



# **AGENDA**

## **Lake Claremont Advisory Committee Meeting Thursday, 7 May 2020**

**I hereby give notice that a Lake Claremont Advisory Committee  
Meeting will be held on:**

**Date: Thursday, 7 May 2020**

**Time: 8:00am**

**Location: ZOOM Video Conference**

**Liz Ledger  
Chief Executive Officer**

## **DISCLAIMER**

Persons present at this meeting are cautioned against taking any action as a result of any Committee recommendations until such time as those recommendations have been considered by Council and the minutes of that Council meeting confirmed.

## Order Of Business

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- 1      DECLARATION OF OPENING / ANNOUNCEMENT OF VISITORS**
- 2      RECORD OF ATTENDANCE / APOLOGIES**
- 3      DISCLOSURE OF INTERESTS**
- 4      CONFIRMATION OF MINUTES OF PREVIOUS MEETING**

**That the minutes of the Lake Claremont Advisory Committee Meeting held on 13 February 2020 be confirmed.**

## 5 REPORTS OF THE CEO

### 5.1 LAKE CLAREMONT OPERATIONAL PLAN 2019-20 PROGRESS REPORT

**File Number:** GOV/00051-03, D-20-14174

**Author:** Jared Bray, Coordinator Parks and Environment

**Authoriser:** Liz Ledger, Chief Executive Officer

**Attachments:**

1. Lake Claremont Operational Plan 2019-20 - Progress Report [↓](#) 
2. Quendas at Lake Claremont [↓](#) 
3. Neonicotinoids Usage - Town of Claremont [↓](#) 

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#### PURPOSE

The purpose of this report is to update the Lake Claremont Advisory Committee (LCAC) on tasks and activities that have been completed in relation to the management of Lake Claremont and the surrounding parklands.

#### BACKGROUND

Activities which are identified in the Lake Claremont Operational Plan relating to the Lake Claremont Management Plan have been completed at the Lake Claremont precinct. These activities relate to the following:

- Turf Management
- Weed Management
- Litter Management
- Park Infrastructure
- Tree Management
- Vegetation Management
- Water and Soil Management
- Fauna Management
- Flora Management
- General Management
- Projects

#### DISCUSSION

Please see a short brief on each activity below:

##### Turf Management

Mowing of the parkland area has been completed as per the mowing schedule. Contractors reported a small amount of Caltrop located in the North West corner of the off lead dog exercise area. Council officer's hand weeded the area to remove the weed and have been monitoring this area along with other known locations.

##### Weed Management

The programmed Weed Control Service in March has now been completed. Weed load is currently low with no reports of off target damage or locations requiring retreatment. Weed control contractors have been discussing with Council officers the improvements to revegetation methods and alternate methods of reducing the weed load while increasing habitat and native flora.

Over the next few weeks, path edges surrounding the Lake will be mulched to suppress the germination of weeds. The 2020 planting site has also been treated to control the couch grass. The area will be monitored and treated as required.

Contractors are scheduled to complete two hand weeding days which include removing weeds from the lake bed, this work will assist in removing excess nutrients and allow native reeds to germinate. Council officers have assisted with the removal of over 500 weed bags in the last month.

### Litter Management

Numerous bush camps have been reported and removed in the last few months. Council officers will continue to monitor the known locations and remove as required. Recent weeks have also seen an increase in patronage around the Lake and the broader reserve resulting in park bins filling up faster and a greater use of dog bags. Council officers now empty bins and top up dog bags more frequently and monitor the situation, the Town has also increased the servicing via the primary waste contractor by 50% to cater for this additional current demand.

### Park Infrastructure

In accordance with the Federal Government COVID-19 restrictions all play equipment has been closed to members of the public. However, playground maintenance including soft fall cleaning has been completed during this same period at Elliot Road and Stirling Road. Minor maintenance and repairs to the playgrounds have also been completed including filing up splits in the wood, re-securing components, smoothing, sanding and oiling of wooden parts.

### Tree Management

Council officers have removed some minor failure due to summer storms along with some unforeseen failures. Overall, the tree health in the parklands is good. Some minor dead wooding and clearance pruning is scheduled during winter.

Unfortunately, there were 2 tuart trees which died near the Elliot Road nature playground. There had been previous tree deaths near this location which had been attributed to the past history of the site. The trees will be considered for replacement over winter.

Quotes have been received for the removal of the numerous Tamarix stand located in the northern bushland adjacent to Alfred Road. These trees will be poisoned prior to removal to reduce the likelihood of regrowth. Once the trees are removed, the regrowth will be managed. The removal of the Tamarix is scheduled to occur shortly.

### Vegetation Management

Contractors have completed the fire break clearing works. Path edges will be maintained and the paths kept clear of vegetation to ensure the fire break is effective.

### Water and Soil Management

Council officers have scheduled water quality sampling to occur with the attempt to capture the first flush of the winter rains.

### Fauna Management

Repaired duck boxes have been re-installed with their locations mapped and recorded on the Council's IntraMaps system. The location of bird and bat boxes have also been mapped. As a proactive measure, some minor ongoing repairs will be required to ensure they have the best chance of getting used by wildlife.

Please see attached “Quendas at Lake Claremont” report.

### Flora Management

The 2020 Planting Site has been prepared and is ready for planting. Habitat logs have also been installed, and the fencing has been costed and is scheduled for installation in the coming months. See attached report for Neonicotinoid use at Lake Claremont.

A Grass Tree Management strategy has almost been completed and will be distributed to the next available LCAC meeting.

### Projects

The re-sheeting of the FOLC shed has been postponed due to the COVID-19 situation.

Logs will be placed along the border of the extended dog off lead area to assist with delineation while also creating some habitat for insects and a place for patrons to rest and dogs to play on.

Old redundant signs which surrounded the Lake and Parkland have been removed. Path resurfacing has been completed between Cresswell Park and Stirling Road Park, new signs in accordance with the Council adopted Sign Management Plan have been approved and ordered and will be installed shortly (including relocation of current signs and corrections to directional information)

## **PAST RESOLUTIONS**

Lake Claremont Advisory Committee Meeting held on 13 February 2020, Resolution 002/20:

*That the Committee notes the progress of the Lake Claremont Operational Plan 2019-20.*

## **FINANCIAL AND STAFF IMPLICATIONS**

Resource requirements are in accordance with existing budgetary allocation.

## **POLICY AND STATUTORY IMPLICATIONS**

There are no policy and statutory implications.

The following documents are relevant to the Lake Claremont area.

- Lake Claremont Management Plan 2016-21
- Lake Claremont Operational Plan 2019-20

## **COMMUNICATION / CONSULTATION**

Consultation to members of the community in respect to Lake Claremont has been undertaken via the Town of Claremont website [www.claremont.wa.gov.au](http://www.claremont.wa.gov.au), the distribution and availability of Friends of Lake Claremont newsletters and Town Notice Boards located at Lake Claremont.

## **STRATEGIC COMMUNITY PLAN**

### **Liveability**

*We are an accessible community with well-maintained and managed assets. Our heritage is preserved for the enjoyment of the community.*

- Provide clean, usable, attractive and accessible streetscapes and public spaces.
- Maintain and upgrade the Town's assets for seamless day to day usage.
- Develop the public realm as gathering spaces for participation, prosperity and enjoyment.



### **Environmental Sustainability**

*We are a leader in responsibly managing the built and natural environment for the enjoyment of the community and continue to demonstrate diligent environmental practices.*

- Take a leadership in the community in environmental sustainability.
- Protect and conserve the natural flora and fauna of Lake Claremont and the Foreshore.

### **URGENCY**

None

### **VOTING REQUIREMENTS**

Simple majority decision of Council required.

### **OFFICER RECOMMENDATION**

**That the Committee notes the progress of the Lake Claremont Operational Plan 2019-20.**

## Lake Claremont Operational Plan 2019-20

Lake Claremont Maintenance and Capital Works Program (Updated 14 April 2020)															
Activity	By Whom	Where	Frequency per annum	July	August	September	October	November	December	January	February	March	April	May	June
<b>Turf Management</b>															
Mowing non irrigated turf	Contractor	Stirling Rd Park	12	X	X	X	X	X	X	X	X	X	X		
Mowing irrigated turf	Contractor	Irrigated Turf Areas	26	X	X	X	X	X	X	X	X	X	X		
Broadleaf weed control	Contractor	Where bindii present	1			X									
Fertilising and soil tests	Contractor	All Parks	1			X									
Reticulation inspections	Contractor & In House	Lake Claremont, Mulder and Stirling Road Parks	40	X	X	X	X	X	X	X	X	X	X		
Amend Irrigation Programs	In House	Lake Claremont, Mulder and Stirling Road Parks	As Required												
Bore Meter Reading	In House	Lake Claremont, Mulder and Stirling Road Parks	8			X	X	X	X	X	X	X	X		
Flow and pressure tests	Contractor	Lake Claremont, Mulder and Stirling Road Parks	1		X										
<b>Weed Management</b>															
Wetland Areas weed control	Contractor	Lake Claremont Lake bed	1						X	X	X	X			
Dryland Areas weed control	Contractor	Dryland natural areas	8	X	X	X		X					X		
Verge weed control program	Contractor	Affected Sticks Road, Lakeview verge	8	X	X	X		X		X			X		
Sumps weed control program	Contractor	Sticks Road Street	2		X		X								
Review Weed Control Program	In House	Everywhere	1							X					
Hand Weeding (Walking Weeders)	Volunteers	Dryland natural areas	52	X	X	X	X	X	X	X	X	X	X		
Hand Weeding (Adopt a spot)	Volunteers	Dryland natural areas	12	X	X	X	X	X	X	X	X	X	X		
Hand Weeding (Busy Bees)	Volunteers	Dryland natural areas	12	X	X	X	X	X	X	X	X	X	X		
Hand Weeding (Contactors)	Contractor	Dryland natural areas	8												
Weed Mapping	In House	Dryland natural areas	8					X				X			
Mulching	Contractor & Volunteers	Dryland natural areas	12					X			X	X			
<b>Litter Management</b>															
Bin Collection	Contractor	All parks	52	X	X	X	X	X	X	X	X	X	X		
Bin cleaning program	Contractor	All parks	1												
Litter Clean Up	In House & Volunteers	All parks	52	X	X	X	X	X	X	X	X	X	X		
Dog poo bag replacement	In House	All parks	52	X	X	X	X	X	X	X	X	X	X		
<b>Park/Furniture Management</b>															
Park weekly inspections	Contractor	Stirling Rd & Mulder Parks	52	X	X	X	X	X	X	X	X	X	X		
Park softfall sieving	Contractor	Stirling Rd & Mulder Parks	4	X			X				X				
Park annual audit	Contractor	Stirling Rd & Mulder Parks	1	X											
BBQ cleaning	Contractor	Stirling Rd & Mulder Parks	52	X	X	X	X	X	X	X	X	X	X		
Deck Oiling Program	Contractor	Bird Observation Platform and Lake Jetty	2					X							
Furniture Cleaning	Contractor	Stirling Rd & Mulder Parks	As Required												
Drink Fountains Filter Replacement	Contractor	Stirling Rd & Crescent Park	2					X							
Asset condition audits	In House	All Parks	1									X			
<b>Water/Soil Management</b>															
Water Sampling	Contractor	As per Water Sampling Plan	2							X					
Macroinvertebrate Sampling	Contractor	As per Water Sampling Plan	2					X							
Water & Invertebrate Report	Contractor	As per Water Sampling Plan	1						X						
Sediment Sampling & Reporting	Contractor	As per Sediment Sampling Plan	1							X					
Drain Outfall Inspections	In House	Before major rainfall events	6												
Erosion Prone Area Inspections	In House	After major rainfall events	6	X	X										
NIMF Plan Review	In House	Outlook/Crescent	1						X	X					
Botulism Inspections	In House	As required when water levels are low	4									X			
Monitoring of Water for Dissolved Oxygen	In House	As required when water levels are low	4							X	X	X	X		
Service water probe	Contractor	As required	1					X	X						

Activity	By Whom	Where	Frequency per annum	July	August	September	October	November	December	January	February	March	April	May	June
<b>Tree/Vegetation Management</b>	Various														
Significant Tree Inspections	Contractor	Ficus, Ficus Turtis	1						X						
Tree inspections	In House	Everywhere	32	X	X	X	X	X	X	X	X	X	X		
Tree works	Contractor	Everywhere	As required	X	X	X	X	X	X	X	X	X	X		
Tree Planting	In House & Volunteers	As identified	1	X	X										
Tree pruning	Contractor & In House	Everywhere	As required	X	X	X	X	X	X	X	X	X	X		
Tree Treatments	Contractor	Bee Control, Caterpillar	2			X									
View Corridor Pruning	In House	Northern and Eastern buffer Areas	4		X			X			X				
Maintain Fire Access Paths	Contractor & In House	Goulders Rd & Alfred Road	1				X								
Park path clearing program	Contractor & Volunteers	All Parks	12	X	X	X	X	X	X	X	X	X	X		
Tubestock Planting	Volunteers	As per attached map	1	X											
Direct Seeding	Contractor	Trail in Salsburg Bushland	1												
Fungi Mapping	In House	Everywhere	2												
Photopoint Monitoring	Volunteers	Agreed locations	1									X			
Update Species Planting Database	In House	Any planting lists	1												
Revegetation Fencing Inspections	In House	Everywhere	1						X	X					
Seed Collection	In House & Volunteers	As required for revegetation	2					X	X	X	X	X	X		
Finalise Planting areas for two seasons	In House & Volunteers	Operational Plan	1									X			
<b>Fauna Management</b>	Various														
Bush Bird Box Inspections	In House	As per map	1						X						
Bat Box Inspections	In House	As per map	1						X						
Duck Box Inspections	In House	As per map	1								X	X			
Duck Floating Nest Installation	Volunteers	Isolate bed	1								X	X			
Bird Counts	Volunteers	Everywhere	4			X			X			X			
Feral Animal Monitoring	In House	Everywhere	32	X	X	X	X	X	X	X	X	X	X		
Update seasonal Signage	In House	Swans, Turkeys, Snakes, etc	4			X			X			X			
<b>General Management</b>	Various														
Update Noticeboard	In House	Lafayette Road Background & Cesswell Park	12	X	X	X	X	X	X	X	X	X	X		
Prepare Reports	In House	Office	4		X			X			X				
Prepare Agenda	In House	Office	6		X		X	X			X				
Preparing Volunteer Work Program	In House	Office	2						X	X					
Updating FOLC Communication Book	In House & Volunteers	FOLC shed	26	X	X	X	X	X	X	X	X	X	X		
Fungi Identification	In House	Everywhere	7												
Quill item	In House	Office	8	X	X	X	X	X							
Update Chemical Quantities Database	In House	Office	after each service	X	X	X	X	X	X	X	X	X	X		
Suitable Plant Species Liaison for Planting Areas	In House & Volunteers	Office	2					X			X				
Preparation of Procedures	In House	Office	2							X					
Preparation of Task list for Field Officers	In House	Office	12	X	X	X	X	X	X	X	X	X	X		
Spot checks on Contractors- PPE/ Signage/Conditions	In House	Everywhere	4	X			X			X					
Training	In House	Office	2						X						
<b>Capital Works Program</b>	Various														
Revegetation fencing	Contractor	Planting sites	1	X	X										
Limestone Path Repairs (as required)	Contractor	As per map	2		X										
Tamarix Removals and preparation for Revegetation	Contractor	FOLC shed	1								X	X			

## Quendas at Lake Claremont

### *Overview*

On the 4<sup>th</sup> of March 2020, the Department of Biodiversity, Conservation and Attractions (DBCA) deemed Lake Claremont a suitable refugia for a small population of quendas and that a translocation from the Upper Swan reserves was possible in May 2021. The proposed release date ensures that there is time enough to consult with relevant stakeholders, consider all of the necessary management options, and confirm Lake Claremont as a suitable site for a trial release of quendas.

The DBCA are currently reviewing their existing translocation permits, so that they align with the new Biodiversity Conservation Act (2016). These permits must be in place before translocation can occur.

The Town of Claremont (TOC) needs to stringently manage ongoing fox and cat control and also be confident the quendas will not have an adverse impact on long-necked tortoise eggs. TOC also will be required to run an ongoing monitoring program of the quendas. This could involve a 'hands-off' approach and include monitoring cameras and observations of quenda diggings.

TOC welcomes the assistance offered from the Friends of Lake Claremont (FOLC) to assist in these and other related undertakings.

It is advisable for the Town of Claremont to run an education program about the quendas and their predators, including both feral and household cats, many months before the release.

### *Fox and cat predation*

The main threat to a group of quenda establishing post-translocation would be predation by foxes and cats. Fox and cat control would need to be addressed before translocation can go ahead and would require a stringent ongoing program to maintain a low density, preferably absence, of predators.

### Foxes

Red foxes (*Vulpes vulpes*) frequent Lake Claremont. While families of foxes were known to inhabit the den on the eastern peninsular in the past, they were eradicated, and current foxes are considered transient visitors to the site (Head 2014, pers comm; Lake Claremont Management Plan 2016 -2012 Appendix 3 Fauna Values). The most recent fox sighting was in February 2020 (pers comm)

It is widely accepted by local ecologists that there are high numbers of feral foxes roaming in the Perth metro area. They are particularly attracted to golf courses and schools, as they can access food from bins and watch out for danger in the wide-open spaces. It is guesstimated that Lake

Claremont would have visits from up to 15 foxes from the surrounding areas particularly over the summer months.

#### Cats

Free roaming domestic and feral cats have been observed at Lake Claremont attacking and killing wildlife. They will pose a significant threat to newly established populations of quendas at Lake Claremont. There is an opportunity for the TOC to further implement the Cat Act 2011 (WA) as part of the management of cats around Lake Claremont, and for residents around Lake Claremont to understand the impact of cats on quendas.

The Cat Act 2011 (WA) requires owners to take responsibility for their animals and ensure they are wearing registration tags when in a public place.

'Natural Area's' review found no evidence of a Cat Local Law. 'Natural Area' recommended the development of a Cat Local Law and education package, including information added to the Town website, to inform the community of requirements and expectations associated with the full introduction on the Cat Act 2011 (WA)(Lake Claremont Management Plan 2016 -2012 Appendix 3 Fauna Values).

#### *Education program*

Dr Geoff Barrett, the DBCA Regional Ecologist for the Swan Region, is happy to speak with the FOLC and TOC about the potential quenda reintroduction. Issues such as interactions with the surrounding residences, vehicle strike, fox and cat predation and dog disturbance are important to be understood broadly within the community for the program to be successful over the long-term.

#### *Possible impact on Long-necked tortoises*

Quendas have been known to eat the eggs of the long-necked tortoise (*Chelodina (Marcodiremys) collie*) eggs. It is important to be sure before the introduction of quendas at Lake Claremont that quendas will not have a negative impact on the long-necked tortoises that currently reside there. **Advise is currently being sought.**

#### *Water and quendas at Lake Claremont*

Quendas rely solely on the moisture from the plants, fungi and insects they consume. They do not need a permanent water source.

#### *FOLC involvement*

FOLC have indicated they are thrilled about the quenda release at Lake Claremont and are keen to be involved in the program and ongoing monitoring. Ideally one or two members of FOLC group will be charged with the responsibility to work with TOC and the quendas.

FOLC have already suggested they would like to take on creating 'quenda safe houses'.

### *Monitoring*

#### WESROC

In 2018, WESROC ran a feral animal control program at Lake Claremont between the 3<sup>rd</sup> of September and the 5<sup>th</sup> of October. Foxes were targeted using rubber-jawed foot-hold traps and feral cats were targeted using cage traps.

During the control program a total of one (1) feral cat and one (1) fox were caught. The fox was an adult male and it was caught at Allen Park. A survey of Lake Claremont was undertaken 11 days prior to the implementation of the trapping program and found no evidence of fox activity during the survey. Trapping in the area had not occurred for 12 months and there was reason to believe that there were more foxes in the area during the time of trapping in 2018.

#### Contractors

Eddie Juras from 'Feral Invasive Species Eradication Management' has provided the following advice and costing in an email in March 2020:

'I have looked at the area (Lake Claremont) for the control program and think that you will need at least 2 X 7-day trapping programs per year. What concerns me is the fact that foxes have an easy thoroughfare from Herdsman Lake to Wembley Golf Club then to Perry Lakes Bushland then to Cottesloe Golf Club then to Lake Claremont and back. I have trapped in the past at Herdsman Lake and removed many foxes from there.

Also foxes love golf courses and schools as they have free range at night and there is food in the rubbish bins for them. I think you will need a 14-day program in these areas (Lake Claremont) at least once a year to keep the numbers down. One 7-day program at Lake Claremont would be A\$3,850.00 NO GST Payable.

Total cost A\$3,850.00. If you would like a formal quote on the program, please let me know'.

#### Feral fence along Alfred Road

Currently being assessed with Amendments to the install being considered.

#### Education

Dr Geoff Barrett, the DBCA Regional Ecologist for the Swan Region has offered to provide training at no cost.

#### Feral Control

Eddie Juras – A\$7,700 per annum

#### Monitoring of quendas

Minimal cost for TOC and FOLC, currently looking into product reviews of suitable cameras.

## Neonicotinoid use at the Town of Claremont

### Overview

A request was made at the last Lake Claremont Advisory Committee meeting to ascertain the use of neonicotinoids at the Town of Claremont (TOC).

There are scientific studies published globally that suggest a link between the use of neonicotinoids and the declining health of honeybees in some regions.

According to the Australian Pesticides and Veterinary Medicines Authority article on their website: 'Current review of neonicotinoids', wild honey bee populations are not in decline in Australia, due in part, to our unique ecosystem.

The article goes on to state that; *As with all agricultural chemicals, the APVMA continues to monitor and assess new information and credible scientific reports as they become available. In November 2019, the APVMA decided to commence a [chemical reconsideration of neonicotinoid insecticides](#) to reconsider approved active constituents, registrations of selected products containing neonicotinoids, and all associated label approvals on the basis of risks to the environment.* (Current review of neonicotinoids - Australian Pesticides and Veterinary Medicines Authority website article – March 2020)

Our contractors and staff were asked to provide their approach to insect management and to list the products they used to do so. Contractors were keen to point out that they follow the advice of peak bodies such as the Australian Pesticides and Veterinary Medicines Authority, when choosing products for bee and insect removal, that they were aware of the possible impact of neonicotinoids, and they did try to or in some cases, did avoid, products that contained neonicotinoids.

Our contractors and staff consistently said they avoided removing bees and other insects either physically or by other means whenever they could. They only removed hives and infestations when there was a request or danger to the public or property. Otherwise wild bee hives and insect nests were left intact and untouched.

Table 1. Below lists insect control products that are used by Town of Claremont staff and contractors. Angela Downey from the ChemCentre provided expertise and advised if neonicotinoids were present in each product.

Product	Contains neonicotinoids or not
Cooper Dust	Assumed to be Coopex Dust (Bayer) Active ingredient: permethrin 25:75 10g/L <b>No</b>
Bifenthrin/liquid bifenthrin	<b>No</b>
Pyrethi dust/liquid	Assumed to be Pyrethrin Dust <b>No</b>
Granular hydramethylnon /Amdro granular	<b>No</b>
Bacillus thuringiensis	<b>No</b>
<b>Initiator tabs – imidacloprid</b>	<b>Yes - neonicotinoid family</b>
Permethor - this consists of 80 per cent talcum powder and 10g/kg Permethrin (a synthetic product)	<b>No-</b>
Pest Xpert Wasp	<b>No - active ingredient(s) Cyphenothrin and D Tetramethrin (pyrethroids)</b>

Table 1. Products used by TOC staff and TOC contractors indicating if neonicotinoids are present.

Johanna Riddell – Bushcare Officer - March 2020



## **5.2 REPLACEMENT OF LIMESTONE PATHS AT LAKE CLAREMONT RESERVE**

**File Number:** PRK/00123-03, D-20-14863

**Author:** Andrew Smith, Director Infrastructure and Assets

**Authoriser:** Liz Ledger, Chief Executive Officer

**Attachments:** Nil

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### **PURPOSE**

To provide feedback to the Council with respect to the proposed replacement of current limestone paths at Lake Claremont with bitumen paths.

### **BACKGROUND**

During deliberations for the draft 2020/21 budget, Councillors informally discussed allocations for the replacement of footpaths within the district as well as within Lake Claremont Reserve.

As Committee members would be aware, the paths at Lake Claremont are made up of two distinct types, the wider red oxide bitumen Principal Shared Paths (PSP) that function as part of the Regional Bike Network, and the narrower 1.8-2.0m limestone paths that are located around the other sections of the Lake Reserve.

As part of the 2020/21 budget a provisional sum to replace an approximate 630m length of limestone footpath, due to high levels of potholing and irregularity was included in the draft budget papers.

Councillors asked if consideration had been given to the replacement of the limestone path, which appeared to need regular repair or replacement, with a more durable bitumen path. Officers advised that whilst it had been understood to have been considered in the past, it had not been considered more recently.

It was agreed that Officers would both review the option of replacing the existing limestone paths at Lake Claremont with a bitumen alternate, as well as table the matter at the next Lake Claremont Advisory Committee meeting for comment.

### **DISCUSSION**

Limestone paths are located in Lake Claremont over an area of approximately 2.6 kilometres (including those located in the bushland near to the Lakeway development), most of these paths are constructed at a width of approximately 1.8-2.0m consistent with the widths of regular footpaths within the residential areas of the Town, if perhaps slightly wider to accommodate the wider array of users.

In recent years little money has been spent on these paths and over time there has been a gradual decline in their condition, with many sections of the path becoming badly rutted, having very irregular surfaces and suffering from erosion and subsidence.

Whilst the 'natural' look of the limestone paths appears to be consistent with the natural feel of many sections of the Lake Reserve through which they are located, some of these paths are also heavily frequented by a range of park users, so ensuring that the paths are both safe for use by this range of users including those with physical disabilities or other restrictions, is essential.

Limestone paths are also difficult to maintain in the traditional sense, in that it cannot be readily patched or filled as holes are created or erosion occurs, and when the profiling of the top section of path is replaced, officers report that from a regular smooth compacted surface, it takes a matter of days for the signs of rutting to appear.

Whilst many consider that recreational cyclists are both the cause (to some degree) of these issues, as well as one of the reasons that the limestone paths should remain, officers have advised that the narrow wheels on prams and other similar pushed vehicles cause obvious and immediate damage to the limestone surface simply because of the narrow wheel profile.

When the limestone path were first installed, the prevailing legislation in respect to the movement of pedestrians and particularly cyclists would have differed considerably to what is currently legislated, so the limestone path would have acted as a very effective delineation of a pedestrian only path compared to the much wider and more formal red oxide PSP bitumen path, designated for use by both pedestrians and cyclists alike.

With changes taking effect from mid-2016 to the Road Traffic Code, cyclists acquired 'As of Right' use on all footpaths rather than this being limited to only those users 12 year of age or less, as per the previous version of the Code.

In affect this meant that the limestone paths have been, since 2016, able to be legally used by any cyclist without restriction.

In a practical sense the surface condition of the path and its more narrow formation may act as a far greater deterrent to cyclists (particularly more organised higher speed cyclists) than signs that indicate rights of use as shown on the PSP, however in achieving this deterrent, the resulting limestone path has become ever more difficult and unsafe to use, and cost effectively maintain, particularly for the more frail users.

Anecdotally the cost of limestone paths at \$40 per sq.m (from an unconstructed form), is far less than the equivalent bitumen path at \$65 per sq.m (not including kerbing, which adds \$28/sq.m) , however this base rate does not take into account the life cycle of either type (limestone – 5 years, bitumen – 15 years).

Whilst the form of construction for both types of paths is relatively similar, particularly in respect to the sub base and base courses, given that the replacement of the surface for both simply requires the profiling of the top portion of the path, and retention of the sub base and base course (assuming no structural damage or water infiltration), the ability to maintain a consistently high quality top surface of a lime stone path is considerably more difficult than a limestone path, and officers have reported clear signs of damage to a new path surface with days of it being laid, simply through regular use.

Whilst the Town's asset management system assume a life expectancy for the limestone path of 5 years, this is not based on the expectation of a provision of a stable, regular top surface of the path, but more related to the period at which the path needs to be re profiled and replaced to ensure the structural integrity of the sub base and base course.

When these various elements are directly compared, the resultant comparison of costs is revealed;

Details	Price Per Sq.m	2.6km @ 1.8m width	Useful Life (yrs)	Cost Per year	Comments
<b>First Construction</b>					
Limestone	\$40	\$187,200	5	\$37,440	
Bitumen	\$93	\$435,240	15	\$296	With Kerb
Bitumen	\$68	\$318,240	15	\$21,216	Without Kerb
<b>Renewal</b>					
Limestone	\$25	\$117,000	5	\$23,400	
Bitumen	\$67	\$313,560	15	\$20,904	With Kerb
Bitumen	\$42	\$196,560	15	\$13,104	Without Kerb

As can be seen, whilst there is a considerable cost implication between the two types of path in terms of the initial development cost (\$93 versus \$40 per sq/m), this cost dramatically reduces when the cost is compared as an annual liability.

When this is then compared, using the life cycle of each form of footpath construction, and the renewal period, the cost of the bitumen path is between 11% (with kerb) and 44% (without kerb) cheaper per sq.m when compared with limestone.

### Use by Cyclists

One reason for the retention of limestone paths, is that it acts as a somewhat effective deterrent to cyclists, and it not unreasonable to assume that faced with the option of a rough limestone path, most cyclists, looking to use the Lake as connection between one location and another, would prefer the smoother red oxide bitumen surface provided by the PSP.

The assumption that the desire to influence use by certain users directly contributed to the use of limestone paths is validated by content of the report to the Ordinary Council meeting on November 3<sup>rd</sup>, 2009, in which it was stated (in part);

*Second option is to explore the possible downgrading of this path to a crushed limestone conservation path and create a new path to the eastern side of the lake as bitumen, cycle-friendly path. This will reduce human activity along the very narrow western section of the lake which in turn will help the natural habitat of the lake environment and also the erosion and ground movement of the steep banks.*

However, in seeking to maintain a rough surface to function as an effective deterrent this results in creating a path surface that may not be suitable for all users, or be able to be maintained at any level of consistency of surface, simply through usual wear and tear.

The Town has received feedback on several occasions that the limestone paths are not suitable for many path users, and with an average age for Claremont above that of the metropolitan area, creating safe and stable walking places for residents must be considered as part in the provision of these footpaths. This is validated by the considerable sums allocated annually by the Council to accelerate the replacement of the slabbed footpath network in the residential areas.

If it is considered that the retention of a particular form of path construction is required to act as a deterrent to other users (particularly cyclist) then the challenge is therefore to find a form of footpath construction and/or design that provides for a safe, and trafficable path for all users, whilst not providing an encouragement for those users, particularly cyclists, whose use may adversely impact on other users.

The Western Australian Local Government Association produced in partnership with the Department of Transport, a document entitled Shared Path Design, Technical Guidelines;

<https://walga.asn.au/getattachment/Documents/Shared-Path-Guidelines.pdf?lang=en-AU>

This publication was produced in October 2016, shortly after the changes to the Road Traffic Code were brought into effect, so it recognises the 'As of Right' provisions that currently apply to the use of footpaths by cyclists.

In summary the publication both recognises the conflicts that are generated on paths and also provides some design guidelines for the development of shared paths.

These designs however require a minimum width of 2.5-3.0m for the smallest low speed shared path. In a setting such as that in which the limestone paths are located, this is clearly not practical without substantial changes (some of them structural) to the layout of this area.

One recommendation however contained within the publication which may be worth considering is the use of the ripple strips as a possible deterrent for speed and to create awareness of different

conditions for cyclists, which whilst effective for this purpose have no adverse impact on pedestrians or other users.

It is clear that as of right powers provided by the Traffic Code allow any cyclist to use the existing limestone paths in their current form, and it has thus far been assumed that the small numbers of cyclists using these paths is as much to do with the surface condition of the path as anything else acting as an effective deterrent.

However in seeking to create a path that acts as a deterrent to cyclists by means of the quality of the surface condition, the path is actually generating a hazard to other users particularly elderly users and those with a disability.

The WALGA publication as referenced states;

*Many recreational cyclists ride to experience high amenity value or do it as a form of exercise.*

*They prefer riding on attractive and scenic routes at a lower speed compared to road cycling.*

*Time is often not a major consideration and the skills and abilities of these cyclists vary quite a bit.*

*Cycling preferences include:*

- *Comfort.*
- *Good surface.*
- *Preferably off-road paths.*
- *End of trip facilities.*

This differentiation is important as the fear that other forms of cyclists (commuter cyclists, utility cyclists and sports cyclists) will divert from the PSP is most likely unwarranted, as the risk of conflict is much higher, the path is much narrower and the ability to maintain an average speed is much harder.

In fact in recent years the greatest conflicts between cyclists and pedestrians have not occurred in low width, slow speed environments such as those that would exist at the Lake, but in dedicated high width PSP's, particularly those that form part of a much larger regional cycle network of natural links across the metropolitan area, or to/from key locations (such as the beach, shopping centres, major hubs).

It is therefore considered that in an effort to provide a safe environment for all users, the limestone paths are considered for replacement with bitumen, of the same width, and that if future conflicts occur with respect to cyclists using these paths, measures are taken including the installation of rumble strips and other controls to positively influence cyclist behaviour.

## **PAST RESOLUTIONS**

Ordinary meeting of Council, 3<sup>rd</sup> of November 2009;

*That Council notes the unconfirmed minutes of the Lake Claremont Committee meeting held on 15 October 2009 and adopts the following recommendations which read that:*

- 2. The conversion of concrete shared path on the west side of the lake to a crushed limestone pedestrian path and an alternative new bitumen shared path along the east side of the lake be considered in the Lake Claremont Park draft concept plan.*

## **FINANCIAL AND STAFF IMPLICATIONS**

Provision for either reinstatement of the limestone path or its replacement with bitumen will be considered as part of the 2020/21 budget and longer term financial implications of the Council.

## **POLICY AND STATUTORY IMPLICATIONS**

Footpaths would be required to be constructed in accordance with Council Policy LV-107 Pavement materials and LV-125 Footpaths.

**COMMUNICATION / CONSULTATION**

No communication or consultation has occurred with respect to this matter thus far.

**STRATEGIC COMMUNITY PLAN****Liveability**

*We are an accessible community with well-maintained and managed assets. Our heritage is preserved for the enjoyment of the community.*

- Provide clean, usable, attractive and accessible streetscapes and public spaces.

**Environmental Sustainability**

*We are a leader in responsibly managing the built and natural environment for the enjoyment of the community and continue to demonstrate diligent environmental practices.*

- Protect and conserve the natural flora and fauna of Lake Claremont and the Foreshore.

**URGENCY**

Given that this matter may be considered by Council in the formation of its 2020/21 budget, the Advisory Committee should make a recommendation with respect to this matter if it desires that the Council is cognisant of its views on this subject.

**VOTING REQUIREMENTS**

Simple majority decision of required.

**OFFICER RECOMMENDATION**

That the Lake Claremont Advisory Committee;

1. Recognises that in endeavouring to provide a safe path for all users in Lake Claremont the transition of the method of construction for limestone paths to bitumen paths is a suitable outcome,
2. Recommends to Council that when limestone paths are transitioned to bitumen paths, their widths be retained at the current width, so as to reinforce these paths as low speed paths, with pedestrian priority,
3. Recommends to Council that if conflicts between users arise on these new bitumen paths the Council consider the installation of rumble strips or other forms of control to improve behaviour of footpath users and reduce such conflicts.

## 6 OTHER REPORTS

### 6.1 FRIENDS OF LAKE CLAREMONT

**File Number:** GOV/00051-03, D-20-15270

**Author:** Isabelle Cadman, Administration Officer Infrastructure

**Authoriser:** Liz Ledger, Chief Executive Officer

**Attachments:**

1. Friends of Lake Claremont Update - April 2020 [!\[\]\(10f8862fc183b400327470ea85afe9ae\_img.jpg\)](#) 
2. Native Bee Survey of Lake Claremont Nov 2019 - Feb 2020 by Kit Prendergast [!\[\]\(4fe307d00a844a23eb14d503e73187bd\_img.jpg\)](#) 

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### OFFICER RECOMMENDATION

That the Committee receives the Friends of Lake Claremont Update for April 2020 and the Native Bee Survey of Lake Claremont from November 2019 – February 2020 by Kit Prendergast.



## **Friends of Lake Claremont Ltd. Quarterly Update: April 2020**

### **Progress - Current Grant Projects**

**2020 Planting.** Funding is in place (SALP \$14,200), plants have been ordered, site preparation is complete and awaiting fencing.

**FOLC continue to assess grant funding opportunities for a range of potential projects.**

### **FOLC sponsored Native Bee survey**

**FOLC have engaged the services of Native Bee scientist Kit Prendergast to do a survey of the Native Bee assemblages at Lake Claremont. Kit is a Native Bee scientist, conservation Biologist and Zoologist. She is a PhD researcher at Curtin University and a Forrest Scholar. The survey will cost approximately \$2400. This cost will be met by FOLC, the funds are not related to any grant funding. The survey will commence in November. UPDATE; Kit has completed her survey work over 3 months. Upon completion of her analysis Kit will present FOLC with a report which we will table at the following LCAC meeting. Report attached.**

### **Grant Applications**

### **Recurring Projects on the Ground**

**FOLC Busy Bee – 2<sup>nd</sup> Sunday of the Month: March BB hand weeding on lakebed 225 bags filled. Busy bee on hold due to Covid-19**

**Year 10 Community Service Program:** Most Friday afternoons Feb. – Oct. with Scotch College and Christ Church Grammar School. Commences Jan 31. Schools withdrew in March. On Hold

**Adopt a Spot:** Individuals adopt a kitchen sized plot of the park to keep rubbish and weed free all year. Mostly at 2019 planting site.

**Monday and Friday Morning Weeding Group:** Continuing manual weed control. We now have 2 small groups running twice a week. Continued focus on weeds in wetland. A major effort has gone into weeding the lakebed. FOLC employed GreenSkills contractors for 2 days to assist

**Planting;** Alfred rd – Mid year

**FOLC/TOC collaboration;** FOLC and TOC continue to discuss framework for future collaboration.

Current membership number: 181+

### **FOLC Events**

**Night Chats at the Lake –** Monthly talks (4<sup>th</sup> Tuesday every month). On Hold



#### **Publicity**

**FOLC Newsletter:** Circulated to Committee members

**Newspaper Articles:**

**Website:** [www.friendsoflakeclaremont.org](http://www.friendsoflakeclaremont.org) Recently upgraded to handle online membership renewals.

**FaceBook:** 1200+ followers

#### **Fundraising**

#### **Other Business**

**Celebrate Lake Claremont Day-**

**Meetings with TOC:** operational meetings between TOC and FOLC will now be twice yearly.

**Changes to FOLC Board;** Anthony Barr has joined the Board. A member of FOLC for several years and an active volunteer, Tony is a Hydro Geologist. Delia Hendry has joined the FOLC Board



**Native Bee Survey of Lake Claremont Nov 2019-Feb 2020****Dr Kit Prendergast (the Bee Babette)****Report presented to Friends of Lake Claremont**

## SUMMARY

Lake Claremont represents a large area of native vegetation within an urban matrix located within the Perth region, in the southwest Western Australian biodiversity hotspot. As with the majority of natural parks and reserves in Western Australia, the native bee fauna and their floral associations has never been investigated. Given the importance of native bees as pollinators, and their high species diversity contributing to the intrinsic biodiversity value of an area, this represents a major knowledge gap. Previous surveys conducted in this urbanised region in 2016-2018 however revealed that bushland remnants are crucial habitat for native bees. To address this major knowledge gap native bee surveys were conducted by native bee scientist Kit Prendergast during the peak bee activity season (Nov-Jan) three times a month. A total of 310 specimens were collected, belonging to 44 species, 12 genera, from four families. This signifies very high diversity of native bees present at this site, and represents almost one third of bee species recorded across fourteen sites over two years in the Perth metropolitan region. The majority of species are small species that are specialised colletids, with the genus *Hylaeus* being the most abundant and species-rich genus collected. The dominant plant taxa that bees were collected from were Myrtaceae, especially *Eucalyptus* and *Melaleuca*. This survey established a baseline for understanding the biodiversity of these important indigenous pollinators at Lake Claremont, and further reveals the environmental assets Lake Claremont boasts as important habitat for native bees. Further surveys are recommended so that the native bee populations can be monitored to understand how populations may be affected by management activities and environmental changes.

## INTRODUCTION

Native bees are keystone species that fulfil vital roles in ecosystems through their pollination services (Potts et al., 2016). They are also a source of intrinsic wonder, and their diversity is a valuable cultural and scientific asset (K. S. Prendergast, 2020). Australia has approximately 2,000 species of native bees, with many that have yet to be scientifically described (Batley & Hogendoorn, 2009), and new species are continually being discovered (Leijs, Dorey, & Hogendoorn, 2018). Of those that are described, their floral associations and geographic distribution is poorly known, if at all (Batley & Hogendoorn, 2009).

Many species have evolved close, symbiotic relationships with Australian flora (Houston, 2018). Consequently, they rely on healthy, intact patches of native vegetation for foraging and nesting. Southwest WA is an internationally-recognised biodiversity hotspot, renowned for its high diversity and endemism of species, mainly in terms of wildflowers (Hopper & Gioia, 2004). However much of the original native vegetation has been cleared for agriculture, and more recently, urban development, which is now the major threat to remnant bushland on the Swan Coastal Plain (Lambers, 2014). The flora in the region is relatively well characterised (Lambers, 2014), however the native bee biota around Perth has only recently received systematic attention (Prendergast, Doctoral Thesis, in prep).

Despite large patches of native vegetation being cleared for urban development, patches of remnant bushland remain scattered throughout the urban region of the southwest Western Australian biodiversity hotspot, under various forms of management and legislation, and in varying states of health (Crosli, Dixon, Ladd, & Yates, 2007; Dixon, Connell, Bailey, & Keenan, 1995; Newman, Ladd, Brundrett, & Dixon, 2013). Lake Claremont is one such patch of remnant bushland. Located in a highly urbanised area, Lake Claremont has considerable conservation assets. Lake Claremont is a Conservation Category Wetland, and receives regular conservation management (weeding, monitoring, revegetation) to ensure its environmental features are preserved, as it has a number of statutorily designated values that require ongoing management and protection (Natural Area Consulting Management Services (Natural Area), 2016).

No native bee surveys have ever been conducted at Lake Claremont, however NatureMap indicates the potential presence of a minimum of 42 terrestrial invertebrate species (Natural Area Consulting Management Services (Natural Area), 2016). This is certainly an underestimate.

Studies by K. Prendergast in the urbanised region of the southwest Western Australian biodiversity hotspot have revealed a substantial diversity of native bees, with over 150 species being found around the Perth metropolitan region (Prendergast, thesis, in prep). Much of this diversity however is found in remnant native vegetation, such that the abundance and diversity of native bees in these habitat patches far exceeds that found in residential gardens (Prendergast, 2018)(Prendergast, in prep).

Understanding the biodiversity of native bees at Lake Claremont, their floral associations, and trait composition will add greatly to knowledge about the biodiversity and environmental values of the Lake, and can help guide management practices to conserve the bees here. Such surveys will also contribute to a greater understanding of the importance of native vegetation remnants for pollinator conservation, and the diversity of native bees in this urbanised biodiversity hotspot.

This report details findings of surveys for native bees conducted by native bee expert Kit Prendergast from Nov-Jan 2019/20 at Lake Claremont, with the following objectives:

- Record the diversity of native bees and their taxonomic and ecological-trait composition
- Place the native bee assemblage in context with those recorded in other habitats in the region
- Identify bee-flowering plant associations
- Understand how the assemblage changes across months
- Establish a baseline for future monitoring to assess any changes in the bee assemblage which may result from management activities, changing environmental conditions e.g. climate change, and identify species that may be at risk.



## METHODS

Surveys were conducted at Lake Claremont (Fig. 1) three times per month in November, December and January in 2019/2020.



Fig. 1. Map of Lake Claremont. Source: Google Maps 2020

Bees were collected from flowering vegetation by K. Prendergast between 10.30 – 14.00 h with an entomological sweepnet (Fig. 2). Targeted sweepnetting has been found to be the most effective method for catching the greatest abundance and diversity of native bees in the region, and moreover enables bee-plant associations to be documented (Prendergast, Menz, Bateman, & Dixon, 2020).



Fig. 2. Kit Prendergast collecting native bees by targeted sweepnetting. Photo credit: Nik Cook, FOLC.

K. Prendergast conducted the surveys by walking around the Lake and stopping to observe if bees were visiting flowering plants. If no bees were observed after 5mins she would move on; up to approx. 30mins was spent at a flowering plant if frequently visited by native bees. Specimens were stored in labelled vials (date of collection, site, and flower species collected from), and euthanised by freezing. Specimens were then pinned and identified to species/morphospecies using published taxonomic keys, with reference to the online database PaDIL (PaDIL) and the Western Australian Museum's entomology collection. A specimen of ten of the species are going to be DNA barcoded to contribute to the Barcode of Life Database (Ratnasingham & Hebert, 2013).

## RESULTS AND DISCUSSION

Over the nine surveys a total of 310 specimens were collected, belonging to 44 species, 12 genera, from four families (Table 1). This is indicative of a high biodiversity of native bees, and that Lake Claremont represents valuable habitat for indigenous pollinators. A total estimate of bee species richness around Perth is not available, however from surveys conducted over a similar time period (Nov-Feb) across 14 sites recoded 96 species (Prendergast, in prep); consequently this single site supports almost half of the species in the wider region.

### *Species composition*

*Hylaeus* dominated the bee assemblage in both the genus with the most individuals and species (Table 1). *Euryglossina* was the next most represented genus. The majority of species in these genera are small-bodied, and specialised on Myrtaceae, indicating the suitability of Lake Claremont to host oligolectic bee species. The relative representation of these genera was substantially higher than from other surveys conducted by K. Prendergast across 14 sites around urbanised southwest WA, where *Hylaeus* comprised approx. 17-19% of species, and 8-14% of individuals, and *Euryglossina* only approximately 2-11% of species, and 6-8% of individuals.

*Amegilla* were comparatively rare, however the high representation in previous surveys was largely due to collections in blue vane traps, which are extremely attractive to this genus (Prendergast et al., 2020). As *Amegilla* are generalists, their low representation is not a cause for concern. Notably absent were *Leioproctus*. The reason for the absence of this genus remains to be determined, as they are not rare nor typically specialised bees, comprising approx. 6-9% of species, and approx. 3% of individuals collected in surveys conducted across 14 sites in urbanised southwest WA (Prendergast, in prep). No *Trichocolletes* were collected, however this is due to the surveys commencing after their main activity period (late winter-early spring).

The collection of three specimens of the kleptoparasitic bee *Coelioxys froggatti* (Fig. 3) in one survey is remarkable (Table 4) – during previous surveys conducted across 14 sites in urbanised southwest Western Australia spanning 10 months over two years, only six

specimens were collected. The actual host specie(s) of *Coelioxys froggatti* is unknown, however their presence is an indicator of a healthy megachilid host population (Anderson et al., 2011).



Fig. 3. *Coelioxys froggatti* (Megachilidae), a kleptoparasite of *Megachile* (host species unknown).

Of interest is the collection of six individuals of an as-yet undescribed species of *Megachile* (*Austrochile*), known colloquially as the “Perth Resin-Pot Bee” (K. Prendergast, 2020) (Table 2). This species is unusual in that it builds exposed resin pots or urns on vegetation in which it stores with pollen and nectar and lays its eggs, rather than nesting within wooden cavities typical of *Megachile*, or in burrows underground (a less-common nesting habit for *Megachile*).

Typical of most ecological communities, the species-abundance distribution was highly skewed, with a few species being abundant, and the majority being rare (Table 2). 13 species were singletons, and 8 species were doubletons, such that 47.7% of species were rarely encountered. The most abundant species was *Exoneura* (*Exoneura*) *pictifrons* (Fig. 4a) – a semisocial species and thus is often abundant, with 35 individuals collected; *Hylaeus* (*Gnathoprosopis*) *euxanthus* (Fig. , with 31 individuals collected, and *Euryglossina*



(*Microdontura*) *mellea*, with 28 individuals collected (Table 2). Interestingly, *E. mellea* until recently was unknown from Western Australia (Houston & Prendergast, in prep.), however this likely reflects its diminutive size (only approximately 3mm in length).

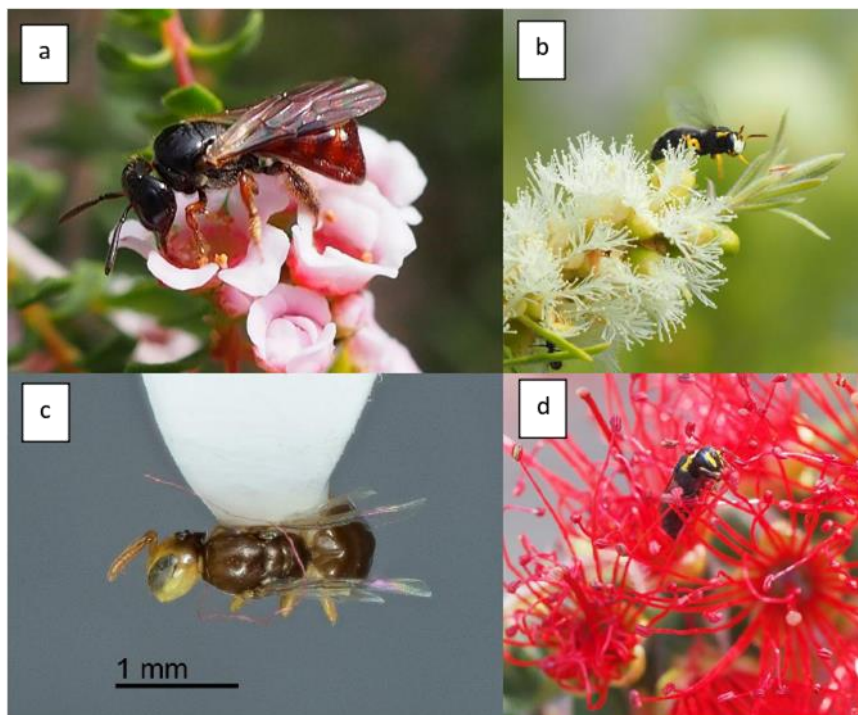


Fig. 4. The three most abundant species collected throughout the surveys at Lake Claremont: *Exoneura* (*Exoneura*) *pictifrons* (a); *Hylaeus* (*Gnathoprosopis*) *euxanthus*, male (b) and female (d); *Euryglossina* (*Microdontura*) *mellea* (d). Photo credit: Kit Prendergast.

#### ***Monthly variation***

151 specimens were collected in November belonging to 20 species, 97 specimens belonging to 19 species were collected in December, and 87 specimens belonging to 20 species were collected in January (Table 3, 4, 5). There therefore appeared to be a slight decline in specimens over the season, which may be attributed to the lack of rainfall as the season progressed (<https://www.watercorporation.com.au/water-supply/rainfall-and-dams/rainfall>) which reduced the abundance of flowering resources at Lake Claremont (K. Prendergast,

personal obs.), however the total number of species each month remained similar. Despite similar number of species, the species composition differed between months.

### ***Bee-plant associations***

This diversity of 44 bee species were collected from a total of seventeen angiosperm species (Table 2), 11 of which were in the family Myrtaceae. The species to host the greater number of bees were *Eucalyptus marginata* and *Melaleuca huegelli*, also Myrtaceae. Exotic plants were rare at Lake Claremont, and no native bees were collected from these. These results revealing the strong preference for native flora, and the attractiveness of Myrtaceae as a host for native bees, are in accordance with studies conducted in both remnant native vegetation as well as residential gardens in the region (Prendergast & Mason, in review). The dominance of these flora also explain the high representation of the small, oligolectic taxa (*Hylaeus* and euryglossine species).

Similar to shifts in the bee species composition, there was variation between the months in the diversity of flora visited, and relative visitation to different species. Native bees were collected from 10 species in November, only 4 species in December, and 8 in January. It appears that provided keystone species, mainly Myrtaceae, are in flower, Lake Claremont can still support an impressive diversity of native bee species.

### **CONCLUSIONS**

Surveys conducted by native bee expert Kit Prendergast have established that Lake Claremont represents valuable habitat for native bees. The diversity of native bees recorded in just three months of surveys is extremely high, with 44 species. Surveys conducted for a longer duration would certainly document more species given that some species' activity periods fall outside the current survey period. Not only was a high diversity of species recorded, but many of these species are oligolectic, being strongly associated with native habitats and native flora. Lake Claremont also hosts an unusually high abundance of the kleptoparasitic species *Coelioxys frogatti*, which can be considered to indicate that a healthy host megachilid population occurs here. With the majority of species being strongly associated with Myrtaceae it is important that these flowering resources are retained. Whilst this set of surveys established a baseline for the native bee biodiversity present in this important urban bushland reserve, it is recommended that surveys continue over the years so

that the populations can be monitored and trends in species diversity, abundances, and relative representation can be determined. This will enable identification of potential at risk populations, assess the influence of management actions, and understand how changing environmental conditions such as climate change impact these important species.

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## TABLES

**Table 1. Taxonomic breakdown of native bee species collected Nov-Jan 2019/20 at Lake Claremont. N= abundance, R= species richness**

Family	Subfamily	Genus	N	R	%N	%R
Apidae		<i>Amegilla</i>	4	1	1.29	2.27
		<i>Exoneura</i>	35	2	11.29	4.55
Colletidae	Euryglossinae	<i>Euryglossina</i>	61	8	19.68	18.18
		<i>Euryglossula</i>	1	1	0.32	2.27
		<i>Euhesma</i>	1	1	0.32	2.27
		<i>Pachyprospis</i>	2	1	0.65	2.27
	Hylaeinae	<i>Hylaeus</i>	135	14	43.55	31.82
		<i>Hyleoides</i>	1	1	0.32	2.27
Halictidae	Halictinae	<i>Homalictus</i>	11	2	3.55	4.55
		<i>Lasioglossum</i>	8	2	2.58	4.55
		<i>Lipotriches</i>	14	1	4.52	2.27
Megachilidae	Megachilinae	<i>Coelioxys</i>	3	1	0.97	2.27
		<i>Megachile</i>	34	9	10.97	20.45

**Table 2. Overall bee-plant network at Lake Claremont, with native bee species (rows) and the flora species they were collected from (columns). Data are pooled across all surveys**

Species	Total	<i>Eucalyptus marginata</i>	<i>Eucalyptus patens</i>	<i>Eucalyptus erythronyx</i>	<i>Eucalyptus sp.</i>	<i>Corymbia calophylla</i>	<i>Corymbia ficifolia</i>	<i>Melaleuca huegelii</i>	<i>Melaleuca systena</i>	<i>Melaleuca teretifolia</i>	<i>Melaleuca quinquenervia</i>	<i>Melaleuca priessiana</i>	<i>Jacksonia furcellata</i>	<i>Jacksonia sternbergiana</i>	<i>Scaevola crassifolia</i>	<i>Hemibelia pungens</i>	<i>Banksia prionotes</i>	<i>Rhagodia baccata</i>
<i>Amegilla</i> ( <i>Notamegilla</i> ) <i>chlorocyanea</i>	4	1														3		
<i>Exoneura</i> ( <i>Exoneura</i> ) <i>pictifrons</i>	35	5	3	2		1	4	4	1	4		2		1		2		6
<i>Exoneura</i> ♀ <i>Exoneura</i> sp.	2							1										1
<i>Buryglossina</i> ( <i>Buryglossina</i> ) <i>cockerelli</i>	1		1															
<i>Buryglossina</i> ( <i>Buryglossina</i> ) <i>hypochroma</i>	4				1					3								
<i>Buryglossina</i> ( <i>Buryglossina</i> ) <i>narifera</i>	2	2																
<i>Buryglossina</i> ( <i>Buryglossina</i> ) <i>perpusilla</i>	15	4	7		4													
<i>Buryglossina</i> <i>es</i> (13?) <i>Buryglossina</i> "Spp. C"	6	5				1												
<i>Buryglossina</i> ( <i>Microdonta</i> ) <i>mellea</i>	28	8	1		1			2			16							
<i>Buryglossina</i> ( <i>Turnerella</i> ) <i>argiocephala</i>	1	1																
<i>Buryglossina</i> ( <i>Turnerella</i> ) <i>atomaria</i>	1									1								
<i>Buryglossula fultoni</i>	2	2																
<i>Buryglossina</i> Lk Cl1 <i>Buhsma</i>	1	1																
<i>Pachyprosopis</i> ( <i>Pachyprosopis</i> ) <i>purnongensis</i>	2		1					1										
<i>Hylaeus</i> ( <i>Euprasopis</i> ) <i>honestus</i>	1							1										
<i>Hylaeus</i> ( <i>Euprasopis</i> ) <i>violaceus</i>	2							1		1								
<i>Hylaeus</i> ( <i>Euprasopoides</i> ) <i>obtusatus</i>	22	2				2		17		1								
<i>Hylaeus</i> ( <i>Euprasopoides</i> ) <i>ruficeps</i> <i>kalamundae</i>	10	3	1			1		4				1						

<i>Hylaeus (Gnathoprosopis) areolatus</i>	3							3									
<i>Hylaeus (Gnathoprosopis) euanthus</i>	31	1	1					24		4							1
<i>Hylaeus (Hylaeorhiza) nubilosus</i>	7	6	1														
<i>Hylaeus (Macrohylaeus) alcyoneus</i>	2																2
<i>Hylaeus (Prosopistemon) aralis</i>	24	20	3								1						
<i>Hylaeus (Prosopistemon) "bicurvatus"</i>	1	1															
<i>Hylaeus (Prosopistemon) "breviscapatus"</i>	7	3	1	1		1						1					
<i>Hylaeus (Prosopistemon) latifacies</i>	23	3	3	1			9	2		5							
<i>Hylaeus 66 F</i>	1									1							
<i>Hylaeus (Rhodohylaeus) proximus</i>	1									1							
<i>Hyleoides zonalis</i>	1	1															
<i>Homalictus (Homalictus) dotatus</i>	8	3	5														
<i>Homalictus sp. 6</i>	3	3															
<i>Lasioglossum (Chilalictus) castor</i>	7						1							6			
<i>Lasioglossum (Chilalictus) hemichalceum</i>	1							1									
<i>Lipotriches (Austromonia) flavoviridis</i>	14	3						8		2							1
<i>Coelioxys (Coelioxys) froggatti</i>	3												3				
<i>Megachile "houstoni"</i>	3									1					2		
<i>Megachile (Austrochile) resinifera</i>	2												2				
<i>Megachile Austrochile Perth Resin-pot Bee</i>	6												6				
<i>Megachile (Eutricharaea) chrysopyga</i>	15							3					9	3			
<i>Megachile (Eutricharaea) obtusa</i>	2												2				
<i>Megachile (Eutricharaea) simplex</i>	1													1			



<i>Megachile</i> ( <i>Hackenapis</i> ) <i>apicata</i>	3														3			
<i>Megachile</i> ( <i>Hackenapis</i> ) <i>oblonga</i>	1							1										
<i>Megachile fultoni</i>	1															1		
<b>Totals</b>	330	78	28	4	6	6	14	73	1	24	17	4	20	6	12	6	2	9

**Table 3. Bee-plant network at Lake Claremont in November, with native bee species (rows) and the flora species they were collected from (columns).**

Species	Total	<i>Eucalyptus marginata</i>	<i>Eucalyptus</i> sp.	<i>Corymbia ficifolia</i>	<i>Melaleuca huegelii</i>	<i>Melaleuca systena</i>	<i>Melaleuca teretifolia</i>	<i>Jacksonia furcellata</i>	<i>Jacksonia sternbergiana</i>	<i>Scaevola crassifolia</i>
<i>Exoneura</i> ( <i>Exoneura</i> ) <i>pictifrons</i>	12	1		3	2	1	4		1	
<i>Euryglassina</i> ( <i>Euryglassina</i> ) <i>hypochroma</i>	4		1				3			
<i>Euryglassina</i> ( <i>Euryglassina</i> ) <i>perpusilla</i>	4		4							
<i>Euryglassina</i> ( <i>Microdantura</i> ) <i>mellea</i>	3	2	1							
<i>Euryglassina</i> ( <i>Turnerella</i> ) <i>argocephala</i>	1	1								
<i>Euryglassina</i> ( <i>Turnerella</i> ) <i>atomaria</i>	1						1			
<i>Euryglassinae</i> LKCI <i>Euhesma</i>	1	1								
<i>Homalictus</i> ( <i>Homalictus</i> ) <i>dotatus</i>	1	1								
<i>Hylaeus</i> ( <i>Euprosopis</i> ) <i>violaceus</i>	2				1		1			
<i>Hylaeus</i> ( <i>Euprosopoides</i> ) <i>obtusatus</i>	17				16		1			
<i>Hylaeus</i> ( <i>Gnathoprosopis</i> ) <i>amiculus</i>	3				3					
<i>Hylaeus</i> ( <i>Gnathoprosopis</i> ) <i>euxanthus</i>	11				7		4			
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) <i>"bicurvatus"</i>	1	1								
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) <i>"brevicaudatus"</i>	1	1								
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) <i>aralis</i>	8	8								
<i>Hylaeus</i> ( <i>Rhodohylaeus</i> ) <i>proximus</i>	1						1			
<i>Hylaeus</i> 66 F <i>Hylaeus</i> ( <i>Prosopistemon</i> ) sp	1						1			
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) <i>latifacies</i>	16			9	2		5			
<i>Lasiglossum</i> ( <i>Chilalictus</i> ) <i>castor</i>	7			1						6
<i>Lipotriches</i> ( <i>Austrostromia</i> ) <i>flavoviridis</i>	2						2			
<i>Coelioxys</i> ( <i>Coelioxys</i> ) <i>fraggatti</i>	3							3		
<i>Megachile</i> <i>"houstoni"</i>	3						1			2
<i>Megachile</i> ( <i>Austrochile</i> ) <i>resinifera</i>	2							2		

<i>Megachile (Eutricharaea) chrysopyga</i>	13				1			9	3	
<i>Megachile (Eutricharaea) obtusa</i>	2								2	
<i>Megachile (Eutricharaea) simplex</i>	1									1
<i>Megachile (Hackeriapis) apicata</i>	3									3
<i>Megachile (Hackeriapis) oblonga</i>	1				1					
<b>Totals</b>	125	16	6	13	33	1	24	14	6	12

**Table 4. Bee-plant network at Lake Claremont in December, with native bee species (rows) and the flora species they were collected from (columns).**

Species	Total	<i>Eucalyptus marginata</i>	<i>Eucalyptus patens</i>	<i>Corymbia calophylla</i>	<i>Melaleuca huegelii</i>
<i>Amegilla</i> ( <i>Notamegilla</i> ) <i>chlorocyanea</i>	1	1			
<i>Exoneura</i> ( <i>Exoneura</i> ) <i>pictifrons</i>	8	4	3	1	
<i>Euryglassina</i> ( <i>Euryglassina</i> ) <i>cockerelli</i>	1		1		
<i>Euryglassina</i> ( <i>Euryglassina</i> ) <i>narifera</i>	2	2			
<i>Euryglassina</i> ( <i>Euryglassina</i> ) <i>perpusilla</i>	11	4	7		
<i>Euryglassina</i> ( <i>Microdontura</i> ) <i>mellea</i>	7	6	1		
<i>Euryglassinae</i> 65[13?] <i>Euryglassina</i> "Spp. C"	6	5		1	
<i>Euryglassula</i> <i>fultonii</i>	2	2			
<i>Pachyprosopis</i> ( <i>Pachyprosopula</i> ) <i>purnanensis</i>	1		1		
<i>Hylaeus</i> ( <i>Euprosopoides</i> ) <i>obtusatus</i>	4	2		2	
<i>Hylaeus</i> ( <i>Euprosopoides</i> ) <i>ruficeps</i> <i>kalamundae</i>	6	3	1	1	1
<i>Hylaeus</i> ( <i>Gnathoprosopis</i> ) <i>euxanthus</i>	2	1	1		
<i>Hylaeus</i> ( <i>Hylaeorhiza</i> ) <i>nubilosus</i>	7	6	1		
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) "brevicaudatus"	4	2	1	1	
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) <i>aralis</i>	15	12	3		
<i>Hylaeus</i> ( <i>Prosopistemon</i> ) <i>latifacies</i>	6	3	3		
<i>Hyleoides</i> <i>zonalis</i>	1	1			
<i>Homalictus</i> ( <i>Homalictus</i> ) <i>dotatus</i>	7	2	5		
<i>Homalictus</i> sp. 6	3	3			
<i>Lipotriches</i> ( <i>Austronomia</i> ) <i>flavoviridis</i>	3	3			
<b>Totals</b>	<b>97</b>	<b>62</b>	<b>28</b>	<b>6</b>	<b>1</b>

**Table 4. Bee-plant network at Lake Claremont in January, with native bee species (rows) and the flora species they were collected from (columns).**

Species	Total	<i>Eucalyptus erythrocorys</i>	<i>Corymbia ficifolia</i>	<i>Melaleuca huegeli</i>	<i>Melaleuca priessiana</i>	<i>Melaleuca quinquenervia</i>	<i>Hemiandra pungens</i>	<i>Rhagodia baccata</i>	<i>Banksia prionotes</i>	<i>Jacksonia furcellata</i>
<i>Amegilla (Notamegilla) chlorocyanea</i>	3						3			
<i>Exoneura (Exoneura) pictifrons</i>	15	2	1	2	2		2	6		
<i>Exoneura</i> ♀ <i>Exoneura</i> sp	2			1				1		
<i>Euryglossina (Euryglossina) perpusilla</i>	1					1				
<i>Euryglossina (Microdontura) mellea</i>	16			2		14				
<i>Pachyprosopis (Pachyprosopula) purnongensis</i>	1			1						
<i>Hylaeus (Euprosopis) honestus</i>	1			1						
<i>Hylaeus (Euprosopoides) obtusatus</i>	1			1						
<i>Hylaeus (Euprosopoides) ruficeps kalamundae</i>	4			3	1					
<i>Hylaeus (Gnathoprosopis) euxanthus</i>	18			17				1		
<i>Hylaeus (Macrohylaeus) alcyoneus</i>	2								2	
<i>Hylaeus (Prosopistemon) "brevicaudatus"</i>	2	1			1					
<i>Hylaeus (Prosopistemon) aralis</i>	1					1				
<i>Hylaeus (Prosopistemon) latifacies</i>	1	1								
<i>Lasiosomus (Chilalictus) hemichalcum</i>	1			1						
<i>Lipotriches (Austrostromia) flavoviridis</i>	9			8				1		
<i>Megachile (Eutricharaea) chrysopyga</i>	2			2						
<i>Megachile Austrochile Perth Resin-pot Bee</i>	6									6
<i>Megachile fulitoni</i>	1						1			
<b>Totals</b>	<b>87</b>	<b>4</b>	<b>1</b>	<b>39</b>	<b>4</b>	<b>16</b>	<b>6</b>	<b>9</b>	<b>2</b>	<b>6</b>

## **6.2 CITY OF NEDLANDS PROJECTS - UPDATE**

**File Number:** GOV/00051-03, D-20-15981

**Author:** Isabelle Cadman, Administration Officer Infrastructure

**Authoriser:** Liz Ledger, Chief Executive Officer

**Attachments:** Nil

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### **PURPOSE**

For the City of Nedlands Councillor Delegate to give an update on the City of Nedlands projects which are of interest to the Lake Claremont Advisory Committee.

### **OFFICER RECOMMENDATION**

**That the Committee notes the updates on the City of Nedlands projects.**

**7 OTHER BUSINESS**

**8 NEW BUSINESS OF AN URGENT NATURE APPROVED BY THE PRESIDING PERSON OR BY DECISION OF MEETING**

**9 FUTURE MEETINGS OF COMMITTEE**

Lake Claremont Advisory Committee Meeting, Thursday 13 August 2020 at 8:00am.

**10 DECLARATION OF CLOSURE OF MEETING**