Ibis Management Strategy

2019 - 2025

City of Charles Sturt

Ibis Management Strategy 2019-2025

A report prepared for the City of Charles Sturt

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1. Australian white ibis colony on Freshwater Lake island, West Lake [Photo: J. Garden 2018]

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Executive Summary

The Australian white ibis is a native bird species traditionally found in inland wetlands. The ibis has become a relatively common bird across the City of Charles Sturt, in surrounding Councils, and in many other coastal metropolitan Councils in Australia due to a combination of factors, including: loss of natural inland wetland habitats, inland drought conditions, and the artificially suitable conditions created in urban areas for this species.

Management of abundant species and biodiversity in urban settings creates challenges for residents, wildlife and city managers. Across Australia this is particularly true for the Australian white ibis. The ibis is a native species that appears to have adapted very well to urban environments and seems to happily live and breed amongst humans in urban environments.

Over the past 10 years increasing Australian white ibis populations have become a management issue in various locations across the City of Charles Sturt, particularly a breeding colony centred at Freshwater Lake on Delfin Island, West Lakes. At this location, Council has experienced an increase in complaints by adjacent or nearby residents seeking management intervention by Council for noise, mess and smell issues.

The increased complaints by residents has resulted in the City of Charles Sturt seeking to thoroughly understand all the factors influencing the ibis colony at Freshwater Lake and develop an ibis management strategy. In developing this strategy, The City has used a range of community consultation approaches to fully understand the key issues impacting residents, the broader biodiversity management issues, expectations for ongoing management of City parks and reserves, and the experiences of other Councils and experts from across Australia.

To date the main management approach utilised by the City to manage ibis has involved pruning of canary island palm trees at Freshwater Lake to reduce the potential roosting and nesting sites with a view to deterring an expansion of the resident population of the site. Whilst it is considered that this management should continue as standard, additional actions were also investigated, ranging from direct removal or destruction of the birds and/or trees to less invasive actions which aim to disrupt bird behaviour and habitat suitability.

Consultation conducted as part of the development of this ibis management plan have found that tree removal and ibis destruction are not desirable outcomes from a community, economic, or environmental perspective. Instead, less invasive disruptive techniques, such as flags and/or lighting, that are implemented in such a way as to make roosting and nesting locations undesirable for the ibis, are considered to be a priority action for trial. Evidence locally and interstate suggests these less invasive options are more likely to be successful techniques.

Targeted disruptive techniques applied to the Freshwater Lake ibis may help to minimise issues at this location, but care must be taken that action in one location does not shift the problem to another location. Further, the longevity of action impacts is not clearly understood, nor the general movement and population flux of ibis across the City. Understanding how the ibis population moves and changes over seasons and years will greatly help to understand factors influencing their occurrence and so help to guide and refine management actions. It is therefore also recommended that an ibis census be included in the City's Biodiversity Action Plan, to ensure an improved understanding of ibis movements, over time, in and through the Council.

1 Introduction

The Australian white ibis (*Threskiornis molucca*) is a native bird species traditionally found in inland wetlands. The pressures of inland droughts in the 1970's pushed ibis populations to seek resources in artificially suitable coastal urban areas, and they have since successfully thrived in these areas. As a large, communal nesting bird, the success of this species in urban settings can result in conflicts with people living in the vicinity of colonies.

Like many other coastal metropolitan Councils in Australia, Australian white ibis are a relatively common bird across the City of Charles Sturt and in surrounding Councils. Evolving concerns from residents regarding the ibis, centres around a colony that have established and increased in abundance over the last 10 years at Freshwater Lake Reserve, West Lakes (Figure 1). The Freshwater Lake Reserve consists of a single constructed lake area with small islands, surrounded by a small landscaped reserve and walking paths. Residential properties, one commercial property, and a main road border the Reserve. The site was constructed in the 1970's as an ornamental lake forming part of the Delfin residential development that converted tidal swamps and reclaimed land to the West Lakes known today.

Anecdotal reports suggest that the number of Australian white ibis at the Reserve increased between 2013 and 2015 from an approximately constant twenty individual birds to a fluctuating population of up to 150-200 birds. However, standardised surveys would need to be undertaken over time to determine whether such observed changes are reflective of population increase or natural population fluctuations. Given the proximity to residential properties, the ibis colony has resulted in some complaints from the community about the presence and seeming population growth of the colony, with specific complaints generally relating to noise, smell, unsightliness, and damage caused to vegetation. Such impacts have been perceived by some residents as causing flow-on effects such as: displacement of "desired" species such as ducks and cessation of weddings photo opportunities and picnic-ers. There has been no surveys to date, however, which aim to determine the real versus perceived impact of ibis on other species and recreational use of the area.

In 2015, the City developed the "*Management of the Australian White Ibis Freshwater Lake - West Lakes*" management plan[1] (Appendix A). Based on recommendations outlined in this initial plan, the key management approach to date has been to heavily prune the Canary Island date palms located on the island within Freshwater Lake, in a bid to reduce their suitability for roosting and breeding. This approach appears to have prevented further growth in colony size and created a slight locational shift in the concentration of birds. However, these changes have not mitigated community concerns long-term. Further, the absence of standardised surveys investigating the response of the ibis population to management actions makes it difficult to quantify impacts, outcomes, and ongoing decision-making.

This Strategy was developed to provide alternative actions for effectively monitoring and managing the ibis colony size and conflict with people at Freshwater Lake Reserve. Key objectives of this Strategy are to:

1. Review the use and success (or otherwise) of alternative ibis management actions from around the country;
2. Develop a set of priority actions to help managing the ibis colony and associated conflicts at Freshwater Lake Reserve;

[1] City of Charles Sturt (2015) *Management of the Australian White Ibis Freshwater Lake – West Lakes.* Management Plan for the City of Charles Sturt.

3. Engage with local residents to ensure concerns are addressed and the management process is transparent; and
4. Help address specific Biodiversity Action Areas (BAAs) 1 and 4, detailed in the City's *Biodiversity Action Plan 2017-2030*

Figure 1. Freshwater Lakes context on Delfin Island, West Lakes. Circle indicates main area of Australian white ibis colony concentration.

2 Methodology

2.1 Desktop Review

A desktop review of key documents relating to Australian white ibis management approaches was undertaken (Table 1). There is a paucity of information available on Australian white ibis, particularly in the urban context and regarding the behaviour and interactions with people. The desktop review of key documents aimed to identify the success, or otherwise, of management approaches applied in other cities. In addition, development of this strategy was influenced by two key experts:

- Professor Darryl Jones, Professor at Griffith University, Queensland, and Australia's leading urban wildlife and road ecologist, specialising in urban birds, behavioural ecology, and human-wildlife interactions; and
- Jason van Weenan, Ecologist for the State's Department of Environment and Water, specialising in threatened and abundant species.

Table 1. Key documents reviewed as part of the desktop review.

1	City of Charles Sturt (2015) *Management of the Australian White Ibis Freshwater Lake – West Lakes.* Management Plan for the City of Charles Sturt.
2	Jones D.N., Cousins S., Pickvance J. (2015) *Ibis at Rochedale Landfill: Final Report.* Report for Remondis and Brisbane City Council. Environmental Futures Research Institute, Griffith University, Brisbane, Qld, Australia.
3	Department of Environment and Climate Change NSW (2007) *Wild About Ibis, Living with Urban Wildlife.* Available at: https://www.environment.nsw.gov.au/resources/nature/wildaboutibis.pdf
4	Ross GA (2004) Ibis in urban Sydney: a gift from Ra or a Pharaoh's curse? In Lunney D. and Burgin S. (Eds) *Urban Wildlife: more than meets the eye.* Royal Zoological Society of New South Wales, Mossman, NSW 148 – 152.
5	Green B., Jones D.N. (2004) *Living with Wildlife, Australian White Ibis*. Australian School of Environmental Studies, Griffith University.
6	Jones D.N., O'Keeffe S. (2015) *Deterrence of Australian White Ibis from eating areas at South Bank*. Draft Proposal prepared for the Couth Bank Corporation.

2.2 Consultation Process

Consultation with community members was undertaken to clarify the level of conflict between people and ibis, perceived ibis population trends, and to workshop potential management actions that will be socially acceptable and financially realistic. The consultation process aimed to engage residents within the vicinity of Freshwater Lake Reserve and more broadly across the Council area. To engage a wide range of residents, a variety of consultation techniques were used, including:

- a postal questionnaire sent to residents on Delfin Island;

- an open drop-in information event at Freshwater Lake Reserve (February 23, 2019);
- an open invitation discussion evening at the West Lakes Community Centre, with keynote presentation by Professor Darryl Jones (March 5, 2019);
- an online “Your Say Charles Sturt” questionnaire;
- an online discussion board forum; and
- a combined community and council management options workshop.

A summary report detailing the consultation process and feedback is contained in Appendix B.

2.3 Priority Action Setting

When investigating the most feasible ibis management actions for the Freshwater Lake Reserve, the following alternative options were considered (derived from the desktop review and expert opinion):

1. Tree removal;
2. Tree management/trimming;
3. Ibis cull;
4. Ibis relocation;
5. Egg disruption;
6. Increased ambient lighting;
7. Targeted tree lighting;
8. Do nothing;
9. Signage and active regulation to stop bird feeding;
10. Noise disruption;
11. Flag disruption;
12. Community engagement and education;
13. An ibis census (stocktake);
14. Track ibis movements;
15. Nest disruption;
16. Create an urban refuge; and
17. Cleaning around the lake.

These options were workshopped with approximately 20 stakeholders who were invited to attend, and included:

- The Seed project team;
- Council project team and internal stakeholders;
- Jason van Weenan, DEW Ecologist;
- Interested members of the local area community; and
- Representatives from the adjacent Port Adelaide Enfield council.

For each action, the workshop group discussed the intent and a range of aspects relating to social, economic and environmental cost and benefit of implementing each action. A scoring matrix was applied which allocated either a low, medium, or high relative cost or benefit rating to the perceived/anticipated social, economic, and environmental impacts of each action (Figure 2).

The aim of this exercise was to assist in understanding the magnitude or influence of different management options to assist Council staff in determining possible actions to present to Council for consideration. A relative score of 1, 2, or 3 was allocated to low, medium, or high benefits (respectively), and a score of -1, -2, or -3 was allocated to a low, medium, or high cost (respectively). This provided an overall relative score for each action, which was used to guide prioritisation of feasible action options by Council.

A summary report detailing the workshop process is contained in Appendix C.

Option: Ibis relocation

	Cost (High, medium, low)	Benefit (High, medium, low)
Social	Medium	Medium
Environmental	Low	Low to No
Economic	High	Low

Figure 2. Example of scoring matrix for the management action option of relocating ibis. In this example, the total score for this management option is -2.

3 Ibis ecology summary

The following provides a high-level summary about the known ecology and behaviour of the Australian white ibis (*Threskiornis molucca*). This summary was compiled to support the "Your Say Charles Sturt" community survey undertaken as part of the consultation process and the management actions workshop.

Distribution and habitat:

- A native Australian wading bird, with a current distribution across much of the country, though absent from Tasmania (except as an occasional vagrant visitor);
- Natural preferred habitats are marshy wetlands near open grassy areas, with nearby tall trees in which they roost and nest;
    - In urban areas, exotic palms are particularly desired;
- Occurrence in urban areas only since the 1970's in response to drought conditions in their natural inland habitats;
    - Further increase in some South Australian Councils due to the millennium drought;
- They are highly adaptable and able to exist in a wide variety of habitats.

Feeding ecology

- Naturally forage in aquatic, (shallow) marine, and terrestrial environments, including wetlands, swamps, beaches, mudflats, and well-watered grasslands;
- Opportunistic foragers with a generalist diet;
    - Preferred prey are crustaceans and invertebrates, particularly crayfish and mussels, though will also prey on fish, frogs, small reptiles, insect, earthworms and other invertebrates;
    - With their movement into urban areas, they have learnt to exploit anthropogenic foods, scraps, and carrion – this has allowed the species to expand their range.

Reproductive ecology

- Breeding season varies across Australia in southern regions of the country, breeding tends to occur August-November;
    - In urban areas, often have a prolonged breeding season throughout most of the year;
- Courtship involves a noisy display by the males to attract females, followed by bowing to females when they arrive, presenting a twig and shared preening;
- Communal nesting in trees located close to water bodies such as rivers, lakes and swamps;
    - Breeding sites may contain up to 1,500 nests;
    - Tend to also nest with other waterbirds such as egrets and cormorants;
- Nests are shallow platforms made of sticks, reeds or grass;
- Usually lay 2-3 eggs, though may range from 1-5;
    - Eggs are incubated for 21-23 days, and hatchlings fledge at 43 days old;
- Birds become sexually mature at 3 years of age and may live up to 28 years.

Behaviour

- Highly social birds – roosting and breeding in often large colonies;

- In urban areas they have become highly tolerant of human presence and can at times exhibit assertive behaviour towards humans, often driven by human feeding of birds (white ibis or other) at waterbodies;
- Tend to leave roosts to forage during the day and return at dusk.

Conservation status

- Play important role in natural pest management – in rural areas often called “the farmers’ friend” due to their habit of helping to control destructive locust and insect plagues;
- Not currently threatened, though their future conservation status is debated, given declines in population numbers in their natural breeding areas.

4 Consultation outcomes

Two main survey pools were targeted with the Ibis survey:

1. Community survey: a mail-out survey to Delfin Island residents, and also placed on the *Your Say Charles Sturt* website;
2. E-Panel survey: Council's E-Panel is a group of 800 residents across the Council area which are surveyed on a range of interest topics.

The community surveys received 77 responses and the E-Panel survey 141 responses, with the majority of these from Grange, West Lakes, Flinders Park, and Kidman Park (Figure 3). It is not possible to identify whether there is overlap in respondents between the two survey types. For the purposes of the analyses below, all respondents were collated and considered to be independent (i.e. total of 218 respondents).

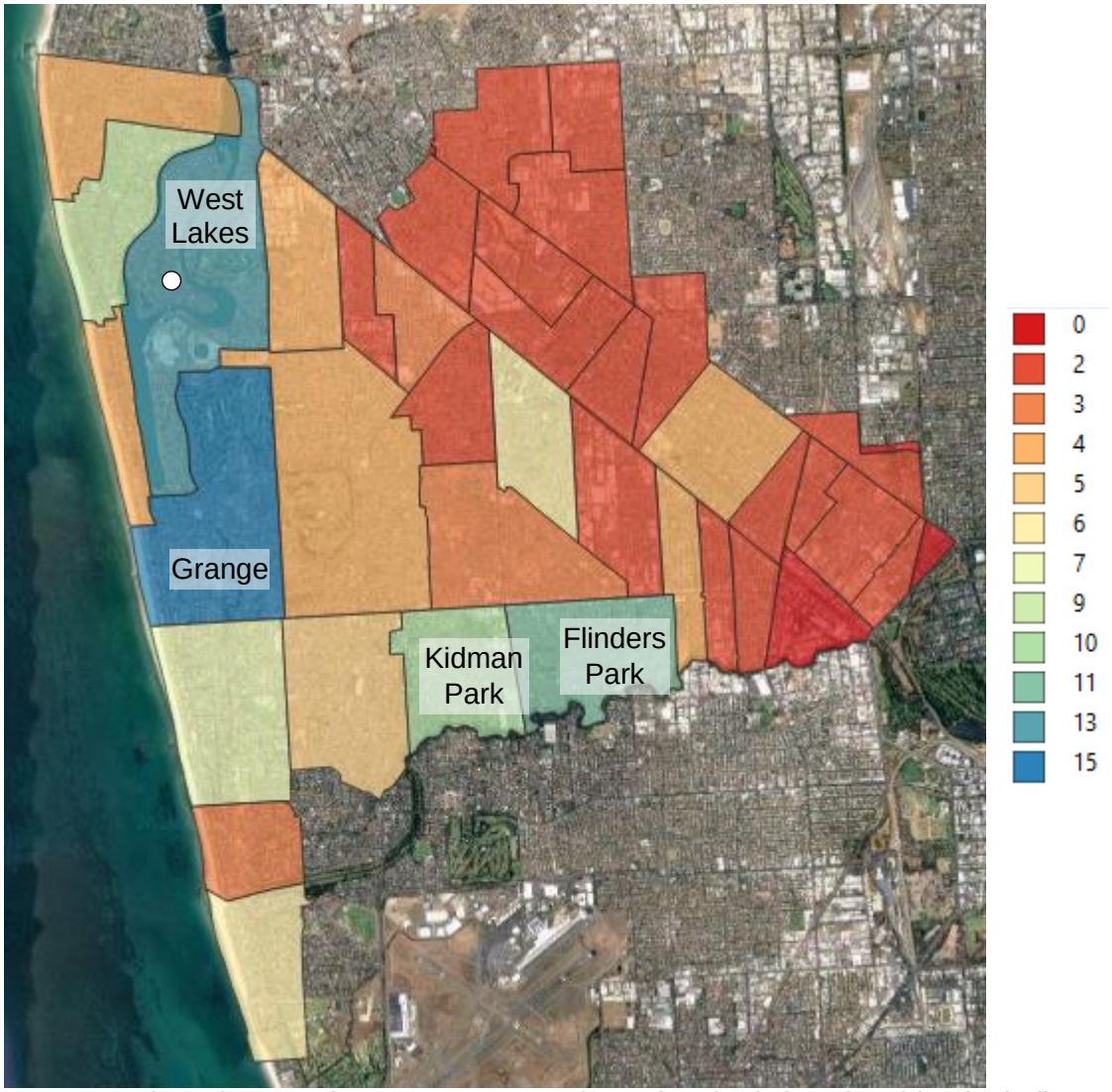


Figure 3. Number of E-Panel survey responses in each suburb (0-15). White dot indicates location of Freshwater Lake Reserve.

Respondents were primarily citizens in the 51-69 age bracket (40%), followed by people aged 70 years and over (31%), 31-50 year old's (26%), 18-30 year old's (3%), and a single under 18 aged respondent. More than 90% of respondents recognised that ibis are a native Australian bird (only 8% thought ibis were non-native), and 80% reported an encounter with ibis in the last year within the City of Charles Sturt, primarily **observational encounters** (77%) at parks and reserves, including Freshwater Lake Reserve.

With regard to community perspectives on Australian white ibis (Figure 4), most **agreed or strongly agreed** that ibis: are a native bird that should be protected (46%), are a pest that should be managed (43%), are an attractive bird (46%), create mess (45%), and don't bother the respondent (49%). Respondents generally neither agreed nor disagreed that ibis: help to reduce insect numbers (55%), cause a bad odour (46%), and are noisy (39%), but most respondents **disagreed or strongly disagreed** that ibis annoyed them (49%).

Despite ongoing trimming of palms at Freshwater Lake Reserve since 2015 in a bid to manage the ibis population, 75% of survey respondents were unaware that Council currently undertakes ibis management actions at this location. When provided a list of potential alternative management options for the ibis population at Freshwater Lake Reserve, most survey respondents neither agreed nor disagreed that current management of the ibis population was either adequate or inadequate (Figure 5); this supports the previous finding that most people were unaware management was occurring at the Reserve. Whilst generally uncertain whether current management of the ibis is adequate or not, most respondents **disagreed or strongly disagreed** that ibis don't need to be managed (50%), but also that they should not be removed as a management action (56%). Comparatively, most respondents **agreed or strongly agreed** that ibis do need to be actively managed (63%), ideally to low numbers (37%), that bird feeding encourages ibis to congregate (45%), and that alternative management actions need to be investigated (71%) (Figure 5).

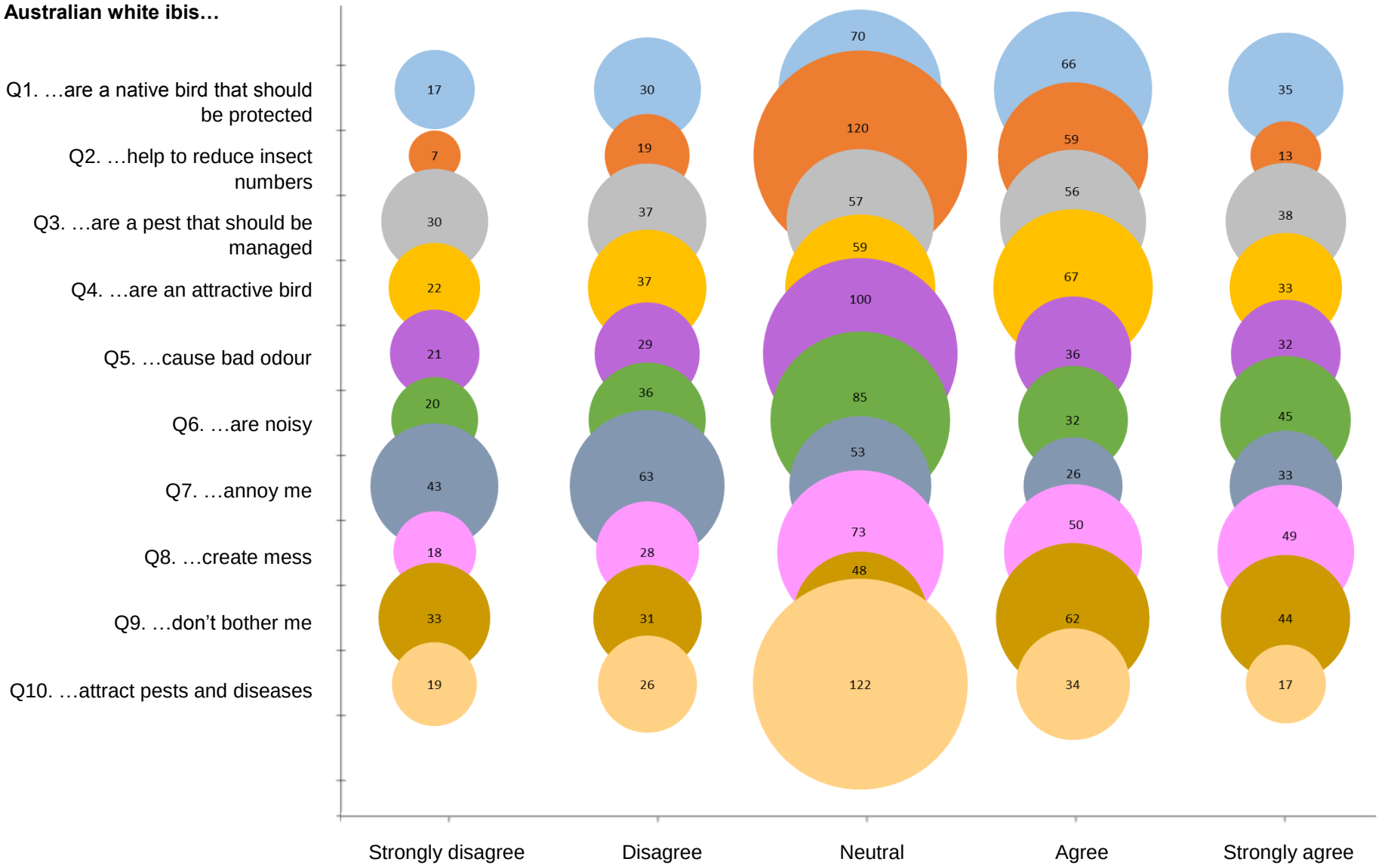


Figure 4. Community opinions about ibis. Size of bubble relates to the number of responses, with the number shown in each bubble.

Figure 5. Community opinion on ibis management at Freshwater Lake Reserves. Size of bubble relates to the number of responses, with the number shown in each bubble.

5 Action Priorities

As described in the methodology, the management action workshop considered a range of potential actions (Section 2.3). Detailed aspects of discussion and action setting priorities is contained in Appendix C.

Based on the outcomes from the community surveys, it was agreed during the workshop that the **"do nothing"** and **"tree removal"** options were not at all feasible in this situation and so were removed as potential options and from further discussions and scoring. In addition, the option of **cleaning** around the lake and **tree pruning** were also removed as action options as these are currently undertaken by Council, though it is recognised the cleaning frequency and method have been modified in response to improve site cleanliness. **Community engagement** and **education** was also removed as this was considered not to be an ibis management action *per se,* but it was agreed that this should form a standard foundation component of any actions undertaken to manage the ibis population and increase public awareness.

Tracking ibis movements was also not considered an ibis management action, but was considered to be useful in better understanding the ibis population and its use of the local and wider landscape. It is also considered an essential monitoring component of any intervention action implemented and should be undertaken pre- and post-implementation to test the effectiveness of actions.

The remaining 12 management action options were scored as shown in Table 2 (Section 2.3 and Appendix C describe the scoring method in more detail).

Management Action Option	Relative Cost-Benefit Score
An ibis census (stocktake)	3
Flag disruption	2
Targeted tree lighting	1
Signage and active regulation to stop bird feeding	1
Create an urban refuge	1
Increased ambient lighting	0
Tree management/trimming	0
Egg disruption	-1
Noise disruption	-1
Ibis cull	-2
Ibis relocation	-2
Nest disruption	-3

Table 2. Relative cost-benefit score for each potential management action option for the ibis population at Freshwater Lake Reserve. Colour-coding indicates actions consider most desirable/feasible (green) through to least desirable/feasible (red).

5.1 High priority actions

The management interventions that were considered to provide the most feasible and socially acceptable outcomes were **targeted tree lighting** and **flag disruption**.

The ibis census, though not a direct management action is also highly important to understand the current population, including abundance, use of the local and surrounding areas, and how these elements fluctuate over the course of a year. It is strongly agreed that such a census should be undertaken prior to any change in management actions at the Reserve to establish a baseline of the current situation, and also during action implementation and for at least a year following implementation of an action. It was considered that local residents and interested community members could be engaged to assist in a structured census.

Flag disruption

The use of flags (e.g. small bunting flags) located in and around preferred nesting/roosting tree canopies was considered an economically, socially and environmentally acceptable option to make nesting and roosting sites appear unfavourable to the birds.

Anecdotal reports of application of such an approach have been positive, and the approach seems reasonable given the conservative behaviour of ibis to their preferred roost and nest sites (pers. comm. Darryl Jones, 2019). It was also considered by the group that, if the approach was unsuccessful, then there was no significant economic or environmental impact, representing a “can’t hurt” initial option. Conversely, if the approach is successful, then potentially costly, unsightly, and socially traumatic options have been avoided.

Targeted tree lighting

Artificially illuminating nest and roost sites using targeted lighting options is considered another potential option which would act in the same manner as flags to create an unfavourable location for ibis to roost and nest. In particular, lighting that is motion activated is considered most likely to present an unfavourable environment for the ibis.

Regulating bird feeding

Options such as signage and active regulation to limit bird feeding was also considered a reasonable option to help manage the population, though both options incurred slightly higher potential costs, resulting in a lower overall relative score.

Refuge creation

Creating an urban refuge for ibis was considered an option to be discussed further, as although potentially very costly, it could also have multiple use benefits for society and the environment. There was, however, concern raised that providing a refuge could potentially serve to increase the overall ibis population, rather than move ibis from a currently unwanted location. Such an approach has not previously been trialled before and would require careful consideration and planning prior to implementation.

5.2 Low priority actions

Some potential actions discussed during the workshop were considered highly undesirable, as they would have a deleterious impact on the birds which may be visually distressing and so increase community disturbance. For example, whilst people may want the ibis population to be managed, it is considered highly undesirable that **culling**, **relocation** of birds, or physical **disruption of eggs and nests** is undertaken. These options are costly and potentially traumatic for people to experience. Further, such actions undertaken elsewhere have proven to be ultimately unsuccessful and may potentially exacerbate the issue in the long-term (pers. comm. Darryl Jones, 2019). **Noise disruption** as an actions was considered undesirable due to the disturbance it would also cause to residents and the potential that that action may ultimately be unsuccessful, as experienced elsewhere.

6 Summary and Next Steps

Across Australia, management of abundant wildlife species has been shown to be a complex and dynamic issue. Removing habitat or food sources in an effort to “move a species along” has been shown to be largely ineffective (Jones, 2015; pers. comm. Darryl Jones, 2019) and often can result in no change or creation of a “problem” elsewhere. Therefore, in this circumstance, removal of trees and discouraging feeding of birds is ultimately expected to make little or no impact to the ibis-human conflict at Freshwater Lake.

It is evident from the consultation process with the City of Charles Sturt community, that:

1. The community does not want to see tree removal as a solution to management of ibis at Freshwater Lake;
2. The community does not want to see destruction (killing) of ibis as a solution to management of ibis at Freshwater Lake;
3. Intervention strategies should occur on a pilot or trial basis initially;
4. Disruptive techniques (such as flags and lighting) are more likely to be successful and appropriate compared to destructive techniques (1 & 2 above); and
5. Management actions should be prioritised by Council and then piloted first before considering a wider response.

Next Steps

Consultation and investigation identified that ibis movements around and through the City area (and through to other Council areas) is not fully understood. It was considered that work should be done to better understand where ibis move, their preferred feeding locations and other factors that may influence roosting and breeding in the City of Charles Sturt. This would involve developing standardised approaches for monitoring and recording ibis activity within the Council area, ideally over the course of at least one full year to capture potential seasonal fluctuations.

The development of a standardised ibis monitoring program could be integrated with the the City’s Biodiversity Action Plan (BAP). For example, developing a monitoring program which could be supported/undertaken by community members could help to address Biodiversity Action Area 4 (Education and Citizen Science) and Biodiversity Action Area 5 (Monitoring and Evaluation) of the BAP. Approaches for integrating ibis monitoring into the BAP should be considered by Council.

Two disruptive management actions were identified. Use of flags and use of lighting as methods to disrupt ibis roosting and breeding. It was considered that these methods may assist in creating a less desirable location for ibis at Freshwater Lake.

It was considered that City of Charles Sturt should prioritise actions and then develop a trial methodology for use of these techniques and that this include monitoring and evaluation of the techniques prior to possible more extensive use.

7 Appendices

7.1 Appendix A. 2015 Ibis Management Plan "*Management of the Australian White Ibis Freshwater Lake - West Lakes*"

Management of the Australian White Ibis Freshwater Lake – West Lakes

Management Plan for the City of Charles Sturt
September 2015

Contents

TRIM document 15/264598 - Strategic Risk Assessment Should be read in conjunction with this document

1. Executive Summary

A breeding colony of the Australian White Ibis (*Threskiornis molucca*) has become self-established at Freshwater Lake Reserve in the City of Charles Sturt. The Freshwater Lake Reserve consists of a single constructed lake area with small islands, surrounded by landscaped reserve and walking trails. Residential and commercial properties surround the lake.

The number of Australian White Ibis has increased from twenty individual birds to a congregation of approximately 150 birds between 2013 and 2015, with concerns that the population will continue to increase at a steady rate. The City of Charles Sturt has received a number of complaints from the community about the colony, relating to the noise, smell, unsightliness and damage caused to vegetation.

This plan presents the issues and a range of options to reduce impacts on local residents, the vegetation and other native bird species occupying the reserve.

Tasks undertaken in preparing this plan included:

- Brief bird counts to gain a better understanding of the number of Australian White Ibis
- Desktop review of Australian White Ibis, associated issues and management options;
- Consultation with staff, visitors and community members living within close proximity of the reserve

There are various management options available to reduce the number of birds in a given location, however care must be taken to ensure the problem is not simply relocated to another area. The different techniques have been explored and considered in the context of Freshwater Lake. A strategic risk assessment has also been undertaken to determine the merits and both positive and negative risks associated with the project.

The Ibis is a native bird and has existed within the region for many years. Community education and consultation with Kaurna people is therefore vital to ensure community is able to live with nature.

2. Site Description

The Freshwater Lake Reserve comprises a single land parcel (total 3.5 ha). It is located in the suburb of West Lakes, situated off West Lakes Boulevard approximately 10 km west of Adelaide (Figure 1). The reserve is managed by Council and is a popular recreational area, commonly used by walkers and families for passive recreation purposes.

The reserve contains an artificially constructed lake that provides habitat for native birds, fish, frogs, algae, aquatic insects and plant life. Water from the roads enter the lake through a single inlet and is also pumped from an underlying bore (with associated license).

Figure 1 – Freshwater Lake Reserve

3. History of the Ibis

Australian White Ibis, *Threskiornis molucca*, is a native Australian bird which is protected under Section 5, Division 1, Part 50 of the National Parks and Wildlife Act 1972. This species has increased its range and successfully colonised urban environments over the past 35 years across Australia, and more recently within the City of Charles Sturt Freshwater Lake area.

The underlying reason for the expansion into urban areas is understood to be a combination of decreasing quality and long-term changes in the inland ecosystems and a long term climatic cycle (drought). The success of Ibis in urban areas is largely due to utilisation of urban landfills for food, open public green space and a constant water supply.

Australian White Ibis are an integral part of our cultural heritage. Their long-term presence in the landscape is reflected in Indigenous Culture and stories across Australia. For thousands of years Ibis have been sacred to aboriginal communities, and an indicator of environmental wellbeing (Department of Environment and Climate Change NSW 2007, p 5). This is an important factor in considering the long term survival of the species in out landscape.

The Australian Ibis plays an important role in natural pest management as it preys on small insects and grubs. While increasing population must be managed, their long-term conservation is necessary for maintaining biodiversity.

4. Behaviours of the Ibis

The following information pertaining to breeding, habitat and distribution has been sourced from the report undertaken by EBS Ecology – Australian White Ibis Management Plan, Roy Amer Reserve 2012. It is also noted that since the time frames during which the works were undertaken by Port Adelaide Enfield in association with the recommendations by EBS, are congruent with the arrival times of the Ibis at West Lakes.

4.1 Breeding

Australian White Ibis breed from June to March with peaking periods in October, November and December (Ecosure, 2009). Some birds have been known to nest in urban settings in both public and private areas where there is adequate vegetation. The location may vary depending on seasonal conditions and food resources. To trigger breeding, Australian White Ibis need plenty of available water. Colonies can comprise hundreds or sometimes thousands of breeding pairs. 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. Young birds return to their hatching site, when sexually mature. Their patterns are therefore cyclic and options associated with simply disturbing a colony may not prove fruitful in the long term (Ecosure, 2009). It is this opportunistic breeding ability that has significantly contributed to an extended distribution and overabundant population of Australian White Ibis within its range.

4.2 Habitat

The Australian White Ibis is a colonial species and is found in a wide variety of habitats throughout Australia (Ecosure, 2009). They favour being near water to breed, taking over ponds and creeks in parks and establishing nesting colonies near waterways. They become unpopular when they contaminate water with their faeces, tipping over rubbish bins and cadging food from park users. Australian White Ibis are highly adaptive, and urban populations of Australian White Ibis are known to exploit a range of natural and anthropogenic food sources. Natural feeding occurs primarily in wetlands, grasslands and mudflats, and the natural diet is largely comprised of aquatic invertebrates (Marchant and Higgins, 1990). They typically nest in low vegetation on wetland islands, however in urban areas may use all strata of any remnant vegetation in close range of their feeding grounds (Ecosure, 2009). Breeding sites are often used year after year.

4.3 Distribution

The Australian White Ibis is common and widespread in northern and eastern Australia (occurs in the eastern half of SA). It's also found in an isolated region of south-western Australia, but is absent from Tasmania. The range of the Australian White Ibis extends beyond Australia to Southern Indonesia, New Guinea as well as being an occasional vagrant to New Zealand. In recent years, Australian White Ibis have become a common sight in the cities of east coast Australia, especially Wollongong, Sydney, the Gold Coast, Brisbane and Townsville. They normally congregate at the massive inland waterways of NSW and Queensland such as the Macquarie Marshes, where they breed in thousands.

Urban areas, such as the Freshwater Lake area, offer attractive advantages to the species; such as permanent water bodies, large open spaces and additional food supply from either landfill sites, rubbish sources or from people feeding them.

Studies reveal that Australian White Ibis travel throughout the urban environment and visit landfills and open green spaces, where they forage in large numbers. Their preferences for landfills and green space coupled with their high mobility need to be considered, when developing and implementing management strategies.

The expansion has many ecological, social and economic consequences, which require solutions. However, urban managers need to be cautious, until more knowledge on basic biological parameters is gained. In particular, we need a better understanding of the birds' movements, so that we can determine effects on local and regional populations and numbers that can be safely removed without harming the long-term survival of the species.

5. Freshwater Lake Management and Observations

Ibis have been noticeable at Freshwater Lake for the past 5 years, however during the breeding season in 2014, there numbers increased significantly to over 60 birds between the front and rear lake. At the commencement of the breeding season in November 2014 – Council undertook works to significantly prune the fronds of the main (15) Date Palms used for nesting during that season.

In July 2015, the numbers of Ibis again started to increase. Whilst variably less than the previous year, the Ibis have still created nests within the palms, and have continued to utilise the upright fronds by effectively pushing them down to nest upon. It is suggested that the reduced number of fronds reduced the nesting area available, however the birds have utilised alternative palms, including individual palms in the surrounding residential areas.

The following pictures were taken in September 2015 and show the Ibis nesting in both pruned Date palms and in larger date palms adjacent to commercial properties. The Ibis feed on the surrounding lawn areas during the day and encroach into the adjacent residential area.

Figure 2 – Pruned Date Palm with nesting Ibis

Figure 3 – Encroachment into residential areas

Figure 4 – Open lawned areas used during the day for feeding

Figure 5 – Nesting in an unpruned Date Palm adjacent to West Lakes Boulevard

It is noted that the Ibis have not created any nests on the ground, as there is very little understory vegetation available within the reserve area.

The main complaint from the community about the presence of Ibis is the noise and smell produced by the colony particularly during the breeding season. With such large numbers of birds there is an increasing amount of excreta on the island and around the lake, and some neighbours have reported that the noise of the colony keeps them awake at night.

Council has undertaken educational signage to discourage visitors to the area in feeding the birds. Human behaviour is difficult to change and there continues to be people feeding the birds, contrary to the advice provided on the sign. Whilst it has not been reported that the Ibis are aggressive, there is evidence to suggest that they can in fact cause concerns for public safety as has occurred interstate.

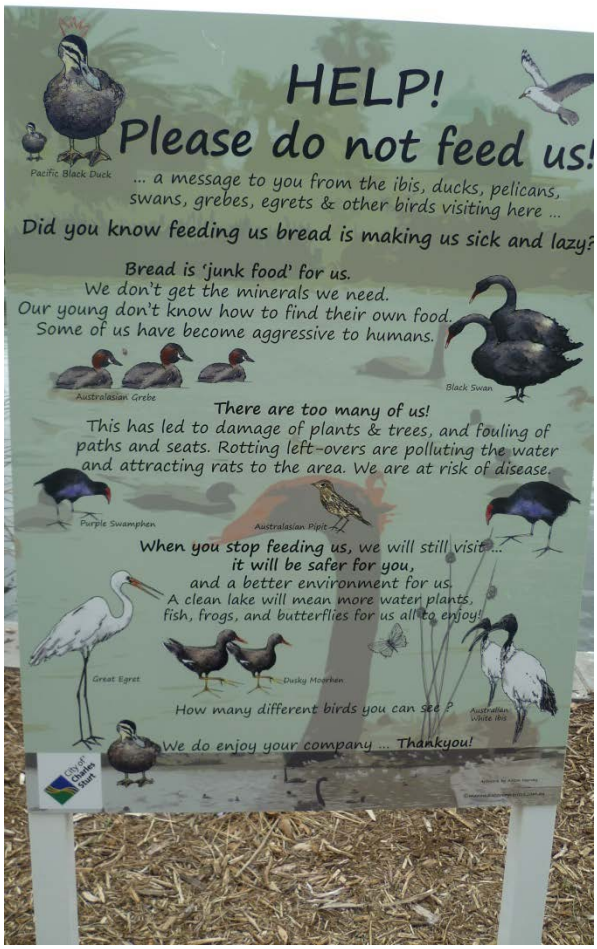


Figure 6 - Sign installed at Freshwater Lake December 2014

6. Management Considerations and Options

Queensland and New South Wales have experienced significant management issues with the Ibis over the last 35 years and have implemented a number of strategies and management techniques to limit the adverse impacts associated with the urbanisation of the Ibis and the resulting nuisance created within the community (commonly associated with noise, aggressive birds, defecation and degradation of vegetation). The Ibis are managed holistically by the NSW Office of Environment and Heritage (OEH).

The OEH advise that managers need to consider that the implementation of management practices may force the birds to switch to alternative urban sites, which may transfer or even worsen the problem.

The OEH had developed a Working Draft - Sydney Regional Ibis Management Plan which identifies colonies of 3 sizes, and applies different management strategies and licensing requirements for each. A licence is required before any intervention (nest and / or egg removal) can be undertaken. In order to obtain a licence for colonies over 50 birds, the landowner must submit a detailed site management plan with the application.

Similarly, individual councils throughout Queensland have development various management reports (Brisbane City Council – Working Towards a Natural Balance, City of the Gold Coast – Ibis Management Control Group). These reports were originally development to manage site specific issues, however the problem of the growing Ibis population has seen local and state authorities work together to form an integrated control group.

In lieu of a similar approach in South Australia and to ensure the City of Charles Sturt can effectively manage the increasing impacts of the Ibis in the urban area, the approach applied interstate has been considered and may be transferrable to our City (and wider region).

Interstate experience demonstrates there must be a holistic management plan in place to consider the long term impacts of a single management strategy and to also ensure the species can be maintained at appropriate levels within the natural environment.

Within the Bankstown Council area (NSW) during 2006/07, it became apparent that Council was attempting to manage the Ibis at an isolated site (Lake Gillawarna) yet the issue was much wider than the Bankstown LGA. Other sites across Sydney such as the Royal Botanic Gardens and Centennial Park were also managing numbers by dispersing the birds. National Parks & Wildlife Services (NPWS) surveys detected that dispersal appeared to have the unintended effect of creating a larger number of small colonies often in single trees on both private and public land.

A coordinated and holistic approach to the management is considered integral in the effective management of the Ibis and should be coupled with a proactive educational program.

DEWNR encourages a 'Living With Wildlife' approach to how we think about and interact with wildlife. A living with wildlife approach:

- promotes positive attitudes toward wildlife
- encourages people to understand the necessity of wildlife conservation
- considers the welfare of all wildlife
- promotes humane and non lethal methods as the way to manage problems with wildlife.

Understanding wildlife behaviour is the key to living with wildlife harmoniously.

A number of management strategies have been employed across Australia; these and their methodologies are outlined below:

6.1 Egg and Nest Removal

1. All nests need to be thoroughly inspected for the presence of chicks before they are removed. This can be done by using:
    - inspection by the naked eye (if possible)
    - inspection using a small mirror fitted to the end of an extension pole
    - inspection using a wireless CCTV camera fitted to the end an extension pole

2. Only nests not containing chicks can be removed. This can be done by using extension poles with pronged attachments fitted to the end. All nests and eggs (not containing chicks or adjacent to chicks) should be removed from the site.

3. It is necessary to return to the site every 14 days throughout the breeding season to remove any freshly laid eggs I newly built nests.

In the City of Port Adelaide Enfield (Roy Amer Reserve) EBS considered this approach. They advise it is important to note that the incubation period for the White Ibis is approximately three weeks; nests could be inspected for the presence of eggs on a fortnightly basis at the beginning of the incubation period and empty nests removed (Ecosure, 2009). Ebs recommends nests containing chicks are left undisturbed to comply with the Animal Welfare Act 1995.

The Department of Environment and Heritage (DEH) regulates the management of wildlife in accordance with the National Parks and Wildlife Act 1972 (NPW Act) which provides for the conservation of wildlife in a natural environment, and for other purposes. Under this Act, a Permit to Destroy Wildlife may be granted to a person to allow for the destruction or removal of native animals that are causing, or are likely to cause, damage to the environment, or to crops, stock or other property (section 53(1)(c) NPW Act).

Given this and the unknown status of Australian White Ibis over the broader landscape, the removal of eggs and nests should be considered as a last measure, particularly if the birds are not posing a danger to public safety. Further studies pertaining to their movements and breeding patterns are necessary to take into account the size and distribution of the broader population.

6.2 Egg Oiling

Nest and egg removal have been described as effective means to manage Australian White Ibis at heavily populated colonies. Martin *et al.* (2007) assessed a new Australian White Ibis-management technique, the application of 'egg-oil' to suppress hatching. Egg-oiling on other species was shown to be environmentally safe and socially preferable to culling adult birds. Results indicated that by applying canola oil to Australian White Ibis eggs once, at any time during the 23-day incubation period that this was sufficient to prevent Australian White Ibis eggs from hatching (Martin, French & Major, 2007). Results also proved that Australian White Ibis continued to incubate unviable eggs. Since Australian White Ibis are multi-brooded (having the ability to raise up to three clutches in a breeding season), the increased time devoted to incubating oil-treated eggs could reduce the opportunity for multiple broods, compared with conventional egg destruction. This technique offers an additional tool for land managers to conduct Australian White Ibis reproduction control, reducing the amount of time required to conduct management on this species (Martin, French & Major, 2007).

Seven parts cooking oil is mixed with 3 parts water and 1 part dish washing liquid in a spray bottle and brightly coloured food dye added to the mix at a concentration that will help identify treated eggs from new untreated eggs (i.e. make sure the dye is highly visible once applied to the egg).

A spray bottle with an adjustable nozzle is required and a fine mist applied to the eggs that will ensure even coverage over the egg without excessive waste of the mixture.

It is necessary to return to the site every 14 days to apply a fresh mixture to any newly laid eggs (repeat steps 1 – 4). Any brightly coloured eggs that have received a previous treatment do not need the mixture re-applied.

Given this and the unknown status of Australian White Ibis over the broader landscape, tampering with eggs should also be considered as a last measure, particularly if the birds are not posing a danger to public safety. Further studies pertaining to their movements and breeding patterns are necessary to take into account the size and distribution of the broader population.

6.3 Vegetation Management

Ibis prefer to nest in and around certain vegetation types including exotic flora such as Date Palms. The strategic removal or pruning of these species may limit roosting and nesting potential. Vegetation management options include:

- Removal of dead fronds from palm trees
- Removal of vines growing on trees and creating platforms for roosting and nesting
- Removal of non-native trees and plants
- Removal of the entire Palm

This technique was considered appropriate within the Freshwater Lake reserve and was trialled at the end of the breeding season in November 2014. Only 14 of the 28 Palms were pruned (those containing the largest number of nests), leaving only vertical fronds to reduce the area available for the Ibis to return and again create nests. Whilst visually it appears the number of Ibis nesting in the same location has changed, the Ibis have chosen alternative Date Palms within the reserve area and also noticeably in and around the surrounding residential area. It is not considered appropriate (or even possible given the accessibility issues associated with the location of the Date Palms) to again prune the Palms. The impact on the amenity and also habitat for other birds should form a balanced consideration.

Removal of the date palms would remove the nesting capabilities of the Ibis, however would need to be considered in the context of alternative vegetation requirements for other resident birds.

6.4 Roost Dispersal

It is suggested that disturbing Ibis after sunset by shining spotlights and laser lights, noisily cracking stock whips and sounding Ibis specific distress calls bay disperse the birds, however may also create disturbance to other birdlife and residential properties.

To discourage Ibis from returning to the site, dispersal needs to occur at least twice per week on a continual basis for all periods that chicks are not present.

The Ibis are highly urbanised birds and unless this method is employed continually (potentially creating nuisance to residents) the birds will adapt and continue to return.

6.5 Electric Shock Systems

Electric shock systems designed to deter bird function in a similar way to electric fences used for livestock. They send a pulse of electric current along conductive wires, and when the bird touches them they receive a shock. The electric pulse is high voltage but low amperage so the bird receives a fright but is not harmed. Birds will tend to avoid the area after receiving a shock. The system must be installed by supplier of equipment and must be maintained and serviced as per manufacturer's recommendation.

This method may in fact disperse the birds from the area, however may not permanently relocate the birds. This system has been used extensively interstate, in particular in the Sydney Botanic Gardens and Centennial Park, where the options of pruning or removing the Date Palms was not considered feasible.

John Martin (pers com.) Wildlife Ecologist, Botanic Gardens & Centennial Parklands NSW, advises that this method appears to work well, with the tracks being charged by the built-in solar panel, in general these palms are exposed to lots of sun (see below). They are effective in relocating the birds but may result in dispersal to nearby areas. The following system (or similar) is recommended https://www.birdbgone.com/products/electric-track/bird-jolt-flat-track.html https://www.birdbarrier.com/products/tree-shock/.../cat_Tree-Shock.pdf

This method is considered both humane and achievable in the Freshwater Lake reserve as a trail in the first instance. Given the success of the system interstate in a similar urban environments and the desire to achieve a sustainable balance of wildlife within the community the systems may allow the dispersal of birds to nearby locations. This will need to be monitored to ascertain the detriment to alternative locations and also the behaviours of the birds associated with this management approach.

6.6 Roost Count / Annual Census

Following the employment of any particular management strategy, ongoing monitoring should occur. Estimating the number of adults and chicks on-site approximately one and a half hours prior to sunset, by using binoculars or a spotting scope to get an accurate result should be undertaken. It would be necessary to count both incoming and outgoing Ibis from an hour and a half before sunset until the last Ibis has returned. Add the on-site count to the number of incoming Ibis and subtract the number of outgoing Ibis. This provides an estimation of the complete roosting population.

Further discussions with DEWNR should occur to determine the merits in undertaking a tagging program to gain a better understanding of the movement and behaviour of the birds.

7. Next Steps

The next breeding season for Australian White Ibis is expected to commence in May 2016, with peak breeding times expected between July and December, incubation lasting 21 days and fledging period of six weeks. A survey pre, during and post breeding is recommended for the 2016 Australian White Ibis breeding season at Freshwater Lake Reserve to gain insight into the movement of Australian White Ibis in and around the site prior to breeding to acquire better knowledge into how Australian White Ibis share the site with species such as the Little Pied Cormorant and the Royal Spoonbill and to obtain quantitative data on the distribution of the Australian White Ibis.

The situation at Freshwater Lake reserve is considered not to be a geographically isolated issue but part of a region-wide Australian White Ibis population problem that warrants further investigation. Broader surveys should be undertaken long term within the Council area targeting water bodies, wetlands and inlets, to gain further distribution data on Australian White Ibis and identify areas of congregation. Urban landfill is largely attributed to the increase in Australian White Ibis populations in open residential areas. Nearby dumps/skip bins should be surveyed in more detail to gain insight into how this supplementary source of food is impacting on Australian White Ibis populations.

A community education program should be implemented, with a key aim being to discourage people from feeding the birds and to develop an understanding about the birds and living with native animals within the urban environment. Community education is a vital aspect of the management of urban populations of Australian White Ibis. Consultation can be undertaken while further studies are underway, and may take the form of an information leaflet, advising residents of the proposed management options and inviting members of the public to talk with staff from the City of Charles Sturt about the issue. Local media can be used to publicise the management of Australian White Ibis and the message of not feeding Australian White Ibis in the area.

8. Recommendations

1. Significantly prune (leave only upright fronds) the Date Palms within the vicinity of the lake to remove nesting area and reduce the overall number of birds returning to the lake for breeding.
2. Work with DEWNR to establish a region wide management approach including bird tagging and monitoring and consistent approach to managing and sustaining bird numbers.
3. Undertake regular monitoring until December 2018 to determine if this has had a positive impact on the reducing the overall numbers of Ibis, and determine if there are any adverse implications for other fauna in the area.
4. Ensure pruning is undertaken annually to minimise nesting areas.
5. Should this technique not be successful based on points 3 and 4 above, contemplate alternative options outlined within this report.

Appendix 1 and 2 have been extracted from the Management Plan for Australian White Ibis in the Bankstown LGA 2012, for use as an example to the anticipated outcomes and risks associated with the different management techniques.

Appendix 1 Risk assessment of various management actions

Small AWI colonies with less than 50 birds

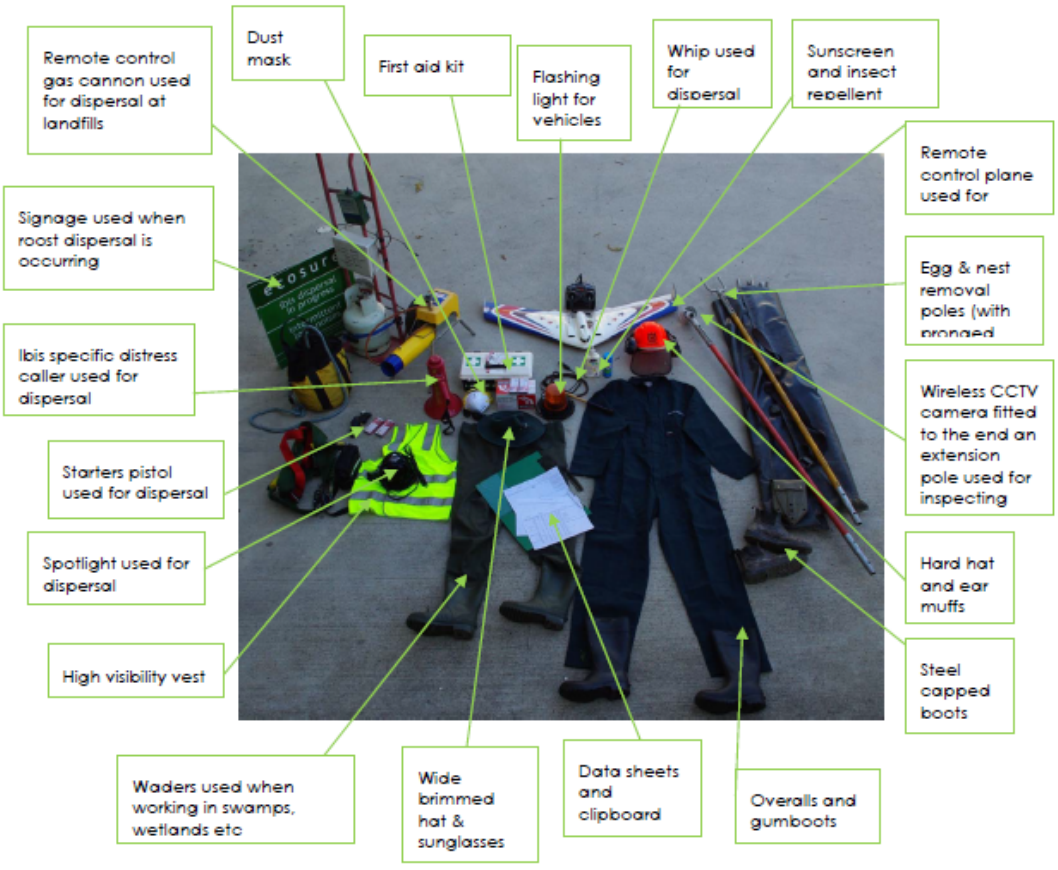
Action	short term outcome	medium term outcome	long term outcome
• No action	• No change to present numbers • Peak numbers during peak breeding Sept - Feb	• Continued community concern about smell, noise, risk to public health etc • Potential for colony to expand and numbers increase	• Ongoing seasonal nesting and breeding • Community perception that Council is not concerned about the issue • Damage to nest trees • Likelihood for colony to expand and increase
• Landowner obtains NPWS licence • Egg and nest removal	• Quick dispersal of Ibis • Costly to employ specialist contractor	• Same or new Ibis quickly rebuild nests and re-commence breeding • Need for ongoing egg and nest removal during breeding season	• Ongoing seasonal nesting and breeding • Community perception that Council is not assisting and not concerned about the issue on private property
• Physical Disturbance - electric shock and/or optical bird scarer, requiring ongoing maintenance	• Reported that birds will tend to avoid area - as yet untested in LGA	• Unknown, however if successful in deterring birds high potential for relocation to another site in the LGA	• Unknown, however if successful in deterring birds high potential for relocation to another site in the LGA

Medium to large AWI colonies more than 50 birds

Action	short term outcome	medium term outcome	long term outcome
No action	• No change to present numbers • Peak numbers during breeding Sept - Feb • Small number of resident Ibis likely to remain during non-breeding season	• As per short term • Ongoing seasonal nesting and breeding • Continued community concern about smell, noise, risk to public health etc • RailCorp may undertake independent action with trees on their land	• As per medium term • Community perception that Council is not concerned about the issue • Damage to nest and roost trees • Increase in numbers during breeding season
• Site management plan and NPWS licence • Egg and nest removal from Council trees • Liaise with RailCorp for simultaneous egg and nest removal	• Quick dispersal of Ibis • Expenditure to employ specialist contractor • Community / media backlash because of interference with AWI	• Same or new Ibis quickly rebuild nests and re-commence breeding • Continued community concern about smell, noise, risk to public health etc	• As per medium term • Ongoing seasonal nesting and breeding • Community perception that Council is not managing the issue • Damage to nest and roost trees
• Site management plan and NPWS licence • Egg and nest removal from Council trees • Liaise with RailCorp for simultaneous egg and nest removal • Removal/pruning of nest trees on both Council and State Rail site	• Quick dispersal of Ibis • Expenditure to employ specialist contractor • Cost of tree removal / pruning • Community / media backlash because of removal of large palms or trees • Community / media backlash because of interference with AWI	• As per short term outcome • With tree removal AWI unable to recolonise the same tree on site • With tree removal AWI may relocate to other trees on same site or nearby • Tree pruning may deter AWI for a medium period only • AWI could relocate to another site in the LGA	• As per medium term outcomes. • Community perception that Council is managing the issue
• Annual site management	• As Above	• As Above	• Suppression of CBD breeding colony • AWI relocate elsewhere in LGA

Appendix 2 Equipment

Tools and Personal Protective Equipment (PPE) used for Ibis management.



Appendix 2 taken from the Sydney Basin Australian White Ibis Regional Management Plan prepared for NSW National Parks & Wildlife Service by Ecosure Pty. Ltd.

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APPENDIX C

Ibis Monitoring Results

Date	Time	Ibis Numbers	General observations
03/04/2017	1pm	3	Definite reduction in Ibis numbers. Approximate count prior to pruning suggested 150 – 200 Ibis within the Freshwater Lake area. A chat with residents confirmed an almost immediate reduction in bird numbers.
10/04/2017	2pm	0	No ibis sighted within the lakes area.
18/04/2017	3pm	0	No Ibis sighted, but one swan and one pelican was. Fountain pump not working. Water level down.
26/04/2017	3pm	3	3 ibis sighted at the southern end of fresh water lakes.
11/05/2017	11.30am	0	No Ibis sighted
15/05/2017	3pm	6	6 ibis spotted and seemed to be preparing nest in the palms at the southern end island.
24/05/2017	3pm	25-30	All birds sighted were in the southern end palms on the island, building nest etc.
2/06/2017	1230	30-40	Majority of ibis were in the southern palms on the island and approximately 10 ibis in the palm next to the Drs Surgery.
08/06/2017	1500	60-65	40- 50 birds located in the palm islands at the southern end, approx. 15 birds located in the palm next to the dentist. One bird was located in the single palm island in the middle section of fresh water lake
15/06/2017	1230	65-75	40- 50 birds located in the palm islands at the southern end, approx. 15 -20 birds located in the palm next to the dentist.
23/06/2017	1500	90-95	12 ibis nesting in the palm in the middle island, approx. 65 ibis in island palms southern end, aprox 16 ibis in the palm next to the dentist. Could hear new chicks.
30/06/2017	1515	90-95	12-14 Ibis nesting/roosting in middle island, approx. 65 ibis in island palms southern end, approx 16 ibis in the palm next to the dentist.
10 /08/2017	1400	Approx 120	Numbers have increased due to babies leaving the nest, still no ibis roosting or nesting north of the middle lake.
29/08/2017	1200	Approx 132	Numbers have increased due to babies leaving the nest, still no ibis roosting or nesting north of the middle lake.
22/09/2017	1400	Approx 140	Numbers slightly increased this inspection, 3 Ibs seen roosting in middle section of palms on the western side, 4 Royal spoonbills were spotted in the palm nearest the dentist.
17/10/017	1545	Approx 178	Numbers have increased again due the young leaving the nest. 6 birds located roosting in the palms at the most Northern end, ibis now nesting in the palms north of the most southern island. 4 Maybe 6 Royal Spoonbills are still on site.
8/12/2017	1500hrs	Approx 90-100	No ibis present in the palm outside the dentist, appears numbers have started to reduce.
9/07/2018	1500hrs	Approx 50-60	Ibis all located at the front lake, nothing in the middle or northern palms. could hear babies

Freshwater Lake – Ibis Monitoring after Date Palm pruning

7.2 Appendix B. Community Feedback Report

Ibis Management Strategy
Community Feedback Report

5 June 2019

Contact: Georgina House, Community Engagement Coordinator
8408 1364, ghouse@charlessturt.sa.gov.au

Ibis Management Strategy – Community Feedback Report

1. Executive Summary

Over the past 10 years the Ibis have become a management issue in the City of Charles Sturt, with an expanding breeding colony centred around Freshwater Lake on Delfin Island, West Lakes. Council has experienced an increase in calls by residents adjacent or nearby to the Ibis colony with these residents seeking management intervention by Council with noise and smell associated complaints the most frequent.

The City of Charles Sturt has sought to thoroughly understand all the factors influencing the Ibis colony at Freshwater Lake and develop an Ibis Management Strategy.

In developing this strategy, The City of Charles Sturt has employed a range of community consultation approaches to fully understand the key issues impacting residents, the broader biodiversity management issues, expectations for ongoing management of City parks and reserves and the experiences of other Councils and experts across Australia.

Consultation has been undertaken in order to gauge the level of conflict between people and Ibis, perceived Ibis population trends, and to workshop potential management actions that will be socially acceptable and financially realistic. The consultation process aimed to engage residents within the vicinity of Freshwater Lake Reserve and also more broadly across the Council area.

A total of 223 surveys were received, and over 60 community members attended one or more of the community events during the community consultation period which ran from late January to late March 2019. The level of participation by the local community was considered reasonably high given the Ibis management issues are largely confined to the West Lakes area and not a Council-wide issue.

Key themes raised during the consultation period are:

- Freshwater Lakes Reserve is an important place for our community.
- Local residents would like to see more emphasis given to regular maintenance and cleaning of paths and seating around Freshwater Lakes Reserve.
- There is a very strong sentiment that existing trees be retained as they are important to the amenity of the local area.
- There is a raised awareness of why the Ibis is attracted to the local area and the natural behaviour of the species.
- There is a raised awareness of the complexities of managing Ibis populations, drawn from past experiences around Australia.
- Community would like to see some form of management take place to reduce Ibis numbers.

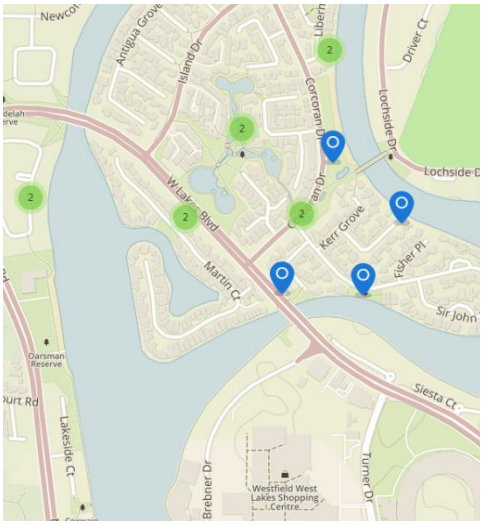
2. Consultation Approach and Timeframe

Specific consultation or engagement regarding Ibis in the Charles Sturt Council area has not occurred previously. Accordingly our approach was to develop a strategy *WITH* the community – so that they would help shape it and through this process, they will have a greater understanding of the complexities associated with management and develop a sense of ownership having developed the strategy.

Our objectives were to foster a sense of partnership with Council, engender trust with us as an organisation, show that we are reliable in communicating our approach and behaving congruently with our words. We took the opportunity to inform our community that no set outcome or pre-determined strategy existed and our approach was to engage stakeholders and community in parallel to ecological investigations to understand the significance of the matter and gauge the opinion of our community ahead of the preparation of the draft Ibis Management Strategy. Through our approach we wanted to ensure our stakeholders were well informed to then develop a strategy with Council for the management of Ibis at Freshwater Lake and broader Council area.

The consultation process provided a number of opportunities, including face to face, online and written feedback, to provide input into the preparation of the Draft Ibis Management Strategy. The consultation period commenced on Thursday 31 January 2019 and concluded on Tuesday 26 March 2019.

To capture the opinions of a wide range of residents and stakeholders, a variety of community engagement activities were used. These included:



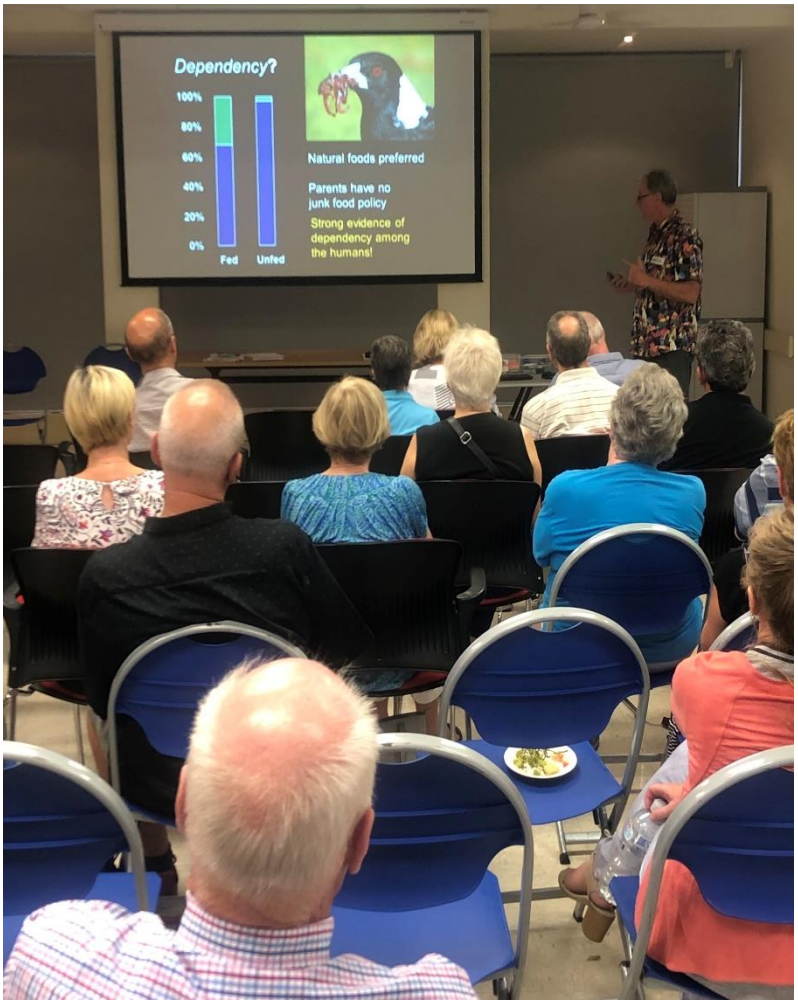
- Mailout of letter and survey sent to residents on Delfin Island (206 households).
- Corflute Signing around Freshwater Lake Reserve.
- Promotion through the Messenger CCS Column.
- Promotion through Council's Social Media channels.
- Your Say Charles Sturt interactive website for all project information and to provide online feedback, including a survey, places tool where community can place pins on a map, and discussion board forum.
- Survey of Council's E-Panel.
- Letters to key stakeholders with an interest in Ibis such as Birdlife Australia, Adelaide Airport, adjoining Councils, and the Department for Environment and Water).
- An open drop-in information event at Freshwater Lake Reserve (February 23, 2019).
- A community discussion evening at the West Lakes Community Centre, with keynote presentation by Professor Darryl Jones a behavioural ecologist working in urban ecology (March 5, 2019).
- A combined community and council management options workshop (26 March 2019).

3. Community Involvement

A summary of community interaction during the community engagement period included:

- 77 survey responses received from the local community via the Delfin Island mailout and Your Say Charles Sturt website.
- 146 survey responses received via the E-Panel survey.
- 207 visits to the Ibis project page on the Your Say Charles Sturt interactive website including:
    - 156 aware visitors (viewed Ibis project page);
    - 105 informed visitors (viewed Ibis project page and one or more documents); and
    - 30 engaged visitors who added pins to a map, commented on the discussion forum and/or completed an online survey).
- 20 participants at the open drop-in information event at Freshwater Lake Reserve (February 23, 2019).
- 60 participants at the community discussion evening at the West Lakes Community Centre, with keynote presentation by Professor Darryl Jones (March 5, 2019).
- 2 residents and 10 other stakeholders at the combined community and council management options workshop (26 March 2019).

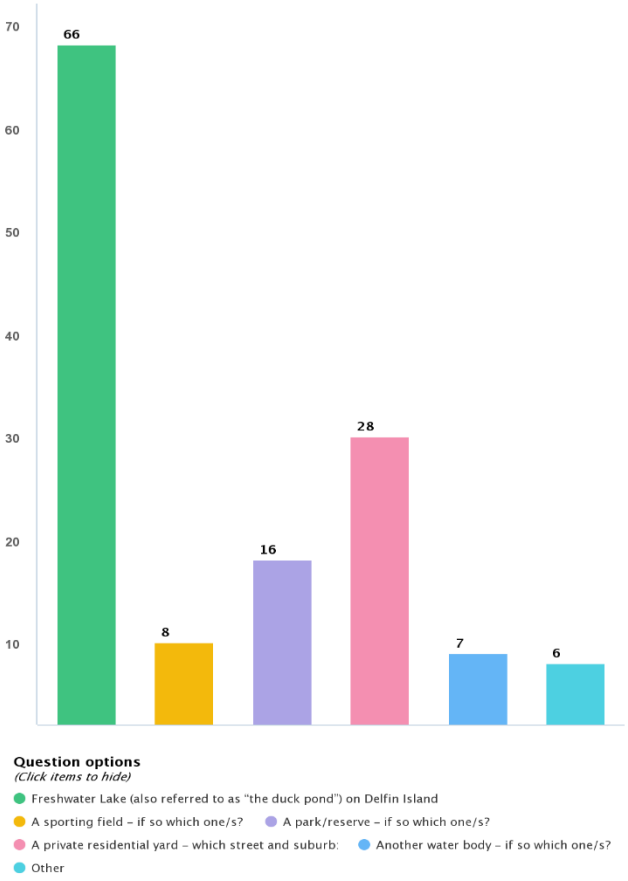
The level of participation by the local community was considered reasonably high given the Ibis management issues are largely confined to the West Lakes area and not a Council-wide issue.



4. Community Feedback

Survey Results

A number of common themes can be drawn from the 223 survey responses (77 community survey and 146 E-Panel survey) and the subsequent community and stakeholder discussions held at the information discussion evening and management options workshop. Key themes are summarised below.



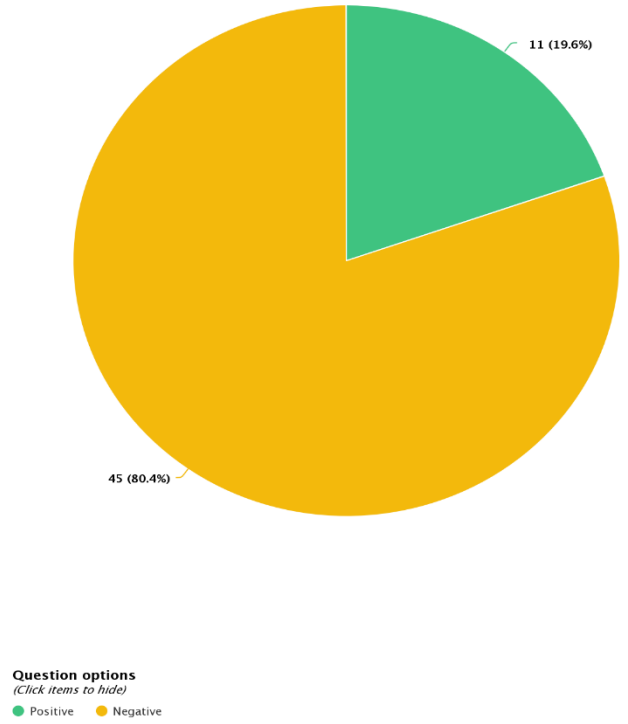
Where do you see Ibis?

(Survey results from the community survey)

The majority of the 77 community survey participants have observed Ibis at:

- Freshwater Lake Reserve (66 participants)
- A private residential yard (28)
- Local parks and reserves (16).

A number of participants cleaned up droppings on their property (24) or actively chased them away (23).



Is your experience positive or negative?

(Survey results from the community survey)

Many of the 77 community survey participants said their Ibis experience was negative (80%).

Negative Ibis experiences included:

- They are noisy
- They are very smelly birds
- Make a mess of paths and park benches
- Make a mess of roofs
- There are too many of them
- They are intimidating in size and number
- They are killing the palms they roost in
- Other birds can't compete with them.

The positive Ibis experiences included the following responses:

- Love bird nature in the area.
- Find it a peaceful and enjoyable place to live.
- It is a delight to see all the changing bird activity at Freshwater Lake at all times of the year, even during the Ibis nesting period.
- Lovely bird to have as part of the wildlife in Adelaide.
- I think they are lovely creatures and beautiful to look at.

A number of the comments from our community related to the amenity and cleanliness of the local area, particularly Freshwater Lakes Reserve. Comments included:

- I would not like to see loss of trees as a solution when we have too few trees in the western suburbs as it is.
- Please do not remove any trees! We don't have enough trees in our council area as it is!
- Removing trees will spoil the appearance of the reserve and the birds will simply move to other existing trees.
- If pruning the trees simply causes the birds to move to other trees in the area, it's not really solving the problem.
- When the palms are pruned the Ibis move to the palms near our property.
- We should discourage bird feeding at the duckpond.
- We need more signs regarding not feeding the birds and ducks bread.
- It would be good to see the walking paths and seats around the duck pond cleaned more regularly.

The consensus of people surveyed was that:

- Some form of management of Ibis at Freshwater Lakes Reserve should occur.
- Existing trees should be kept and other methods of managing Ibis found.

Community Discussion Evening Outcomes

The information gathered from the community surveys then informed the agenda for the community discussion evening on the 5 March 2019. The presentations by Professor Darryl Jones, Department for Environment and Water and SEED Consulting providing the basis for an open, transparent and informative discussion for all present with the sharing of stories and experiences between community and ecological specialists. The key take-aways from the community discussion evening are:

- Freshwater Lakes Reserve is an important place for our community.
- Local residents would like to see more emphasis given to regular maintenance and cleaning of paths and seating around Freshwater Lakes Reserve.
- There is a very strong sentiment that existing trees be retained as they are important to the amenity of the local area.
- There is a raised awareness, for those present, of why the Ibis is attracted to the local area, the natural behaviour of the species, and the complexities of managing Ibis populations, drawn from past experiences around Australia.
- Community would like to see some form of management take place to reduce Ibis numbers.

Management Options Workshop

The management options workshop held on the 26 March 2019 included relevant Council staff, SEED Consulting, representatives from adjoining councils and State Government, as well as two local residents. The workshop participants considered background information, community feedback received to date and worked through a range of potential management options. The community survey, community discussions and workshop outcomes have informed the development of the Draft Ibis Management Strategy.

5. Next Steps

Following the development of the Draft Ibis Management Strategy, the next step will be to seek the approval of Council to commence community comment on the Draft Ibis Management Strategy.

7.3 Appendix C. Setting Actions – Summary of Workshop

Ibis Management Strategy

Management Options Workshop

Summary Document

14 April 2019

seed
consulting services

www.seedcs.com.au

Ibis Management Strategy
Management Options Workshop

Summary Report

prepared for the City of Charles Sturt

Prepared by
Seed Consulting Services
106 Gilles Street, Adelaide, South Australia 5000
www.seedcs.com.au

1 Introduction

Seed Consulting Services (Seed) has been engaged by the City of Charles Sturt (CCS) to prepare an Ibis Management Strategy. An important part of this strategy includes engagement with a wide range of stakeholders, including Council, State government and the community.

During progress of the project Seed and CCS have engaged with these stakeholders in a variety of ways, including:

- A questionnaire survey of residents;
- A drop in information morning at Freshwater Lake (Delfin Island, West Lakes);
- An information evening at the West Lakes Community Centre; and
- An online “YourSay” questionnaire.

A final engagement workshop was arranged to work with a selection of key stakeholders to consider a range of possible management options, and if possible, agree and suggest priorities for these options.

This report summarises the methodology, discussions and outcomes of an Ibis management strategy options workshop held at Council on Tuesday 26 March 2019.

This report, plus the summaries from the other forms of community engagement, Seed’s literature review and discussions with subject matter experts (in SA and interstate) will form the basis for development of a draft Ibis Management Strategy Plan for consideration by Council.

2 Background

2.1 Intent of the project

The intent of the project to develop prioritised actions and management techniques to be outlined in a Strategy that will effectively manage the increasing impacts of the Ibis in the urban area including the potential impacts on the Ibis population within the western suburbs of Adelaide. The outcomes of a particular management approach may identify alternative nesting sites for the Ibis which will need to be managed into the future and recommendation should be provided as to how these also can be mitigated.

2.2 Community Consultation

A desktop study by Seed initiated the project with particular focus on methods for engagement with stakeholders in other states of Australia.

During the subsequent progress of the project Seed and CCS engaged collaboratively with a range of stakeholders in a variety of ways, this included:

- A questionnaire survey of residents (conducted with targeted residents on Delfin Island by CCS);
- A drop in information morning at Freshwater Lake (Delfin Island, West Lakes) Initiated CCS and supported by Seed;
- An information evening at the West Lakes Community Centre (including national expert, Professor Darryl Jones (collaboratively designed and run by CCS and Seed); and
- An online “YourSay” questionnaire (prepared and managed by CCS).

Results of the “YourSay” consultation process were presented to the community at the Information evening. They will be presented in more detail in Seed’s final report (Ibis Management Strategy).

3 Management Strategy Workshop

The following section summarises the design, methodology and outcomes of a management strategy workshop run by Seed and CCS at Council's offices on Tuesday 26 March 2019. The intent of the workshop was to consider all the review and consultation work to date, discuss a range of possible management options and if possible, score and prioritise (or dismiss if appropriate) these possible management actions.

3.1 Design

A select group of approximately 20 stakeholders were approached to attend the workshop. They included:

- The Seed project team;
- CCS project team and internal stakeholders;
- A DEW ecology specialist; and
- Interested member of the community.

Based on project work to date (including community and specialist ecological advice), Seed prepared a range of possible management options (Seed Attachment B) and a method for considering the economic, social and environmental factors that should be considered. This matrix was then used to score each possible management action (Attachment C).

3.2 Methodology

An agenda for the workshop was prepared (Attachment A).

Background on the project and a summary of consultation to date was presented.

Seed presented a range of (17) possible management actions (Attachment B1). The group discussed intent, and a range of aspects relating to social, economic and environmental factors that should be considered for each possible action (Attachment B2). Fifteen (15) of the options were scored. Two were not (do nothing and XXXX).

A scoring methodology was used to for each – social, economic and environmental category to assist in understanding the magnitude or influence of these factors in helping CCS to decide on possible actions to present to Council for consideration. (Attachment B3 & C summarise the actions and the scoring methodology and outcomes.

3.3 Outcomes

A prioritised list of actions and notes on general discussion were recorded. Attachment C presents the scored options, with positive scored coloured green, neutral options orange and non-preferred options coloured red.

4 Discussion and Next Steps

Discussion

Focus on the Social, economic and environmental aspects of a particular action enabled the group to consider aspects such as:

- the impacted residents and wider community reaction to an action;
- the cost to Council of a particular action;
- the perceived benefit (or not) to the environment (including the Ibis and associated environments);
- the likelihood of unintended consequences, such as Ibis colony relocating to another street or part of the Council area; and
- evidence of management outcomes in other parts of Australia.

A summary of the scoring of actions is provided in Table 1 and summarised in key headings in Attachment C.

Generally, there was consensus that removing trees, killing or relocating (physically) the ibis were not socially or environmentally acceptable outcomes and would likely be medium to high cost. Other disruption actions such as egg painting and use of noise would need more work to consider the benefits, but generally noise was considered to have social impacts and egg disruption may not reduce the colony size (new birds may enter).

Lower cost and likely high impact (in moving the Ibis along, or reducing numbers) by means of disruption methods (targeted lighting and flag disruption) were considered the most favourable outcomes due to low cost, demonstration of action to attend to the perception of their being problem, particularly on Delfin Island.

Table 1. Summary of action scoring

Options	Score
Ibis census	3
Flag disruption	2
Targeted lighting	1
Signage	1
Create refuge	1
Ambient lighting	0
Tree management/trimming	0
Noise disruption	-1
Egg disruption	-1
Ibis cull	-2
Ibis relocation	-2
Tree removal	-3
Nest disruption	-3

CCS advised that a number of cleaning actions would form part of ongoing maintenance (pressure cleaning benches and footpaths), so these aspects were not scored.

In all cases, it was considered that action taken must consider a range of barriers and benefits and provide a clear outline of the expectations (e.g. what will be achieved?) of an

action before developing a trial. It was considered that monitoring and evaluation should be conducted following an action to ascertain the benefit and or any unintended consequences.

Next Steps

Seed will now prepare the Ibis Management Strategy Plan taking into consideration all consultations steps to date and the outcomes of this workshop.

5 Attachments

Attachment A. Workshop Agenda.

Time	Action
2:00pm	Welcome (MS)
2:00 - 2:02pm	Introduction to project (MH)
2:03 – 2:10pm	Community surveys – summary of what was done and key findings (GH)
2:10 – 2:20pm	Background to Ibis ecology (JG)
2:20 – 2:25pm	Background to management options – some case studies summarising what's been tried where and outcomes (AC)
2:25 – 3:15pm	Activity 1: Evaluate management options (cost-benefit) – led by (MS)
3:15 – 3:30pm	Tea Break
3:30 – 4:05pm	Activity 1 (Cont.): Evaluate management options (cost-benefit) – led by (MS)
4:05 – 4:55pm	Activity 2: Prioritise management options and identify "top 3" for potential trial – led by (MS)
4:55 – 5:00 pm	Next steps and close (MH)

Attachment B1. List of Management Options.

1. Tree removal
2. Tree management/trimming
3. Ibis cull
4. Ibis relocation
5. Egg disruption
6. Increased ambient lighting
7. Targeted tree lighting
8. Do nothing
9. Signage and active regulation to stop bird feeding
10. Noise disruption
11. Flag disruption
12. Community engagement and education
13. An ibis census (stocktake)
14. Track ibis movements
15. Nest disruption
16. Create an urban refuge
17. Cleaning around the lake

Attachment B2. Assessment table for strategy options scoring

Option: Ibis relocation

	Cost (High, medium, low)	Benefit (High, medium, low)
Social	Medium	Medium
Environmental	Low	Low to No
Economic	High	Low

Example assessment table

Attachment B3. Scoring matrix for strategy for first three options

ACTIVITY 1 Evaluating Triple Bottom Line of Management Options

	Cost	Benefit
High	-3	3
Medium	-2	2
Low	-1	1

Option:	Ibis cull (reduce population size)			Option:	Ibis relocation			Option:	Targeted lighting		
	COST	**BENEFIT**			**COST**	**BENEFIT**			**COST**	**BENEFIT**	
SOCIAL	-3	2		**SOCIAL**	-2	2		**SOCIAL**	-1	2	
ENVIRONMENTAL	-1	1		**ENVIRONMENTAL**	-1	1		**ENVIRONMENTAL**	-1	1	
ECONOMIC	-2	1		**ECONOMIC**	-3	1		**ECONOMIC**	-1	1	
SCORE	-6	4	-2		-6	4	-2		-3	4	1
economic benefit to house prices locally??											
socila benefit high locally, low broader					high locally for short term where move to???						

Options	Score
Ibis census	3
Flag disruption	2
Targeted lighting	1
Signage	1
Create refuge	1
Ambient lighting	0
Tree management/trimming	0
Noise disruption	-1
Egg disruption	-1
Ibis cull	-2
Ibis relocation	-2
Tree removal	-3
Nest disruption	-3

Short term vs. long term actions

tracking - perhaps less likely

Attachment C. Table of Management Options - categorised.

Do Nothing	Disruption	Education	Maintenance	High impact	Landscape
• Do nothing	• Egg disruption • Targeted tree lighting • Nest disruption • Flag disruption • *Noise disruption***	• Signage • Track Ibis movements • An Ibis census • Community engagement and education	• Tree removal • Tree management/ trimming	• Ibis relocation • Ibis cull	• Increased ambient lighting • *Create urban refuge*** • Cleaning around Lake • Changing the landscape • Tree selection