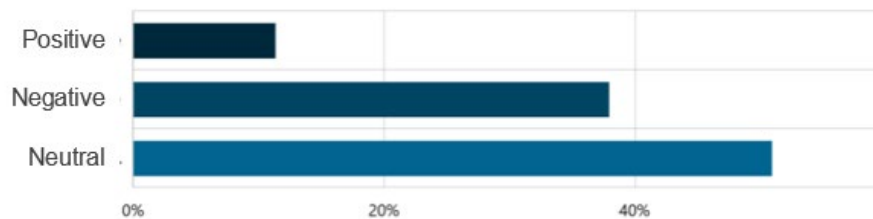


Figure 5 Responses to the question 'How would you rate your experience or interactions with ibis at Rosalind Park?'

A key objective of the survey was to understand the importance the community placed on re-opening the Fernery. When asked if respondents would like to see the Fernery re-opened to the public, the overwhelming response was 'yes' (88%; n=270) highlighting the value of this space to the community (Figure 6). It is noteworthy that of those community members who responded 'no' (12%; n=34), almost all commented that their reasoning was they wanted to see the flying-foxes and other wildlife prioritised in this area.

Multi Choice | Skipped: 0 | Answered: 308 (100%)

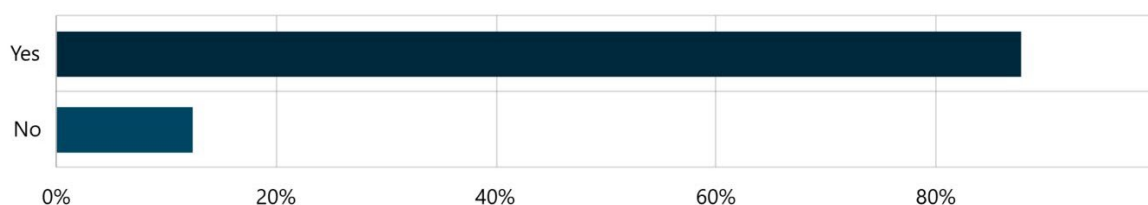


Figure 6 Responses to the question 'Would you like to see the Fernery re-opened to the public in the future?'; note, this was one of the few required survey questions without the option to skip

Note, for the following questions participants were able to select multiple responses so total response rates are >100%.

The issues of concern for the highest number of respondents with both flying-foxes (Figure 7) and ibis (Figure 8) were mess (76% and 49%, respectively) and smell (75% and 43%, respectively), followed by damage to vegetation (57% and 34%, respectively). Concern about disease was reported in relation to both flying-foxes and ibis (19% and 16%, respectively).

Additional topics of concern included: habitat protection (19%), flying-fox welfare (15%), flying-fox conservation (13%), ibis welfare (12%), and a proportion had no concerns around flying-foxes (6%) or ibis (24%) (Figure 7 and Figure 8).

Respondents reported issues associated with feeding/foraging by flying-foxes (12%) and/or

ibis (18%). Flying-foxes commonly forage up to 10 km from their daytime roost each night and can travel significantly further (Meade et al. 2021; see Appendix 1) and ibis can easily travel 25-35 km between nesting sites and feeding areas (Ecosure 2013; Martin et al. 2011), so managing foraging impacts is only possible at a property-level. As such this impact is largely outside the scope of this Plan which is focussed on the Park, however CoGB will support residents in understanding how to manage these impacts at a property level.

Multi Choice | Skipped: 1 | Answered: 307 (99.7%)

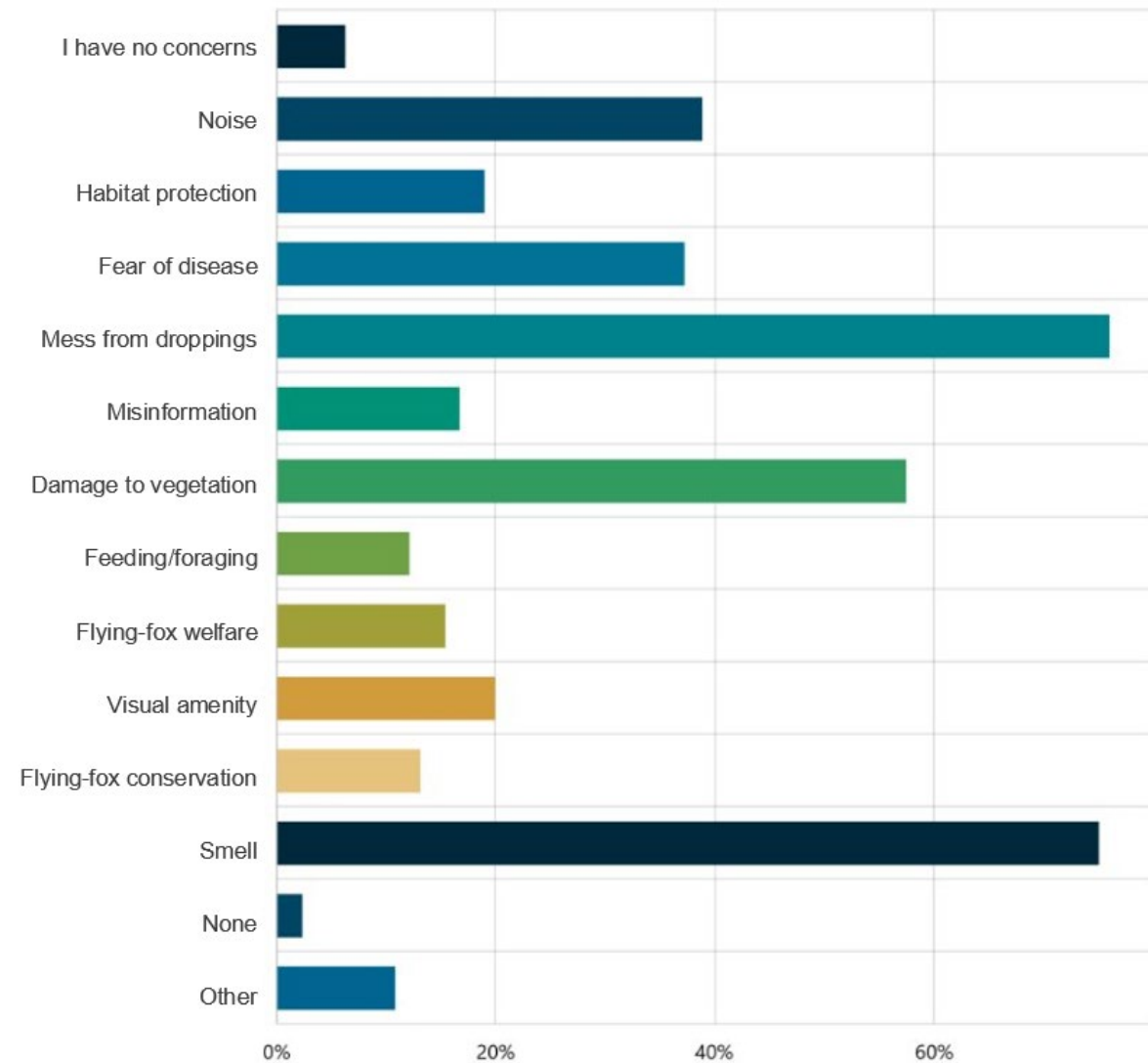


Figure 7 Topics respondents considered an issue at Rosalind Park in relation to flying-foxes

Multi Choice | Skipped: 17 | Answered: 291 (94.5%)

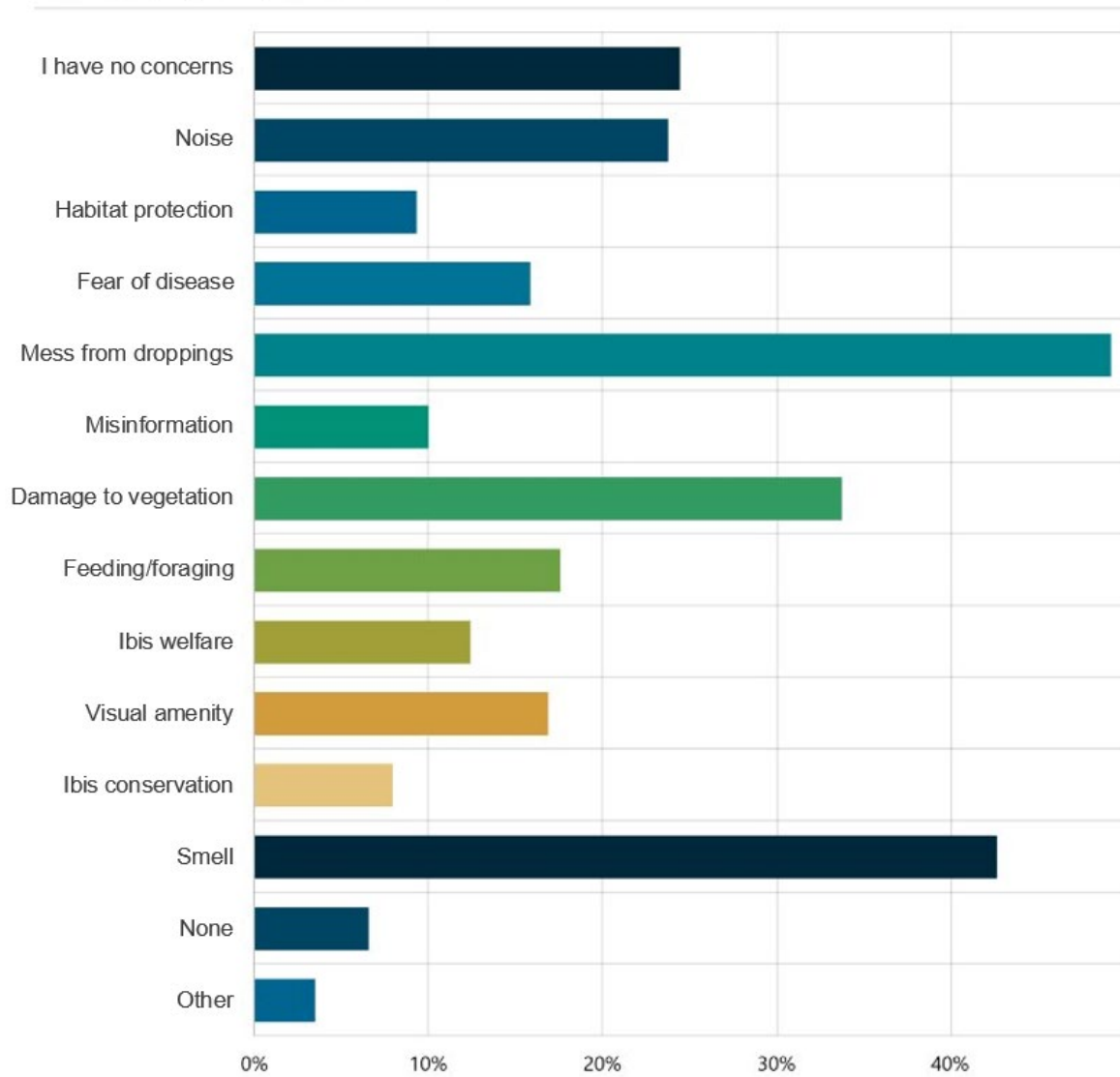


Figure 8 Topics respondents considered an issue in relation to ibis

The most favoured management options were (Figure 9):

- use of plants that flying-foxes and ibis don't like to create buffers (60%)
- use of deterrents to create buffers (47%)
- park modifications (42%)
- community education (36%).

An open comment section was provided for Other Management Options. The comments received for each topic were all less than 5%, they related to relocation/dispersal, provision of habitat elsewhere, the desire for no flying-fox/ibis management, exclusion of flying-fox/ibis from the Fernery (e.g. wire roof), and some general comments about wanting more sectioned and varied displays and park benches in sunny areas. There were also several respondents wanting to cull flying-foxes and ibis. Culling is illegal and is inappropriate given both species movement behaviour; culling is not considered in this Plan. It was also a common view that flying-foxes and ibis are not native to Bendigo. Education programs should include discussion of the growing importance of urban areas for flying-foxes, including the threatened GHFF.

The least favoured option (Figure 10) was protecting flying-fox and ibis roost habitat (55%), although conversely in the prior question this was a favoured option for many respondents (24%) (Figure 10). The other least preferred options were removing vegetation to create buffers and tree trimming (44% and 34%, respectively).

An open comment section received a range of responses further detailing preferred management which has been considered in the Plan. A strong theme of appreciation was conveyed by respondents, thanking CoGB for providing the community with the 'beautiful Rosalind Park'. This positive feedback was provided by respondents who had positive and negative experiences with flying-foxes and/or ibis.

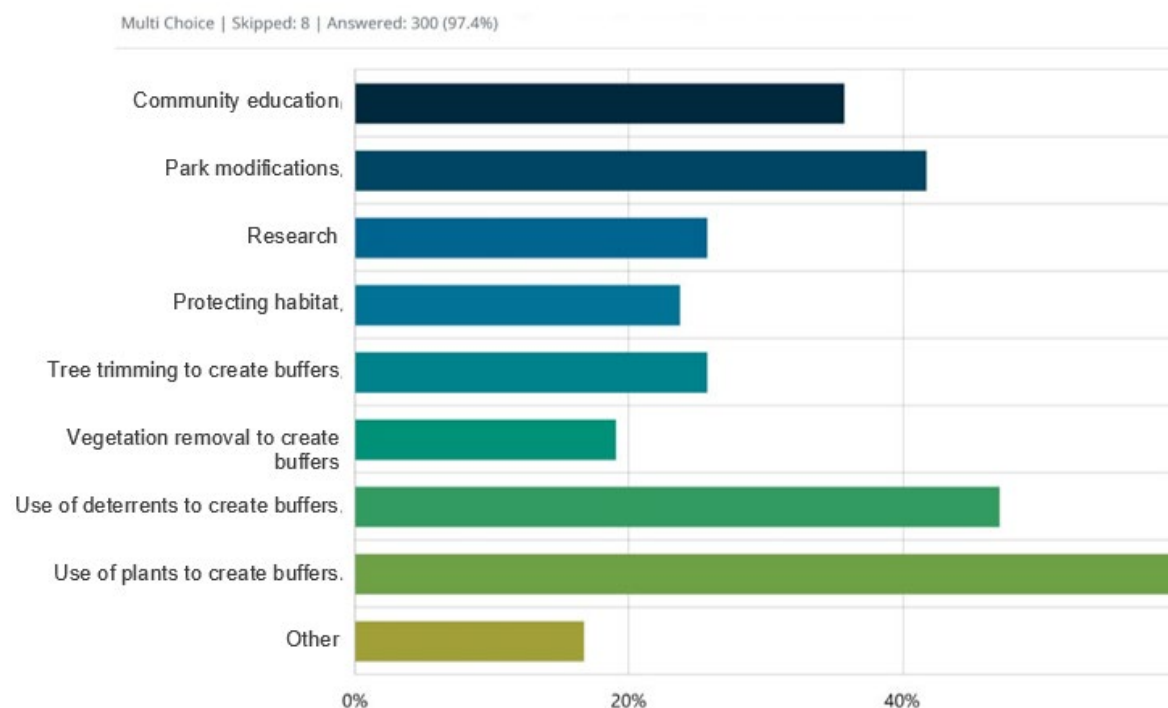


Figure 9 Level of support for presented management options

Multi Choice | Skipped: 64 | Answered: 244 (79.2%)

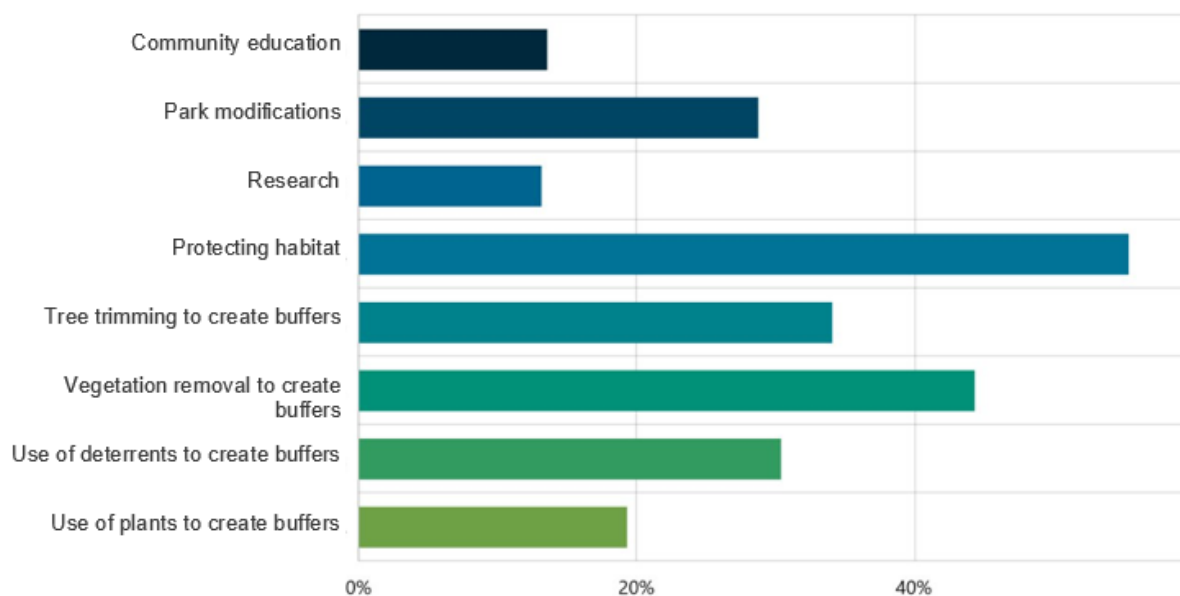


Figure 10 Management options that did not appeal to respondents

## 3.2 Stakeholder and partner engagement

Key stakeholders and partners were engaged with on 11-13 December 2024, including:

1. CoGB operational staff
2. CoGB directors and managers
3. Business and community representatives including Dja Dja Wurrung Clans Aboriginal Corporation, National Trust, Heritage Advisory Committee, Central Victorian Bat Alliance, Bendigo Chinese Association, and the Golden Dragon Museum
4. DEECA.

Topics discussed included:

- site context and values including legislative framework (heritage and biodiversity)
- review of Plan objectives (agreed objectives presented in Section 1.1)
- community survey results (Section 3.1)
- management options (supported options incorporated into Section 4 ).

## 4 Management

### 4.1 Aims

This Plan contributes to the overall success of the Park, including its serviceability and protection of heritage values. This will be achieved by focussing on the following overarching management aims<sup>2</sup> for flying-fox and ibis:

- i. Re-open the Fernery.
- ii. Reduce nesting and numbers of ibis in the Park.
- iii. Foster coexistence with flying-foxes and ibis in the Park whilst maintaining the values of the Park.
- iv. Prepare for temporary large influxes of GHFF to minimise concerns and disruption for the community.

Actions to achieve these management aims, in the context of the objectives in Section 1.1, are outlined in Table 1. Management areas are mapped in Figure 11.

#### 4.1.1 Re-opening the Fernery

CoGB appreciates this is a priority for the community (Section 3.1) and is committed to restoring and re-opening the Fernery. It is important to recognise that vegetation in the Fernery has changed significantly. Trees have been lost due to storm events, drought, natural attrition, and some areas have had limb-fall which has likely been exacerbated by roosting flying-foxes and nesting ibis. These processes have led to a significantly more open canopy which is less suitable for fern species.

CoGB will increase succession planting, and there will be some areas where the objective of restoration will be to keep the look and feel of the historical Fernery. However much of the area will be more open and look and feel different. This provides an opportunity for the addition of new and exciting activities, such as interactive displays and walks, including those which celebrate having a threatened species in the Park and the CoGB. The CoGB planning and design teams will be creating a new plan for the Fernery that will add value to the Park for the community and visitors, and attract business to the surrounding areas.

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<sup>2</sup>These management aims were identified during the community and stakeholder consultation (Section 3.2).

## 4.2 Actions

Management actions for CoGB over the life of the Plan are outlined in Table 1. Key management areas are mapped in Figure 11. The timing of each action will be dependent on the available resources and the outcomes of the flying-fox and ibis monitoring (Section 4.4.2). Property-level options to help minimise impacts from roosting and foraging flying-foxes are included in Appendix 3.

Table 1 Management actions for Rosalind Park. \*Human safety and flying-fox/ibis impact avoidance measures apply to all actions (see Sections 4.3 and 4.4). Suggested management timing is provided in Section 4.4.1

Management aim	Category	Action	Approval required*
Re-open the Fernery	Maintenance	Develop a work instruction for CoGB staff for regular maintenance works in the Fernery (as per action below). This should outline where, when and how maintenance activities will be implemented and what will be done to reduce impacts to the flying-fox.	N/A.
		Commence staged works to re-open the Fernery (as per the work instruction; see action above) - remove fallen debris, manage weeds (e.g. tobacco ( <i>Nicotiana glauca</i> ) and Cocos palms ( <i>Syagrus romanzoffiana</i> )), clear and pressure wash footpaths, maintain infrastructure and infill plant (including potentially light-tolerant ferns in suitable areas). <i>Pittosporum</i> ( <i>Pittosporum sp.</i> ) which is invasive in the Fernery, is being used by roosting flying-foxes and nesting ibis so its removal will need to be over an extended timeframe to avoid displacing flying-foxes/ibis, potentially into other areas of the main gardens/adjacent properties. Additional resources required.	Approval not required for general maintenance (confirmed during consultation). DEECA approval may be required if high risk of disturbance e.g. machine use. Heritage approval potentially required.
	Park modification	Remove/relocate seating within the Fernery to areas not directly under roost trees to avoid vegetation debris and faecal mess. This should include some sunny locations as requested in the community survey. Seating may need to be occasionally moved on an ongoing basis depending on the dynamic of the roost and shifting extents.	N/A.
	Planning	Prepare a concept design for potential Fernery changes; implementation subject to available funding.	Possible heritage approvals.
Communication		Inform stakeholders and the general community about the works that will be undertaken in the Fernery (see action above).	N/A.

Management aim	Category	Action	Approval required*
Reduce nesting and numbers of ibis in Rosalind Park	Non-breeding season management	Remove old ibis nests across the Park once all chicks have fledged. Prune nesting trees immediately prior to each nesting season to reduce nesting platforms. Date palms should be pruned (e.g. to look like a “pineapple”) with only the minimum number of vertical fronds to maintain tree health. Consider installation of deterrents where egg and nest removals may be impractical. Possible nesting deterrents include canopy-mounted sprinklers and a strategic use of long, non-harmful spikes (not regular bird spikes, these can be effective to deter perching but will not prevent ibis nesting). An example is shown in Figure 12. These could be attached using a collar to avoid damaging palms. Deterrents should be trialled in one area to confirm efficacy. Strategic date palm removal may be required if deterrents are ineffective to minimise the need for an elevated work platform (EWP).	Authority to Control Wildlife (ATCW) permit required. Heritage approval may be required.
		Advocate for a LGA-wide ibis Management Plan to identify low-conflict nesting sites and other regional monitoring and management actions (e.g. managing artificial food sources that promote overabundant populations).	N/A.
	Breeding season management	Commence fortnightly* egg and nest removal at the start of the next breeding season (see Section 4.4.1). An EWP will be required in some areas (e.g. date palms). Monitoring of entire gardens and surrounds is required to allow timely management of new nesting locations in undesirable locations (e.g. Municipal Baths, Chinese Gardens <sup>^</sup> ). If any eggs are allowed to hatch, nest removal in that area will need to be postponed (i.e. at a minimum until the ibis chicks fledge the nest but depending on the number and location of chicks this may need to be until the next non-breeding season) to ensure chicks are not inadvertently impacted. It is critical that nest removal is done by a suitably qualified person, and each nest is checked thoroughly before removal (e.g. visually if working in an EWP, or with a remote camera). Care must be taken not to impact flying-foxes (and other native fauna species) during egg and nest removal, particularly during the critical rearing season (Section 4.4.1).  Noting: *The period between ibis laying an egg and it hatching is approximately 21 days so fortnightly egg and nest removal ensures that eggs do not have developed embryos (Marchant and Higgins 1990). <sup>^</sup> Ibis have nested in the Chinese Gardens previously; engagement with landholders will be required if management is needed outside of Rosalind Park (e.g. permitting and funding arrangements).	ATCW.
		Advocate to the Camp Hill Primary School for the removal of Cocos palms from the playground area. Cocos palms are an invasive species that currently support ibis nesting and flying-fox foraging with associated mess (and negative impacts on flying-foxes with Cocos palm toxicity, teeth wear and choking/entanglement hazard).	ATCW.

Management aim	Category	Action	Approval required*
Foster co-existence with flying-foxes and ibis	Park maintenance	Continue routine maintenance including cleaning of park assets (fences, gates, walkways, park benches, the rotunda, etc.), maintenance of the lawns and vegetation.	Not required for maintenance with appropriate impact mitigation measures (Section 4.4).
		Continue regular tree health assessments to ensure tree health and safety of park users.	N/A.
		Investigate additional resources for periodic flying-fox influxes and ibis nesting periods to allow additional cleaning/blowing of footpaths and chairs/path sweeping, etc.	N/A.
		Develop and implement a planting plan to ensure succession within the Fernery, and wider Park. Many of the trees in the Park are towards the end of their lifespan, and natural attrition has and will continue to occur. Succession planting is essential to ensure continued canopy cover in the Fernery for amenity and the flying-foxes. Native species resilient to roosting flying-foxes and ornamentals with a tough cambium layer should be selected where possible. Planting mature stock could be considered to fast-track this process.	N/A.
	Buffers with trimming / Park modifications	Limit mess on paths through a combination of strategic minor tree trimming and path covers/shelters in key areas i.e. highly trafficked areas with high amount of faecal drop, such as those identified in Figure 11. Trimming will only be in consultation with an experienced arborist to protect trees and heritage values. Structure design needs to consider heritage character, minimise cleaning requirements (e.g. self-cleaning through rain or hosing, with run-off into suitable garden/outlet with good drainage to avoid creating mosquito habitat), be high-set to avoid graffiti, non-climbable and well-lit for safety, and maintain connection of pedestrians to nature. Structures could be moveable (permanent concrete footings with moveable posts that lock in place) so they can be removed when not required, moved as roost extent changes, and temporarily removed for events (e.g. Christmas fire truck).	ATCW for trimming and construction. Heritage approvals for trimming and installation of structures.
Buffers through the use of deterrents	Consider deterring flying-foxes from strategic areas with canopy-mounted sprinklers on a rotational basis, if required, to allow areas to recover whilst also allowing flying-foxes to remain in the Park. Canopy-mounted sprinklers, and/or selective trimming, may also be used where flying-foxes are roosting in highly undesirable areas, such as the schools.	ATCW permit.	
Odour reducing/masking plants	Plant additional odour reducing creeping plant species on the Fernery fence line and increase shading around the periphery to improve conditions for ferns.	N/A.	

Management aim	Category	Action	Approval required*
	Education and awareness programs	Continue developing and sharing information for the community via the CoGB website, interactive and interpretative opportunities at the Park (e.g. signage and QR codes), social media posts, educational programs (including stalls at various events), media and other platforms. Communications should be increased during flying-fox influxes (or proactively before historical influxes) and could include installing temporary signage across the Park to alert users of the short-term nature of the influx.	N/A.
		Continue supporting community group/DEECA tours of the flying-fox roost such as the 'Bat Buddies' tour. Investigate opportunities to increase the frequency of these types of tours and coincide with other community events where possible to maximise attendance.	N/A.
		Provide species lists for community who either want to minimise foraging flying-foxes or species to plant to attract foraging flying-foxes (and birds) to their yards.	N/A.
	Event/construction management	Engage with internal and external stakeholders to ensure flying-fox and ibis welfare is considered in all aspects of events or other works at or adjacent to the Park (see Section 4.4).	Potential approval from DEECA if disturbance is likely.
		Develop a template for staff to complete when organising an event at the Park to consistently record information relevant to flying-foxes and ibis (e.g. the activities, timing and mitigation measures as outlined in Section 4.4).	N/A.
		Review the Parks current schedule of events (and any new events) to identify high-risk activities relevant to flying-foxes/ ibis and document mitigation measures (using the template developed in the action above).	Potential approval from DEECA if risk of harm (engage as required).
	Protocols to avoid impact / issues	Incorporate impact avoidance measures and information from this Plan into operational protocols (mowing, tree trimming, maintenance, construction) and training/inductions programs.	N/A.
		Support surrounding schools in education and awareness programs, and school development and implementation of suitable protocols e.g. daily sweeps by school staff for flying-foxes in school grounds.	N/A.
		Continue implementing human health and safety protocols e.g. food procedures near wildlife.	N/A.
		Continue responding to heat stress events in line with Victorian Response Plan for Heat Stress in Flying Foxes (DEECA 2023b) and working alongside wildlife carers to respond to other extreme weather events as required.	Approvals/requirements specific to protocol.

Management aim	Category	Action	Approval required*
Prepare for large influxes		Develop and finalise a Camp Heat Stress Plan for the Park in consultation with DEECA and other stakeholders. This should be consistent with the Victorian Response Plan for Heat Stress in Flying Foxes (DEECA 2023b) and provide details on local readiness and response arrangements for the Park.	DEECA and Traditional Owners.
		Communicate with relevant authorities including Ambulance Victoria during flying-fox influxes.	N/A.
		Develop protocols for adaptively managing events during high-risk periods (such as during summer, peak breeding season, and if influxes occur) to avoid impacts to events and flying-foxes. Strategies could include moving the location of the event to an area in the Park where there is no flying-foxes, or having an alternative location for the event if there is a large influx of flying-foxes across the entire Park.	N/A.
All	Stakeholder engagement	Continue engaging with Traditional Owners, the community, National Trust, Heritage Vic, DEECA, wildlife care and rescue groups and other stakeholders to ensure an inclusive vision of management of the Park.	N/A.
		Continue to attend regional landholder meetings coordinated by DEECA to ensure landscape engagement of landholders, coordinated monitoring and information sharing regarding flying-fox conservation and management.	N/A.
		Advocate for a regional Australian White Ibis Management Coordination Group (IMCG) with all stakeholders (e.g. DEECA, Bendigo Airport, landfill managers) to ensure a coordinated approach to ibis population monitoring and management in the region. IMCGs have been pivotal to the success of ibis management programs in Queensland, maintaining populations within a target population range and minimising impacts associated with overabundant ibis.	N/A.
	Research	Support research (e.g. assisting requests for research in CoGB) to improve knowledge of flying-foxes and ibis ecology and address knowledge gaps about these species behaviour. Research should also aim to investigate the efficacy of new, innovative management techniques.	Researcher will need to obtain relevant ethics/research approvals.
	Monitoring	Advocate for a regional flying-fox and ibis monitoring program in collaboration with other stakeholders, especially given the notable increase of ibis in the area. This includes monitoring of sites where flying-foxes and ibis are known to forage and/or roost.	N/A.



**Figure 11: Key management areas**

City of Greater Bendigo

Rosalind Park Flying-fox and Ibis Management Plan





Figure 12 Bird nest (left) and non-harmful spike as a nesting deterrent following removal (right) (Source Avisure)

### 4.3 Human health and safety

All animals have the potential to carry pathogens that can pose human health risks. Mitigating these potential risks is relatively easy. In general, the standard household hygiene practices we have in association with our pets is a good and simple starting point. For example, avoid contact with faeces, and wash your hands after touching an animal.

Flying-foxes are the natural host for Hendra Virus (HeV), which can be transmitted from flying-foxes to horses. Infected horses sometimes amplify the virus and can then transmit it to other horses and humans. There is no evidence that the virus can be passed directly from flying-foxes to humans (or dogs) (Queensland Health 2022).

Australian Bat Lyssavirus (ABLV) is a rabies-like virus that may be transmitted to humans through exposure to saliva of an infected flying-fox (or other bat). All known cases have been through a bite or scratch, however exposure to mucous membranes (eyes, mouth) could potentially also lead to infection.

Excluding those people whose occupations require contact with bats, such as wildlife carers and vets, human exposure to ABLV and HeV, transmission and frequency of infection is extremely rare. These diseases are also easily prevented through vaccination, personal protective equipment, safe flying-fox handling (by trained and vaccinated personnel only), and appropriate horse husbandry. Therefore, despite the fact that human infection with these agents can be fatal, the probability of infection is extremely low, and the overall public health risk is also judged to be low (DEECA 2025).

Under no circumstances should any staff/contractor/visitor attempt to touch or handle a flying-fox. If a flying-fox is on or near the ground, an exclusion area should be established and clearly demarcated to prevent close contact. The contact number of the local [wildlife rescue group](#) should be listed on a sign in the Park.

Any animal excrement can have bacteria or fungus present which can cause human health impacts if inhaled/swallowed. Avoiding contact and washing contact areas with soap are easy first steps.

The following minimum measures will protect personnel against known pathogens and transmission routes (note, Contractors are responsible for conducting their own risk assessment prior to commencing):

- wear appropriate PPE: long sleeves and pants, eye protection, gloves, broad-brimmed hat
- appropriate hygiene practices such as hand washing with soap and water before eating or smoking
- assess the risk of aerosoling excrement (e.g. ground disturbance) and provide suitable dust respirators if required [Working with Bird and Bat Droppings](#)
- if working underneath the active roost wash clothes daily. Work crews should also have a spare set of clothes to change into at end of shift in the event clothes are contaminated with urine/faeces. Contaminated clothes should be placed in a plastic bag for transport home and then immediately washed.

If a person is bitten or scratched by a bat, the area should be immediately washed (**not scrubbed**) with soap and water for at least five minutes, followed by application of an anti-viral antiseptic (e.g. Betadine) and immediate medical attention (post-exposure vaccinations may be required).

Medical attention should be immediately sought if a person is exposed to an animals' saliva or excreta through the eyes, nose, or mouth.

## 4.4 Flying-fox and ibis impact avoidance

High-risk activities (e.g. from maintenance works, events, construction) that could impact flying-foxes at the Park, particularly during critical periods of their breeding season, are outlined below. The ideal management schedule and measures to minimise impacts are also identified. CoGB will ensure risk to all other wildlife is avoided.

### 4.4.1 Timing

Based on the indicative breeding cycles of GHFF and ibis, Table 2 outlines the timing of low-, medium-, and high-risk to plan activities and mitigation measures.

With regards to GHFF, high-risk activities are those that result in:









- Sudden, loud noise and intense lighting e.g. fireworks, sound checks, lasers.
- High-pitched, percussive or vibrational sounds e.g. motorised chainsaws, vegetation chipping, installation/removal of temporary fencing during event bump in and bump out/rock being unloaded.
- Any large plant/vehicle/equipment within visual line of sight of the roost e.g. excavators, EWP, aircraft.

These high-risk activities should be avoided in close proximity to the roost during the GHFF moderate- to high-risk time of year (i.e. critical breeding season) where possible. Where rescheduling or moving activities is not possible, additional monitoring and activity-specific

advice will be required.

Table 2 Indicative critical periods for the GHFF and ibis along with appropriate management timing; note, the timing of breeding is indicative, out-of-season breeding can occur and monitoring by a species expert is recommended to avoid impacts

	GHFF		Ibis		Management Year 1	Management Year 2 onwards
	Stage	Risk	Stage	Risk		
Jan		H		H	Limit to hand tools near roost where possible.	Limit to hand tools near roost where possible. Fortnightly egg and nest removals.
Feb		H		H		
Mar		M		H		
Apr		L		L	Major maintenance and cleaning. Remove empty ibis nests.	
May		L		L	Major maintenance and cleaning.	
Jun		L		L	Major maintenance and cleaning. Prune palms, trim ibis nesting vegetation and platforms. Install ibis deterrents.	
Jul		L		M	Commence fortnightly egg and nest removals.	
Aug		M		H	Fortnightly egg and nest removals.	
Sep		M		H		
Oct		H		H	Fortnightly egg and nest removals. Limit to hand tools near roost where possible.	
Nov		H		H	Fortnightly egg and nest removals. Limit to hand tools near roost where possible.	
Dec		H		H	Fortnightly egg and nest removals. Limit to hand tools near roost where possible.	

	GHFF peak conception.
	GHFF trimester / ibis nesting.
	GHFF peak birthing / ibis likely with chicks in nests.
	GHFF crèching (from ~4 weeks of age).
	GHFF lactation.
	Low risk (L) – unlikely to cause impacts, preferred time for management and non-urgent maintenance/construction.
	Moderate risk (M) – may cause impacts without sufficient controls, advice required for any activities with high risk of impacts.
	High risk (H) – likely to cause impacts without sufficient controls, advice and monitoring required for any activities with high risk of impacts.

#### 4.4.1.1 Impact avoidance measures – non-critical breeding period

The following general measures will minimise the potential for flying-fox/ibis welfare impacts and apply to all times of year (note, these are in no particular order):

1. Monitoring prior to and during activities with triggers for when management activities must cease as detailed in Section 4.4.2.

2. All activities will be carried out in a sequential manner, beginning at the furthest distance where possible and moving towards the roost, to allow some level of habituation to noise and activity.
3. Equipment maintenance undertaken as far away from the roost as possible.
4. Initial start-up of equipment tested as far away from roost as possible to determine potential impact of noise. Where no impact is identified, incrementally move equipment towards roost.
5. Chipping of vegetation, if required, is to be undertaken as far away from the flying-fox roost as possible (at least 50 m). The impact of the chipper is to be monitored and if required, sound attenuation must be applied around the chipper to mitigate noise impacts. If the impact of noise cannot be mitigated, chipping must be completed off site.
6. All plant and equipment maintained to Australian Standards to minimise noise generation.
7. All plant and equipment highly visible to avoid strike/infrastructure-related mortality and stored away from the roost.
8. Where fencing/rock is being loaded or unloaded, this will be done as far from the roost as possible and noise attenuation is required (e.g. matting in the truck tray and foam or similar at unloading points).
9. An exclusion zone of at least 50 m maintained from roosting flying-foxes if temperatures reach or are predicted to reach  $>36^{\circ}\text{C}$ , or when stress is likely to already be increased (e.g. severe weather events), or otherwise as approved by an expert in flying-fox ecology and behaviour.
10. Trees should not be trimmed or felled when any animal is in or near a tree and/or likely to be harmed (with the exception of emergency situations).
11. Grass around roost trees will be replaced with mulch/plantings where possible to minimise mowing which can disturb flying-foxes.
12. Tree Protection Zones will be maintained around roost trees to protect integrity of trees (e.g. root health).
13. Matting will be used to protect grass from high foot traffic during events in areas where grass and potentially roost tree damage may occur.
14. Fireworks, and lasers/lights at canopy level, not used within 200 m of the roost.
15. A wildlife carer and veterinarian should be on stand-by to assist if required for activities that may result in unintentional harm.
16. Clear roles and responsibilities of all personnel on site communicated during inductions and daily pre-starts, including the requirement for all staff/contractors to comply with this Plan.
17. All personnel debriefed at the end of each day of works to allow methods to be adapted if required.
18. Personnel will work near the roost quietly in small teams, with electric tools where possible to avoid disturbance.
19. Communication maintained between all relevant personnel on site at all times.

#### 4.4.1.2 Impact avoidance measures – critical breeding period

In addition to general measures outlined in Section 4.4.1.1, the following apply for moderate- and high-risk periods in the breeding cycle shown in Table 2:

1. If high-risk activities (Section 4.4.1) in roosting areas cannot be timed to avoid critical breeding periods when dependent young are likely to be present for public safety or other unavoidable reasons, this should be identified in the planning process. CoGB will work with experts as required to avoid impacts during these times.
2. Activities likely to disturb flying-foxes or nesting ibis during the critical breeding season will be undertaken with advice from experts as required e.g. DEECA, species expert.
3. Based on this advice, works will be managed to avoid impacts noting that stop-work periods are more likely in the critical breeding period.
4. An exclusion zone of at least 50 m maintained from any tree with dependent young present, unless otherwise approved by a species expert.

#### 4.4.2 Monitoring and stop triggers

CoGB will keep internal records to monitor the effectiveness of mitigation measures and inform future planning. At a minimum, data will be collected before, during and after any high-risk management action in a moderate-high risk time of year (Section 4.4.1), including:

- date
- management activity
- management outcome
- observations for flying-fox and ibis:
  - estimated number of adults and young (note occasional evening assessments by a species expert may also likely be required to confirm flight progress of young)
  - roost extent
  - nest locations
  - young present
  - behaviour, potential reasons for disturbance if observed and course of action
- notes and general observations.

Signs of stress and risk to dependent young, and the action required for each are presented in Table 3. If any animal appears to be injured/killed as a result of any activity say something.

Table 3 Signs that flying-foxes/ibis may be stressed or at risk, and appropriate mitigation actions

Potential impact	Signs	Action
Stress	Flying-foxes: <ul style="list-style-type: none"> <li>· panting</li> <li>· saliva spreading</li> <li>· located on or within 2 m of the ground</li> <li>· unusual vocalisations.</li> </ul> Flying-foxes/ibis: <ul style="list-style-type: none"> <li>· more than 30% of the roost takes flight</li> <li>· individuals in flight for more than five minutes</li> <li>· more than 30% of adults appear to be leaving the roost.</li> </ul>	Works to cease in the immediate area for the day. Species expert may determine whether work can continue in alternative areas of the site.  If an event is in place which cannot be modified, DEECA and/or a licensed carer/expert must be contacted immediately for advice.
Dependent young at risk	Flying-foxes: <ul style="list-style-type: none"> <li>· adults moving away from dependent young</li> <li>· adults carrying young being disturbed.</li> </ul> Ibis: <ul style="list-style-type: none"> <li>· nestlings becoming stressed at risk of jumping/falling.</li> </ul>	Works to cease in the area, and potential need for rescue determined. If dependent young are dropped/abandoned, DEECA will be contacted to discuss the best way forward.  A fauna spotter catcher should be present during trimming/vegetation management if any other wildlife may be present (e.g. bird nests, possum dreys, hollows).  A licensed carer must be on stand-by for any event during the rearing season to rescue animals if required.
Injury/death	Any animal appears to have been injured/killed on site (including aborted young).	Works to cease immediately and where any death or injury has occurred DEECA must be notified  AND  works to be rescheduled  OR  works to be adapted sufficiently so that significant impacts (e.g. death/injury) are highly unlikely to occur, as confirmed by DEECA and a species expert.

## 5 Plan review

The Plan is an adaptive document that should be updated as situations change, further monitoring data are available, and/or research improves our understanding of flying-foxes, ibis, and management of community impacts.

At a minimum the Plan should be internally reviewed annually, with a full review including stakeholder consultation at three years.

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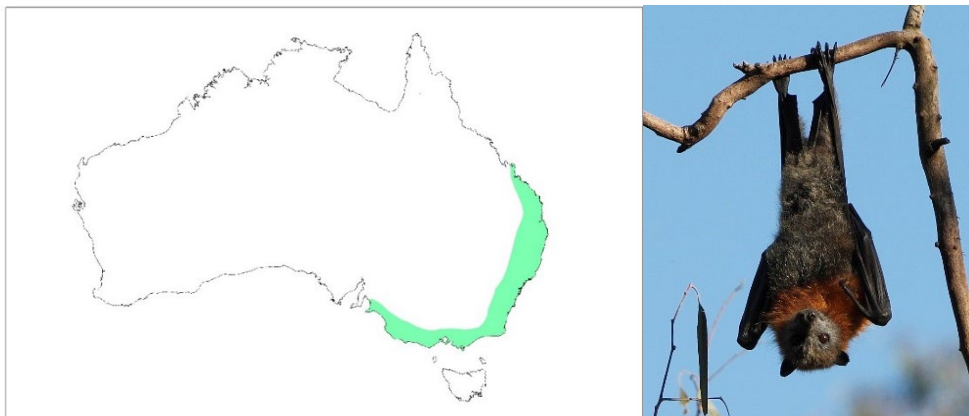
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## Appendix 1 Species profiles

### Grey-headed flying-fox (*Pteropus poliocephalus*)



Grey-headed flying-fox indicative species distribution (DPE 2023)

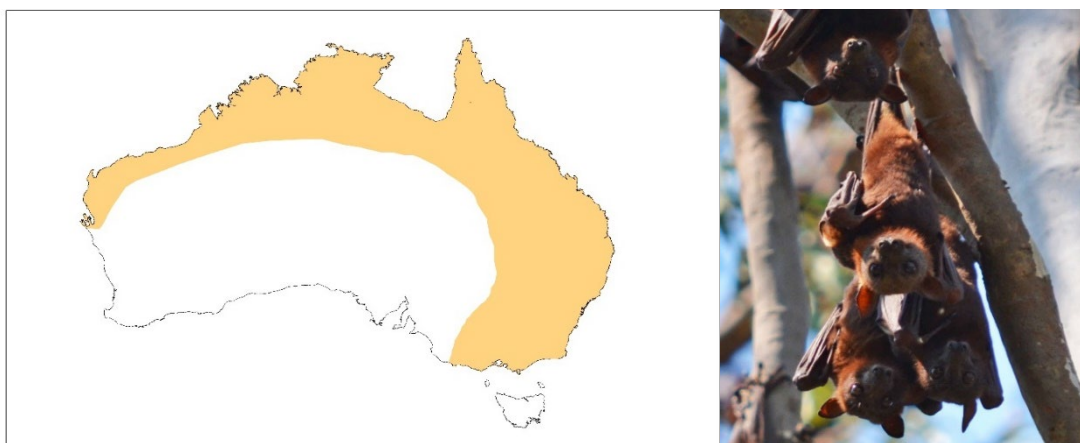
The GHFF is found throughout eastern Australia, generally within 200 km of the coast, from Finch Hatton in Queensland to the north to Melbourne, Victoria (OEH 2020). This species now ranges into South Australia and individual flying-foxes have been reported on the Bass Islands and mainland Tasmania (Driessen et al. 2011). It requires foraging resources and roost 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 (OEH 2020).

All GHFF in Australia are regarded as one population that moves around freely within its entire national range (Webb and Tidemann 1996, DAWE 2021). GHFF m have been recorded travelling over 500 km over 48 hours when moving from one roost to another (Roberts et al. 2012). GHFF generally show a high level of fidelity to roost 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). In summer they are distributed across Queensland, NSW, ACT, Victoria, Tasmania, and South Australia (DAWE 2021), but in spring and winter are generally uncommon in southern states, however there are a few known permanent GHFF roosts in Victoria, such as Royal Botanic Gardens Melbourne and Rosalind Park which are occupied year-round.

There is evidence the GHFF population declined by up to 30% between 1989 and 2000 (Birt 2000, Richards 2000). 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 black flying-fox (*P. alecto*) (DAWE 2021). For these reasons it is listed as vulnerable to extinction under Victoria, NSW, and federal legislation.

## Little red flying-fox (*Pteropus scapulatus*)



Little red flying-fox indicative species distribution (DPE 2023)

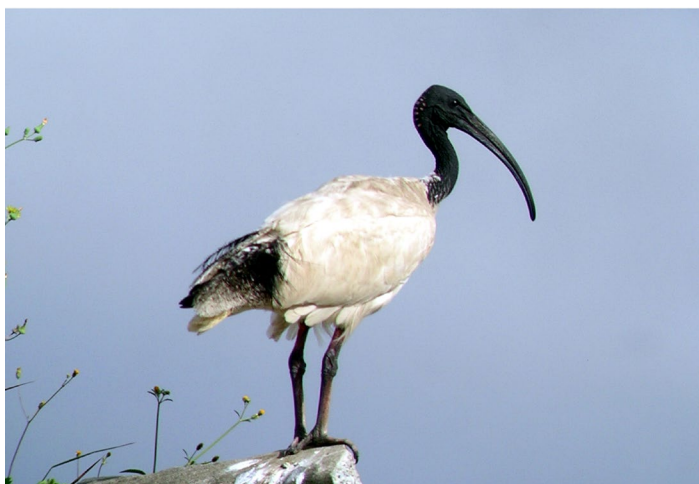
The LRFF is widely distributed throughout northern and eastern Australia, with populations occurring across northern Australia and down the east coast into Victoria.

The LRFF forages almost exclusively on nectar and pollen, although will eat fruit at times and occasionally raids orchards (Australian Museum 2020). LRFF often move sub-continental distances in search of sporadic food supplies. The LRFF has the most nomadic distribution, strongly influenced by availability of food resources (predominantly the flowering of eucalypt species) (Churchill 2008), which means the duration of their stay in any one place is generally very short.

Habitat preferences of this species are quite diverse and range from semi-arid areas to tropical and temperate areas, and can include sclerophyll woodland, melaleuca swamplands, bamboo, mangroves and occasionally orchards (Australian Museum 2020). LRFF are frequently associated with other *Pteropus* species. In some colonies, LRFF individuals can number many hundreds of thousands and they are unique among *Pteropus* species in their habit of clustering in dense bunches on a single branch. As a result, the weight of roosting individuals can break large branches and cause significant structural damage to roost trees, in addition to elevating soil nutrient levels through faecal material (SEQ Catchments 2012).

Throughout its range, populations within an area or occupying a roost can fluctuate widely. There is a general migration pattern in LRFF, whereby large congregations of over one million individuals can be found in northern roost sites (e.g. Northern Territory, North Qld) during key breeding periods (Vardon & Tidemann 1999). LRFF travel south to visit areas of South East Qld, NSW, and Victoria during the summer months; with rare observations in South Australia. Outside these periods LRFF undertake regular movements from north to south during winter–spring (July–October) (Milne & Pavey 2011).

## Australian white ibis (*Threskiornis molucca*)



The ibis is one of three native species of ibis found in Australia. It is a native, colonial wetland bird which forage and breed in a wide variety of habitats. Ibis are common and widespread across northern, eastern and south-western Australia. Historically, large ibis populations occurred at large inland wetlands when wetlands were in flood, and ibis would migrate to opportunistically forage and breed. The geographic range of this species has expanded since European settlement, initially benefiting from the conversion of the natural environment to agricultural areas (DELWP 2021). It has further extended its range into urban areas, clearly demonstrating an ability to opportunistically utilise resources in a new environment (Shirreffs et al. 1997, Shaw 2006).

Urban populations of ibis are known to exploit a range of natural and anthropogenic food sources. Natural feeding occurs primarily in wetlands, grasslands and mudflats, and natural diet is largely comprised of aquatic invertebrates (Marchant and Higgins, 1990). One study found that there are two relatively distinct urban ibis populations; those that forage primarily at landfills and those that forage in areas such as parks, theme parks, schools and foreshores (Murray 2005). Landfill foraging ibis make up approximately 70% of the overall population (Ecosure unpublished data). Another study found that urban ibis were moving as much as 35km each way between their roosting and foraging sites (Martin et al. 2011).

Ibis typically nest in low vegetation on wetland islands. However, in urban areas may use all strata of vegetation in close range of their feeding grounds (Ecosure pers. obs.). Breeding sites are often used year after year. Ibis typically breed in serially monogamous pairs, nesting between July and March. The duration of the breeding season depends on access to vital resources, and may be extended within urban environments due to constant water and food supplied from anthropogenic sources (Ecosure pers. obs.). There can be hundreds, or sometimes thousands, of breeding pairs in a single ibis colony. A breeding pair usually produces one to two young per year, but where resources are abundant a second or third clutch of one to four chicks can be produced (Ecosure pers. obs.). It is this opportunistic breeding ability that has contributed to an extended distribution and artificially high population within its range.

Populations in marginal areas are semi-nomadic following recent rainfall along watercourses. Juvenile ibis usually disperse from their birth colony, often travelling thousands of kilometres to join unrelated colonies or to congregate with other juveniles. Ibis tend to be sedentary in areas where resources are stable and satisfy their requirements, such as in urban environments. There may be reduced juvenile dispersal from urban colonies, although banding studies in Sydney (G. Ross 2006, pers. comm, Martin et al. 2011) and Moreton Bay (J. Gorrying 2023 pers. comm.) suggest that some juveniles still emigrate over large distances.

## Appendix 2      Assessment of roost dispersal

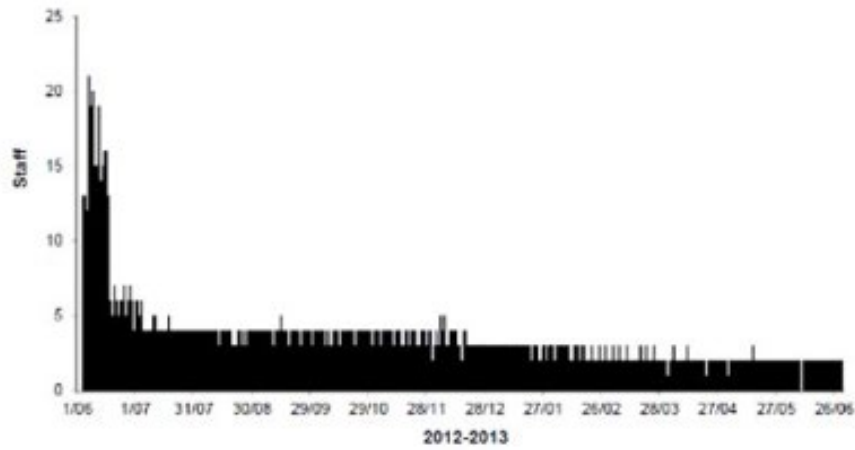
Flying-fox roost dispersal was considered during the management options stage of preparing this Plan (Ecosure 2024).

Multiple studies of 48 flying-fox dispersal attempts (Roberts and Eby 2013, Ecosure 2014, Roberts et al. 2021) found that dispersal:

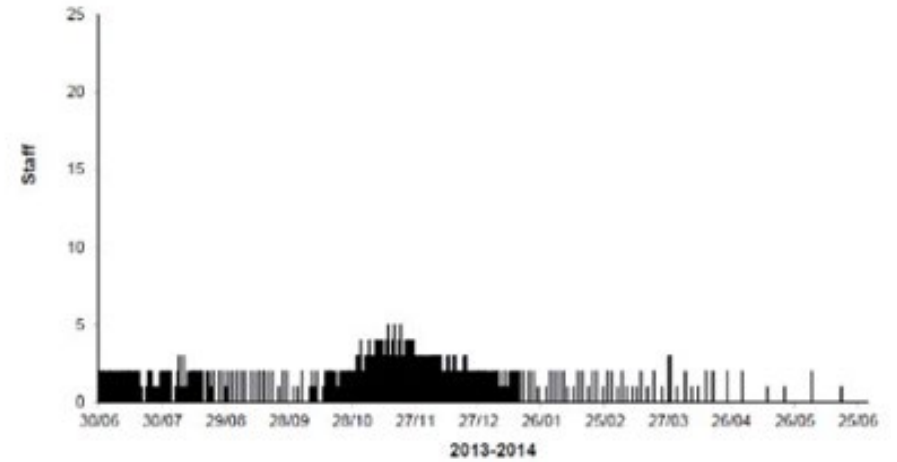
- is rarely successful in the long term
- is extremely costly (the few successful dispersals cost at least \$250,000, with both Sydney Botanic Gardens [see also Figure A] and Melbourne Botanic Gardens each costing >\$2M with ongoing attempts by flying-foxes to re-establish roosting after more than 10 and 20 years respectively)
- almost always resulted in moving/splintering the roost to other locations within 1 km, increasing the area of conflict
- has significant risks and potential impacts to both communities, animal welfare and biodiversity.

For these reasons dispersal is not deemed a suitable option and has not been considered in this Plan.

Year 1: Staff implementing dispersal



Year 2: Staff implementing dispersal



Year 3: Staff implementing dispersal

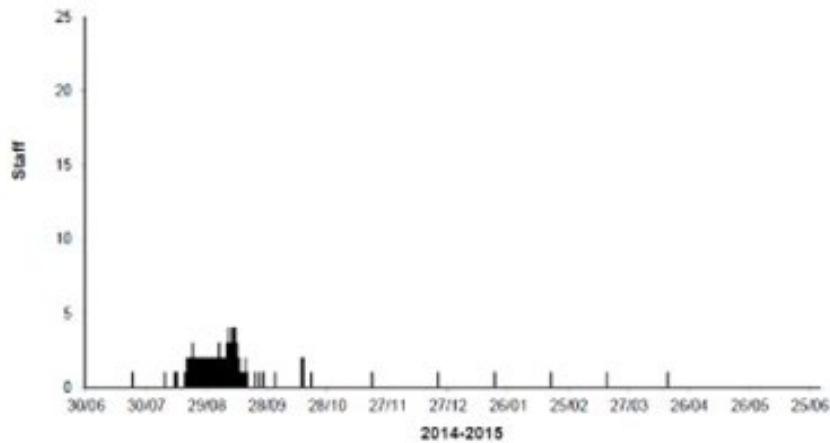


Figure A Sydney Botanic Gardens flying-fox dispersal effort and outcomes; J. Martin National Flying-fox Forum 2016

## Appendix 3 Property-level options

The managers of land on/near a flying-fox camp may minimise impacts from roosting and foraging flying-foxes (note that approval may be required for some activities, refer to Section 1.2):

- 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](#) (DEECA 2025).
- 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.

Further information can be found at: <https://www.wildlife.vic.gov.au/our-wildlife/flying-foxes/your-questions-answered-on-flying-foxes>.

## Revision History

Revision No.	Revision date	Details	Prepared by	Reviewed by	Approved by
00	21/03/2025	Rosalind Park Flying-fox and Ibis Management Plan Draft	Tegan Dinsdale, Fauna Ecologist Jess Bracks, Wildlife Biologist	Jess Baglin, Senior Environmental Scientist	Dr John Martin, Senior Ecologist
01	11/04/2025	Rosalind Park Flying-fox and Ibis Management Plan Draft (Revision 1)	Tegan Dinsdale, Fauna Ecologist Jess Baglin, Senior Environmental Scientist	Dr John Martin, Senior Ecologist	
02	24/06/2025	Rosalind Park Management Plan: Coexistence with Flying-fox and Ibis Draft (Revision 2)	Jess Baglin, Senior Environmental Scientist	Dr John Martin, Senior Ecologist	
03	20/10/2025	Rosalind Park Management Plan: Coexistence with Flying-fox and Ibis	Jess Baglin, Senior Environmental Scientist	Dr John Martin, Principal Ecologist	
04	30/01/2026	Rosalind Park Management Plan: Coexistence with Flying-fox and Ibis	Jess Baglin, Senior Environmental Scientist		

## Distribution List

Copy #	Date	Type	Issued to	Name
1	30/01/2026	Electronic	City of Greater Bendigo	Kerina McIntyre
2	30/01/2026	Electronic	Ecosure	Administration

Citation: Ecosure 2025, *Rosalind Park Management Plan: Coexistence with Flying-fox and Ibis*, Report to City of Greater Bendigo, Brisbane.

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PR8781-RE.Rosalind Park Management Plan - Coexistence with Flying-fox and Ibis.FI

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