



# APPENDICES

# APPENDIX 1.0 BENCHMARK STUDY

TCL have undertaken a benchmark study of a number of lakes and waterbodies in Victoria. The aim is to understand the context and usage of these precedents through analysis, which could be brought forward to assist the development of the Lake Caroline Master Plan and Activation Strategy.

The precedents are selected based on their similarity to Lake Caroline, in terms of their artificial construction, recreational purpose and ecological functions. It is worth noting that these precedents are of various scale, which could still provide insight for future of the Lake.

### List of Studied Lakes

- ① Albert Park, Melbourne
- ② Newport Lakes Reserve, Newport
- ③ Cherry Lake Reserve, Altona
- ④ St Leonards Lake Reserve, Geelong
- ⑤ Coburg Lake Reserve, Coburg
- ⑥ Edwardes Lake Park, Reservoir
- ⑦ Lake Wendouree, Ballarat
- ⑧ Lake Daylesford, Daylesford
- ⑨ Lake Weeroonam, Bendigo



All aerial photos are sourced from Google Map.

**A1.0 LAKE CAROLINE**

The following are the basic information of Lake Caroline, which are used to identify suitable precedent.

The Lake is connected to two wetlands upstream, and Kororoit Creek downstream via the spillway. There are algae bloom events in the lake, but it is infrequent.

- Total Area (of the Reserve)**  
10.47ha / 104700m<sup>2</sup>
- Area (Lake Caroline Reserve)**  
1.97ha / 19700m<sup>2</sup>
- Area (Boathouse Reserve)**  
0.52ha / 5200m<sup>2</sup>
- Area (Lake Caroline Waterfront)**  
0.48ha / 4800m<sup>2</sup>
- Area (Waterbody)**  
7.49ha / 74900m<sup>2</sup>
  
- Length**  
000
- Width**  
000
- Perimeter**  
1900m / 1.9km
- Depth (Waterbody)**  
approx. 0.4m - 2m



## A1.1 ALBERT PARK

### TOTAL AREA

225ha / 2250000m<sup>2</sup>

### KEY FACTS

- Managed by Parks Victoria
- Repurposed from existing wetlands and lagoon
- A long history of recreational activities, such as Australian Grand Prix
- Regional and State destination for sporting events, including Lakeside Station, Melbourne Sports and Aquatic Centre (MSAC) and many sports clubs
- A popular spot for dog walking, cycling, rowing and boating
- Not known to be used a community gathering space
- Full of ecology

### ACTIVITIES / USES

#### Outdoor recreation

- Gym equipment
- Playground

#### Facilities

- Picnic tables
- BBQ

#### Daily use

- Dog walking
- Cycling
- Running

#### Water play

- Rowing
- Swimming (Indoor)

#### Ecology

- Wetland

#### Sporting events

- Lakeside Stadium
- MSAC
- Australian Grand Prix



Shared User Path



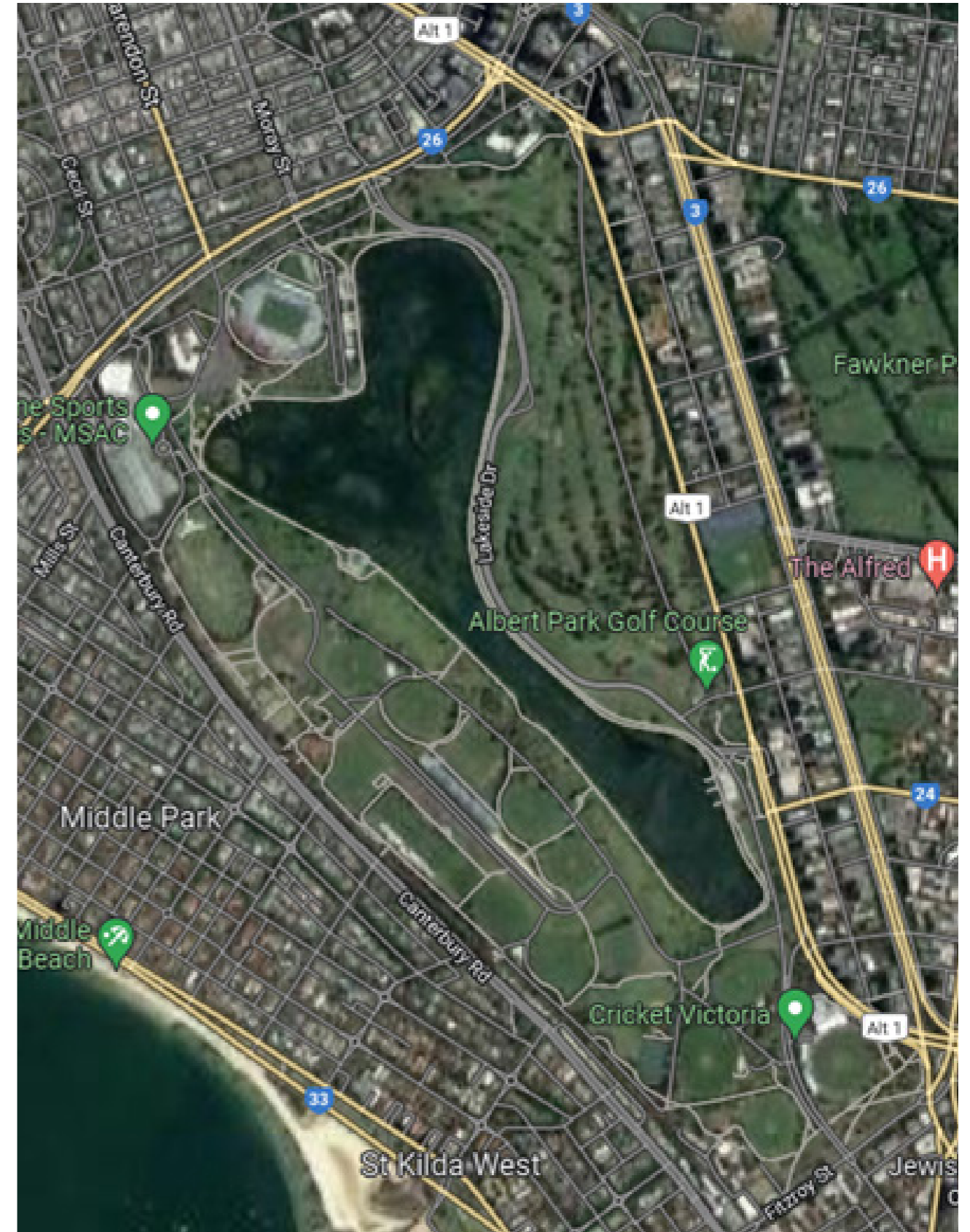
Wetland Ecology



Formula 1



Playground



## A1.2 NEWPORT LAKES RESERVE

### TOTAL AREA

3.3ha / 330000m<sup>2</sup>

### KEY FACTS

- Managed by Hobsons Bay City Council
- Former bluestone quarry and rubbish tip site
- Contain remnants of native bushland and has been extensively revegetated
- Local level open space
- Contains a 2km self-guided nature trail, BBQ and shaded seating facilities

### ACTIVITIES / USES

#### Outdoor recreation

- Gym equipment
- Playground
- Off-leash dog area
- Walking trail

#### Facilities

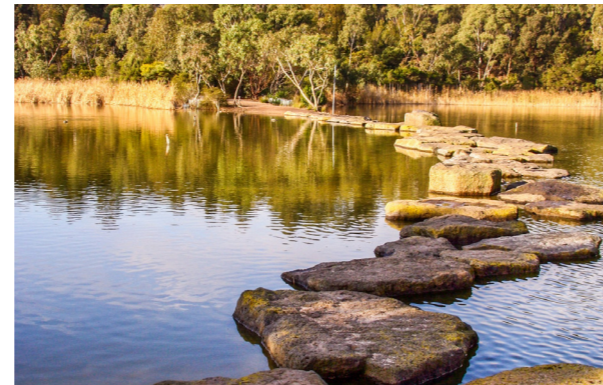
- Picnic tables
- BBQ
- Public toilets
- Shelter
- Water fountains
- On-site nursery

#### Daily use

- Dog walking
- Cycling
- Running

#### Ecology

- Wetland ecology
- Native bushland
- Bird watching



Rock Crossing



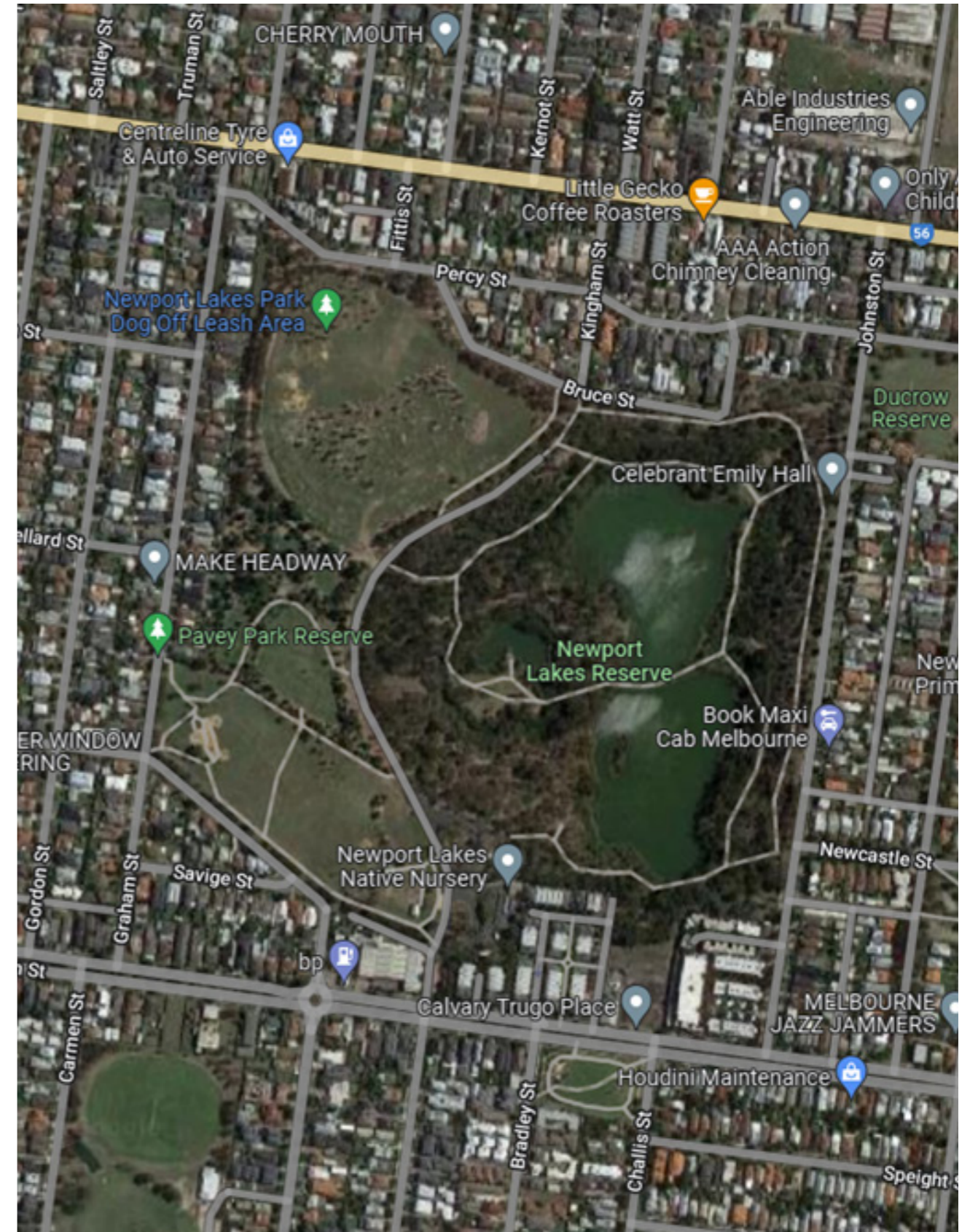
Wetland Ecology



Natural Scenery



Playground



## A1.3 CHERRY LAKE

### TOTAL AREA

101ha / 1010000m<sup>2</sup>

### KEY FACTS

- Managed by Hobsons Bay City Council
- Converted from historical wetlands and swamps
- Contains a 3.5km walking and cycling trail circuits, boating and bird hide
- Community space to house Cherry Lake Sunday Market
- Part of Kororoit Creek
- Full of Ecology

### ACTIVITIES / USES

#### Outdoor recreation

- Gym equipment
- Playground
- 3.5km trail

#### Facilities

- Picnic tables
- BBQ
- Food van
- Toilets
- Drinking tap
- Shelters

#### Daily use

- Dog walking
- Cycling
- Running

#### Water play

- Canoeing

#### Ecology

- Wetland ecology

#### Events

- Sunday markets
- Bird watching



Wetland



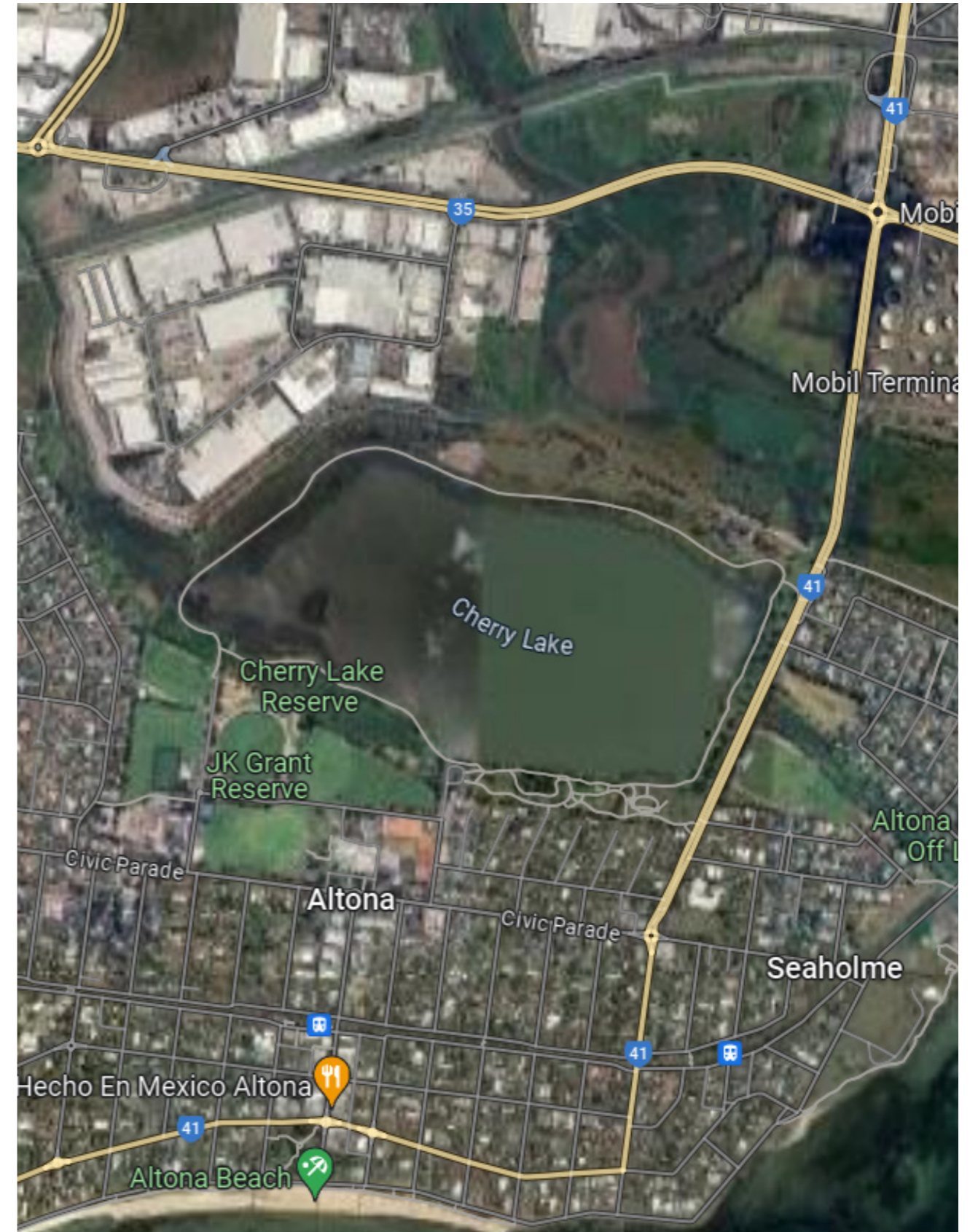
Outdoor Gym



Playground



Cycling / Shared Path



**A1.4 ST LEONARDS LAKE RESERVE**

**TOTAL AREA**

23ha / 233650m<sup>2</sup>

**KEY FACTS**

- Managed by City of Greater Geelong
- Close to the St Leonards Salt Lagoon
- Local level open space
- Used by local community and sports clubs
- Master Plan completed in October 2011, with the aim to provide a place for people to stay physically active, strengthen social connections and engage in community life
- Facility Development Plan in development as of February 2022

**ACTIVITIES / USES**

Outdoor recreation

- Playground
- Netball court
- Oval (cricket)
- Hard wickets
- Bocce court

Facilities

- Picnic tables
- BBQ
- Pavilion
- Rotunda
- Toilets
- Off-lead dog area

Daily use

- Dog walking
- Cycling
- Running

Ecology

- Wetland ecology
- Native bushland
- Bird watching



Wetland



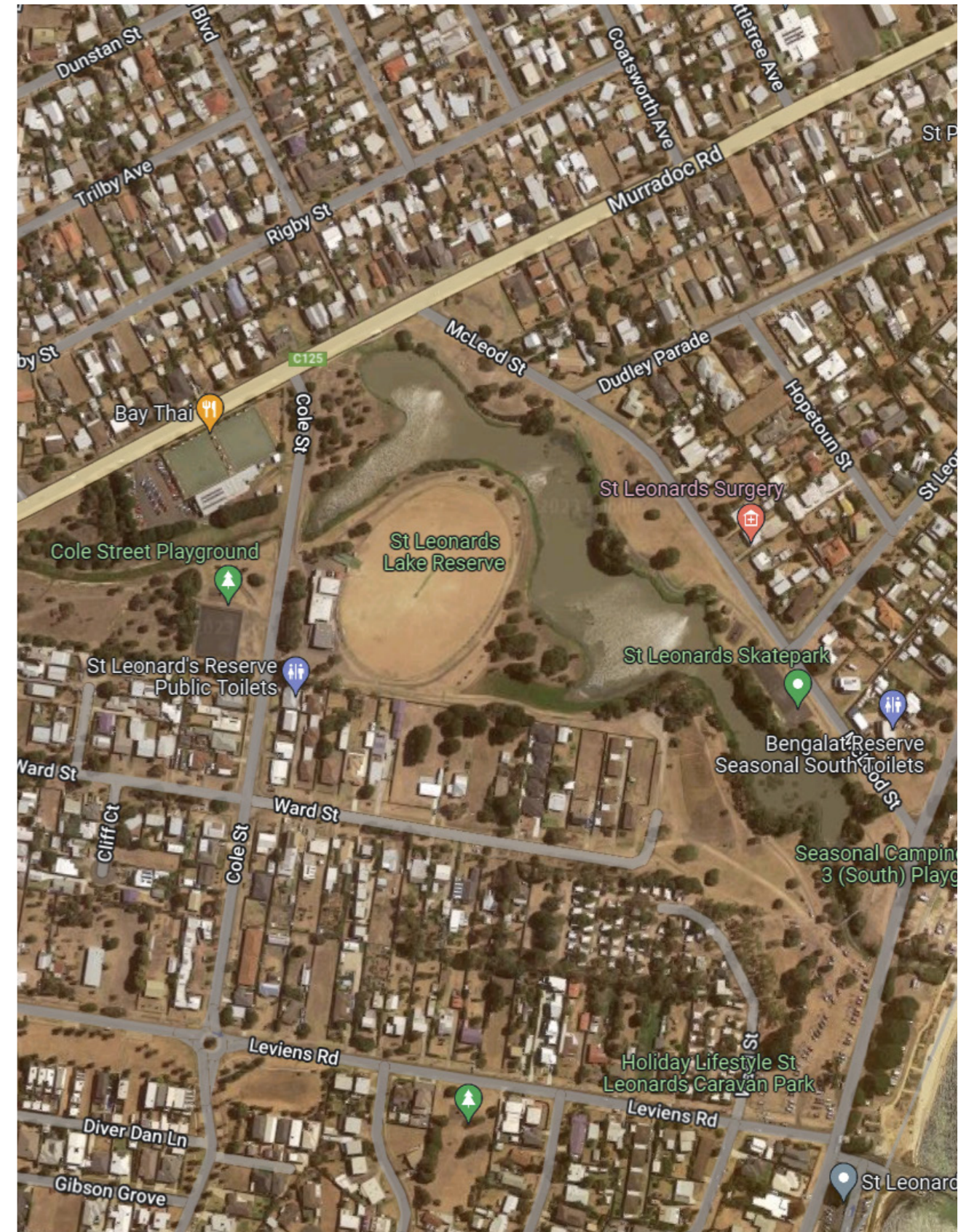
Off-lead Dog Area



Sport Facilities



Playground



**A1.5 COBURG LAKE RESERVE**

**TOTAL AREA**  
14ha / 141700m<sup>2</sup>

**KEY FACTS**

- Managed by Merri-bek City Council
- Artificial lake created by the construction of a weir on Merri Creek
- District level open space
- Contains BBQ, all abilities playground, nature play, bocce court

**ACTIVITIES / USES**

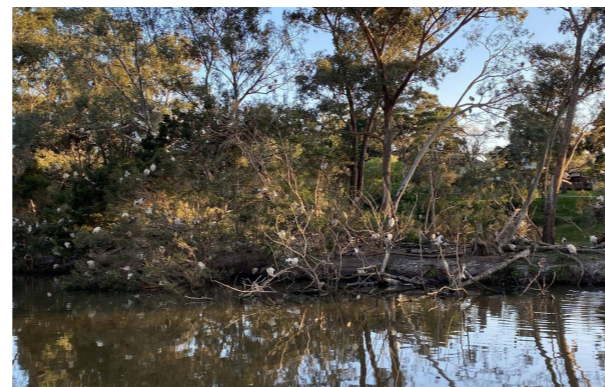
- Outdoor recreation
- Gym equipment
  - Playground
  - Bocce court
- Facilities
- Picnic tables
  - BBQ
  - Toilets
  - Shelters
- Daily use
- Dog walking
  - Cycling
  - Running
- Water play
- Canoeing
- Ecology
- Wetland ecology
  - Nature play



Wetland



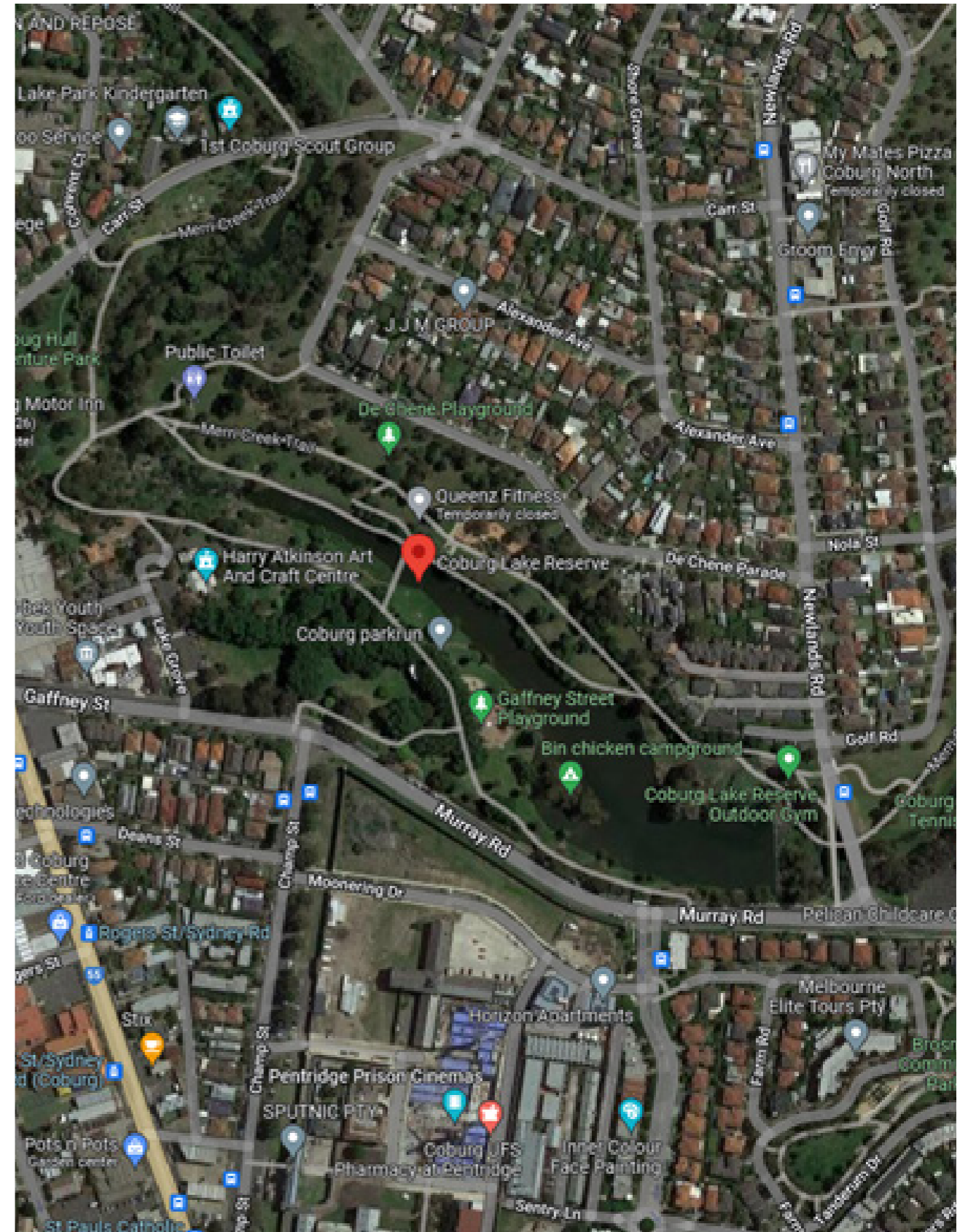
Outdoor Gym



Wildlife Island



Concert Stage





## A1.6 EDWARDES LAKE

### TOTAL AREA

26ha / 260000m<sup>2</sup>

### KEY FACTS

- Managed by City of Darebin
- Second largest urban lake in Melbourne Metropolitan Area
- Artificial lake formed by damming Edgars Creek
- Regional level open space
- Contains off-lead dog area, athletic track, sports clubs, all abilities playground and skate park
- Master Plan completed in 2009 by Rush Wright Associates with the lake envisioned as the regional destination for the northern suburbs
- Social group "Friends of Edwardes Lake / Edgars Creek Wetlands" is established for the benefit of the lake

### ACTIVITIES / USES

#### Outdoor recreation

- Gym equipment
- 2x playgrounds
- Athletics track

#### Facilities

- Picnic Tables
- BBQ
- Shelter
- Toilets
- Off-lead Dog Area
- Skate park

#### Daily use

- Dog Walking
- Cycling
- Running

#### Ecology

- Wetland ecology

#### Events

- Community festivals



Wetland Ecology



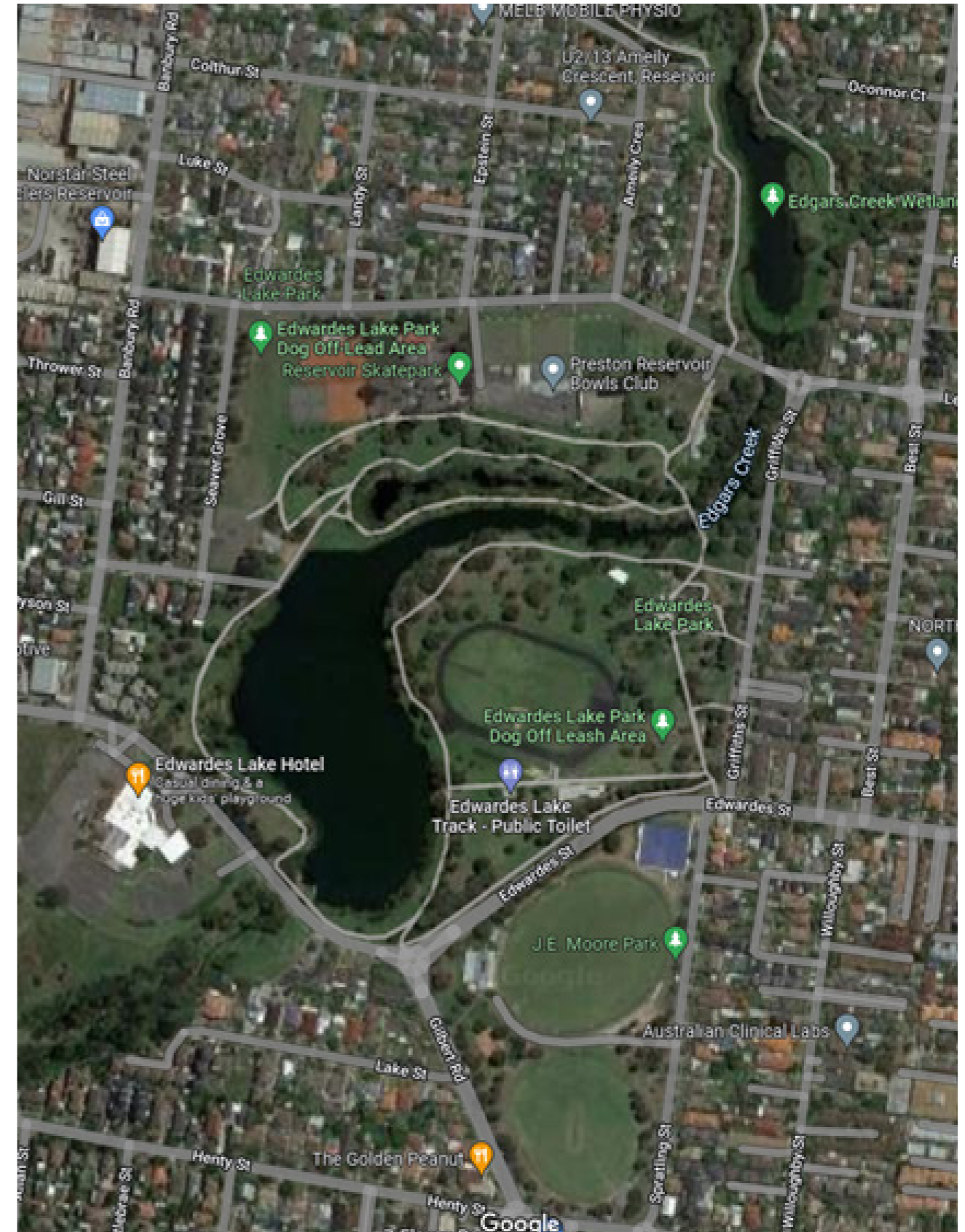
Steam Locomotive on Display



Outdoor Gym



Playground



1.7 LAKE WENDOUREE

**TOTAL AREA**  
238ha / 2380000m<sup>2</sup>

**KEY FACTS**

- Managed by City of Ballarat
- Artificial lake created by damming wetlands
- Regional level open space / destination
- Contains 6km walking track and 2km rowing course
- Home of rowing in 1956 Olympics
- Was fully dried up in 2006 and 2011 during drought period
- Master Plan completed in 2017 by City of Ballarat and Urban Initiatives

**ACTIVITIES / USES**

Outdoor recreation

- Gym equipment
- Playground
- 6km running track
- Peddle boat hire

Facilities

- Picnic tables
- BBQ
- Restaurants / Cafes
- Toilets

Daily use

- Dog walking
- Cycling
- Running

Water play

- Rowing
- Fishing
- Sailing

Ecology

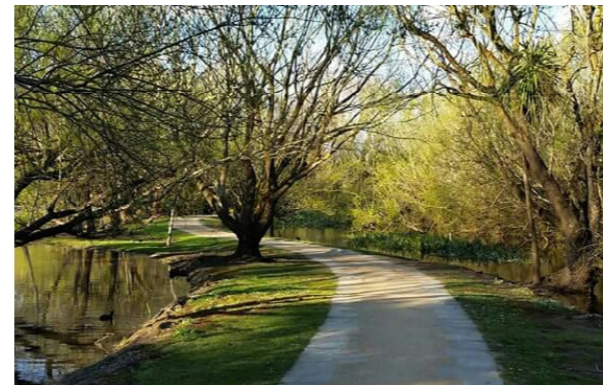
- Wetland ecology
- Nature play

Others

- Botanical garden



Lakeside



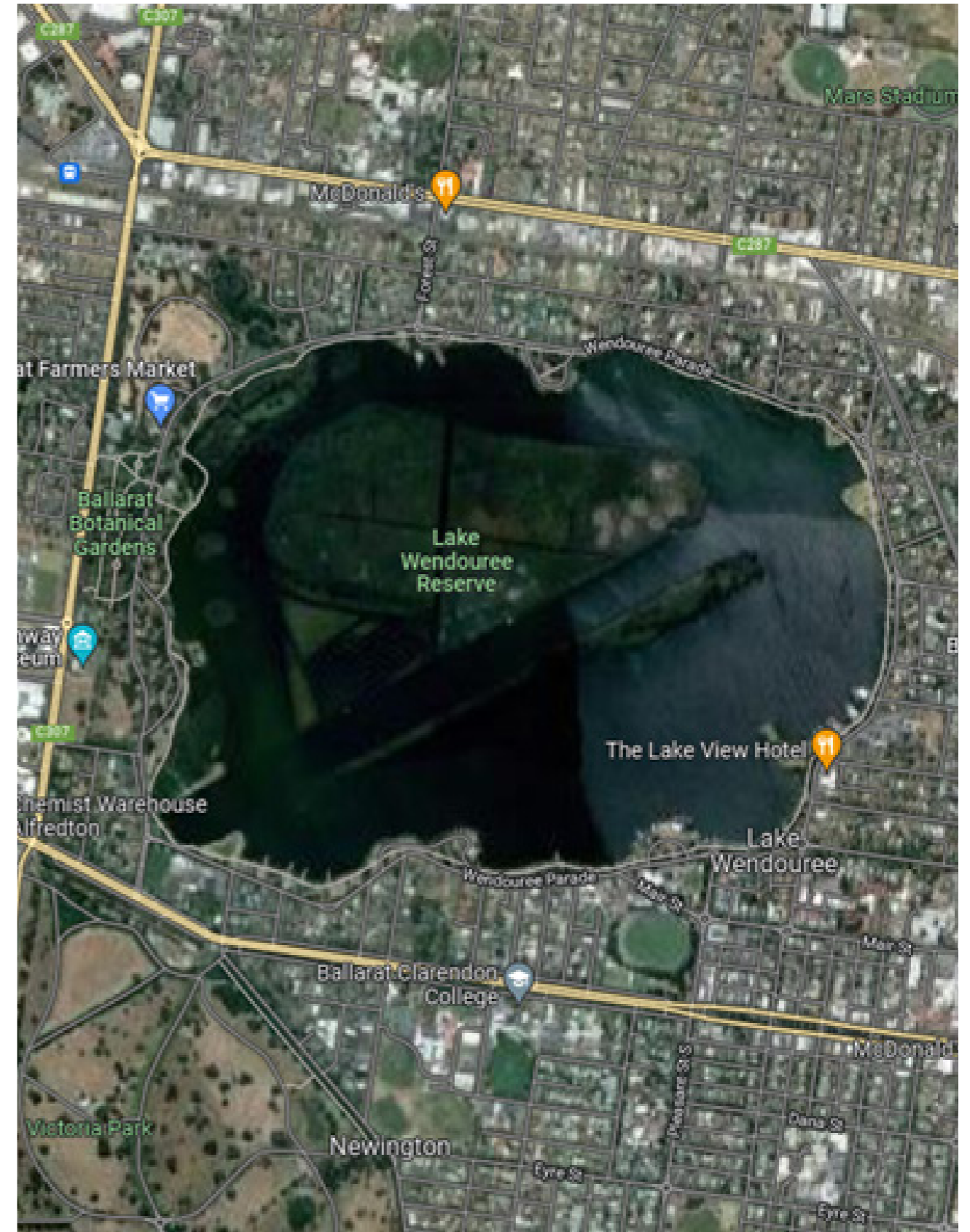
Nature Trail



Playground



Rowing



## 1.8 LAKE DAYLESFORD

### TOTAL AREA

11.6ha / 116000m<sup>2</sup>

### KEY FACTS

- Managed by Hepburn Shire Council
- Artificial lake formed by damming wetlands in 1927
- Former site of gold digging and a Chinese market garden
- Regional destination

### ACTIVITIES / USES

#### Outdoor recreation

- Gym equipment
- Playground

#### Facilities

- Picnic tables
- BBQ
- Shelters
- Restaurants / Cafes
- Toilets

#### Daily use

- Dog walking
- Cycling
- Running

#### Water play

- Swimming
- Paddle boat hire
- Fishing

#### Ecology

- Wetland ecology

#### Others

- Botanical garden



Jetty



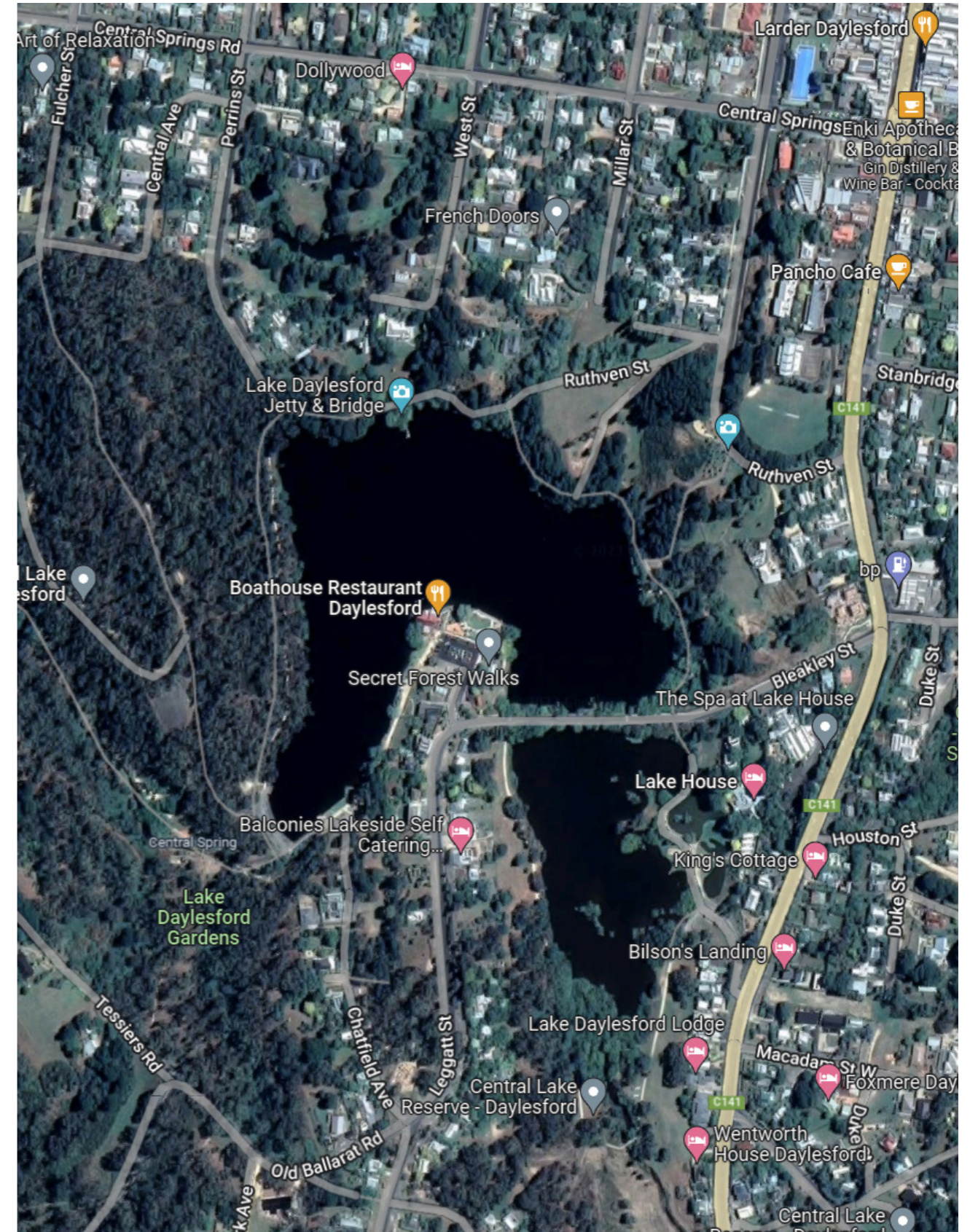
Beach



Botanic Garden



Paddle Boat Hire



## 1.9 LAKE WEEROONAM

**TOTAL AREA**  
18ha / 180000m<sup>2</sup>

### KEY FACTS

- Managed by City of Greater Bendigo
- Artificial lake created on a former mine, designed by William Guilfoyle in 1878
- Regional level open space
- Master Plan completed in 2011

### ACTIVITIES / USES

#### Outdoor recreation

- Gym equipment
- Playground

#### Facilities

- Picnic tables
- BBQ
- Shelters
- Toilets

#### Daily Use

- Dog walking
- Cycling
- Running

#### Water play

- Rowing
- Fishing

#### Ecology

- Wetland ecology
- Educational



Rowing



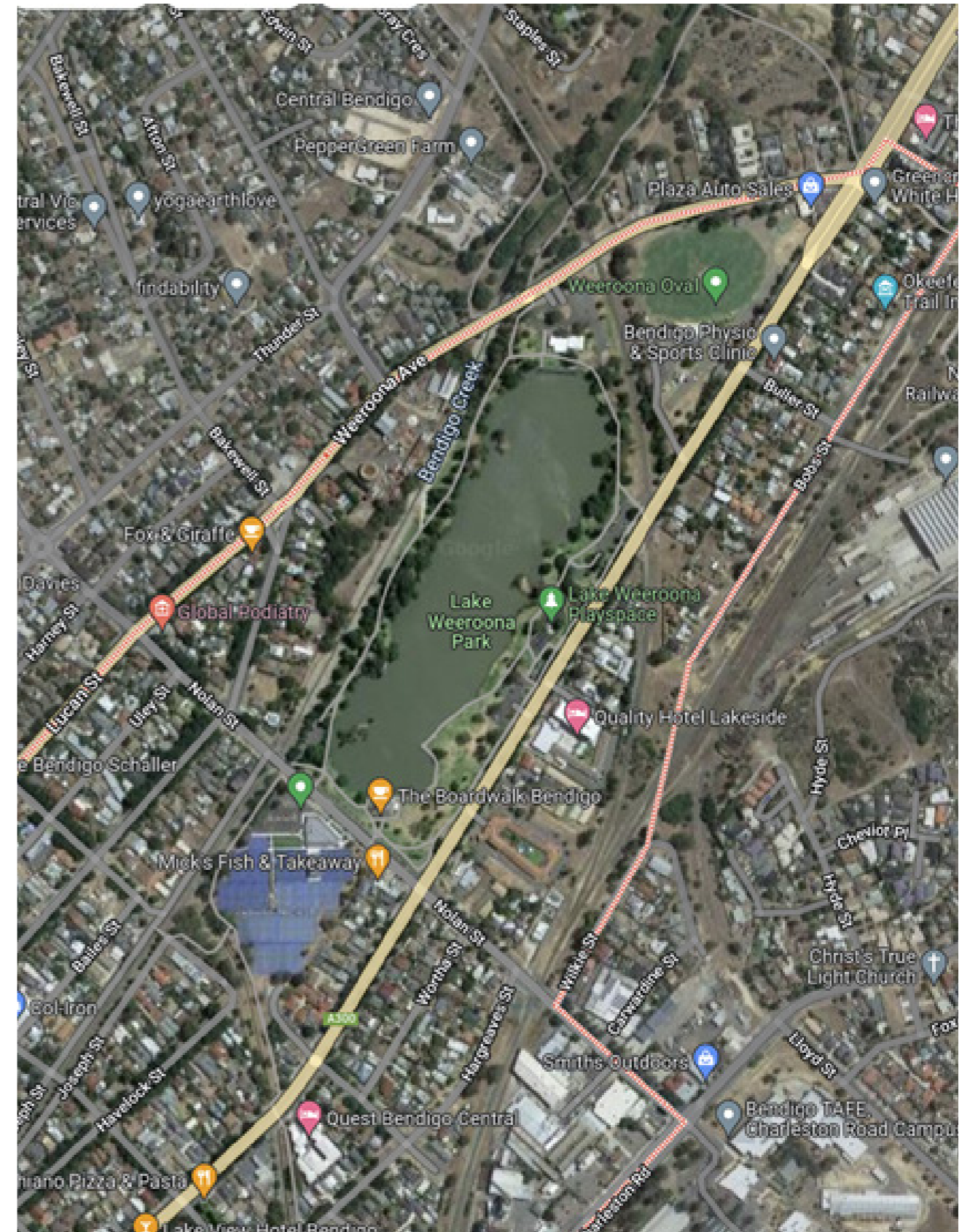
Wetland Education



Playground



Cycling



# APPENDIX 2.0 CONSULTATION FEEDBACK

Community consultation is a key component in the development of the Lake Caroline Master Plan and Activation Strategy. As the lake holds significance to the local community, it is critical to listen and understand their opinion, and incorporate their knowledge into the development.

Multiple consultation sessions had been carried out, with the detailed analysis being included in this appendix.

*“It is a great community asset that could be improved to make it even better for everyone living in our community. It is great that you are consulting the community about what can be done and what they want to see down at Lake Caroline.”*

- Survey response from a local resident

## A2.1 USER

The online survey provides key information on the users' demography and their activity statistic, summarised as follows:

- Most respondents are at their early 30s to late 40s
- Most respondents are female
- Most visitors live within 2km from Lake Caroline Reserve; half of the respondents reside in Caroline Springs
- A large majority of respondents travel to Lake Caroline by foot or by car
- Most respondents visit the lake either daily or weekly
- Most respondent spend 15 mins to 1 hour in Lake Caroline Reserve
- Many respondents come with their children; other respondents come with their family members or by themselves
- Most users visit the lake for exercising; appreciating nature; appreciating scenic views; and children's play

The profile of the respondents reflects the following findings:

### USER BACKGROUND

- 91.6.% of the respondents are aged 30 or above. This implies the survey outcome does not have strong associations with the younger community, who might not have access or unable to respond to the online survey.
- 63.1% of the respondents are identified as female, reflecting the opinions particularly associated with female.
- 80% of the respondents live with 2km from Lake Caroline Reserve. However some respondents were willing to travel to Lake Caroline from suburbs beyond the 5km radius, including St Albans, Melton, Tarneit and Ardeer.

### TRAVEL & TIME SPENT ON SITE

- 54.1% of the respondents walk to Lake Caroline and 44.6% drive, revealing the lake is largely accessed by foot or car.
- 53.8% of the respondents visit lake Caroline regularly, varying from daily to weekly. It indicates a strong consistent population using the Lake.
- 62.9% of the respondents spend 15 minutes to an hour in Lake Caroline Reserve. However, during both online and in-person consultation, the respondents mentioned they would like to spend more time in the lake (more than an hour) if more reasons are provided.

## NATURE OF VISITS

- 70.9% of the respondents visit the lake with family, whether that be with other adults, children or the whole family. This data indicates the respondents are expecting having activities and facilities for all ages and abilities.
- 18% of the respondents use the lake when they are by themselves indicating there are needs for independent activities and safety.
- 33.3 % of the respondents visit the lake to appreciate the nature and surrounding views, highlighting that the habitats and natural elements as key elements to draw people to the lake.
- 28.1% of the respondents visit the lake for exercise, reflecting an importance to reify running and exercise infrastructure.
- 9% of the respondents visit the lake for events but many suggested that more events would help increasing their tendency to visit the lake.

**A2.2 ACTIVATION-RELATED OPINION**

Activation around the precinct has been spatially identified by community members through City of Melton's online interactive comment map. Combining this with high ranking survey data, the following activation hotspots have been identified along Lake Caroline's edge.

**An Unique Events Destination**

An artful space for community and council led events including music, markets and pop up food stalls to occur.

Something that will draw people from neighboring localities to visit.

The lake is unique to Caroline springs, the community want to activate it.

**88.62%** of survey participants selected markets as an important feature to see on the Lake.

**An Accessible Place to Play and Connect**

Upgrading playgrounds and incorporating a fenced off leash dog area to allow children of all ages and abilities to play amongst the lake has been identified amongst all consultation sessions.

**23%** of survey participants commented on upgrading playgrounds as well as comments for upgrades mentioned in consultation with Project Working Group, Counsellors and community consultation sessions.

Introducing BBQs and picnic facilities to encourage community members to spend more time on the lake, connecting with family and friends has also been identified as important through survey data.

**High Interest in Outdoor Cinema and Artificial Beach**

Events, festivals and occasions are identified as key drivers to activate the lake.

Furthermore **66.67%** of community members surveyed desire after dark activities which includes outdoor cinemas and moonlight boating.

**72%** of users mentioned dining out as their main reason for visiting Lake Caroline.

**30%** of survey participants have identified floating bars and restaurants as their number one preference of what they would like to see on the lake - the highest ranking preference in this question.

*"It's a perfect area for more arts engagement. Perhaps an art trail around the Lake. At the moment it is just town houses with one big tap. It would be great to get more interesting structures around the lake to lead a trail and celebrate the aesthetic."*

*"Ability for tables and chairs to sit by the lake - in the warmer months would be nice to have a coffee van there, so u can go for your walk and then sit and have a coffee. Consider having entertainment certain time of the day ie singer or table with games ie chess"*

*" The lake is under utilised as no watersports are available.."*

*"... buskers and free live entertainment..."*

*"It would be great to make it a destination that allows you to stay longer after walking around the lake."*

*"More interactive play spaces around the lake would be welcomed (eg musical activities) or more toddler friendly equipment in the playground."*

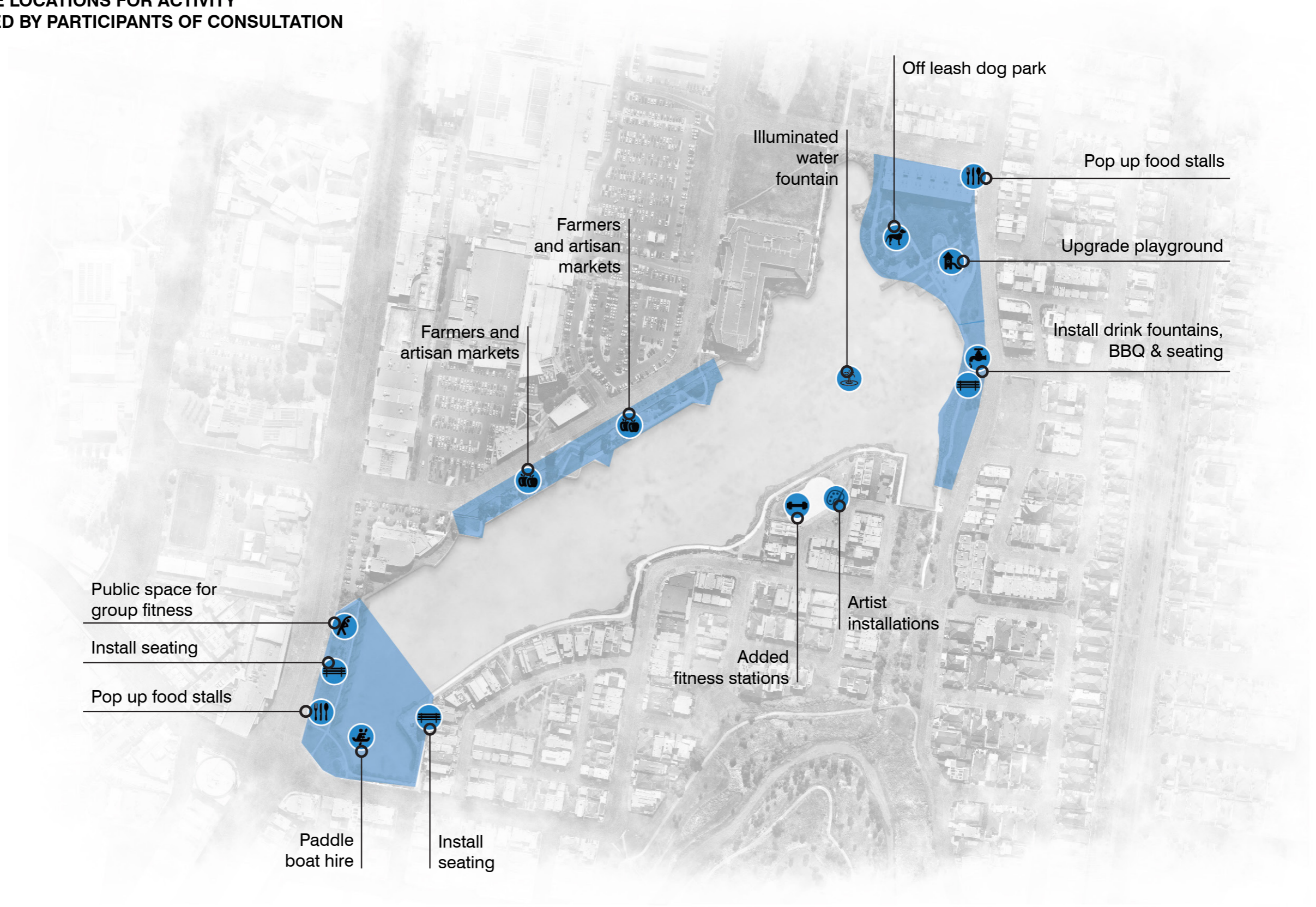
*"Multi level shipping container event space community feel for the young professionals and young families in the area - public space with pop up shops open for vendors to lease containers and public benches for food and drink shade from the sun as well as open air spaces. Also a space to listen to live music and big screens for sporting and national event."*

*"A multi use recreational space for music events/stallholders/food vendors alike. Could be a cost effective option like a shipping container (refer to Sunshine Social) or Boypark - there are benches/large tvs/beanbags for film event nights/food vendors and a DJ 'booth'. This would be fantastic for all ages, especially young adults as we need to travel out of the city via Vline for a night out. The Vline service is irregular and not accessible (would need to get an uber to the station twice if you plan to drink). It would be so nice to be able to walk to the lake on a Friday night and have events hosted in this space. Sport screenings/ karaoke nights/film nights/music nights w/ a DJ/ food stalls and pop up markets. The space would already be there and could create diverse opportunities. This will also bring people to the area."*

*"As a resident of Caroline Springs and a mother of two children under the age of 10 I cannot stress how much this current playground needs improvement. It would be lovely to have a new, fun... playground in Caroline Springs"*

- Survey response from a local resident

**POSSIBLE LOCATIONS FOR ACTIVITY  
IDENTIFIED BY PARTICIPANTS OF CONSULTATION**



**A2.3 ECOLOGY-RELATED OPINION**

Ecology is one of the main concerns raised by the participants, which the presence and protection of wildlife and lack of vegetation are among the items most frequently mentioned.

**An Ecological Habitat**

Introducing vegetation to encourage more wildlife back to the lake aligns with user interests of Lake Caroline. The provision of educational opportunities and observation on wildlife is also preferred.

**64.33%** of survey participants identified their main reason for visiting the lake is to appreciate nature and scenic views.

**A Clean Environment for Wildlife and Residents**

Water quality to be monitored as it is cited as one of the major factor influencing the perception of the lake as well as for the quality of wildlife habitat.

**15%** of participants across the City of Melton Survey, Community Consultation and Intercept interview sessions all mentioned their desire for a cleaner, nicer smelling and more beautiful lake.

**A Site Connected to the Water**

More opportunities to connect with the water itself. Floating berms, paddle boats, upgraded boardwalks, revegetation of the edge of the lake

**A Place of Rest and Respite**

Seating, shade to facilitate community members to rest amongst the natural features of Lake Caroline.

*" In the past there were a lot more birds on and around the lake, and birds and frogs in the Wetlands. The whole area needs to be weeded, and dead plants and rubbish removed to improve water quality and attract the wild life back to the area."*

*"There are almost no trees around the lake which makes it quite hot to run around during Summer."*

*"Protected Nature observation space for local wildlife."*

*"Add additional habitat for wildlife"*

*"More consideration to the local wildlife needs to be put in place."*

*"Protect the wildlife which is a draw card to the area. Higher level of water quality."*

*"Would like to see signs for vehicles to be aware of the wildlife around the lake such as " duck crossing" as there have been times where drivers do not slow down."*

*"Take better of the wildlife."*

*"Anything that supports and promotes the wildlife that lives there."*

*"Needs more trees, also could do with some potted trees along the residential side to pretty it up."*

*"Need more identifiable drinking fountains and seating around the lake. Whereas the whole loop is quite long to complete in one go, so providing somewhere for people to rest and take a break would be nice."*

*"Need more trees and flower gardens, regular cleaning both inside the lake and around the paths."*

*"More planting, more bird habitat. Bridge or boardwalk to feel engaged. Makes you feel connected to be on top of the water and engaged in the landscape."*

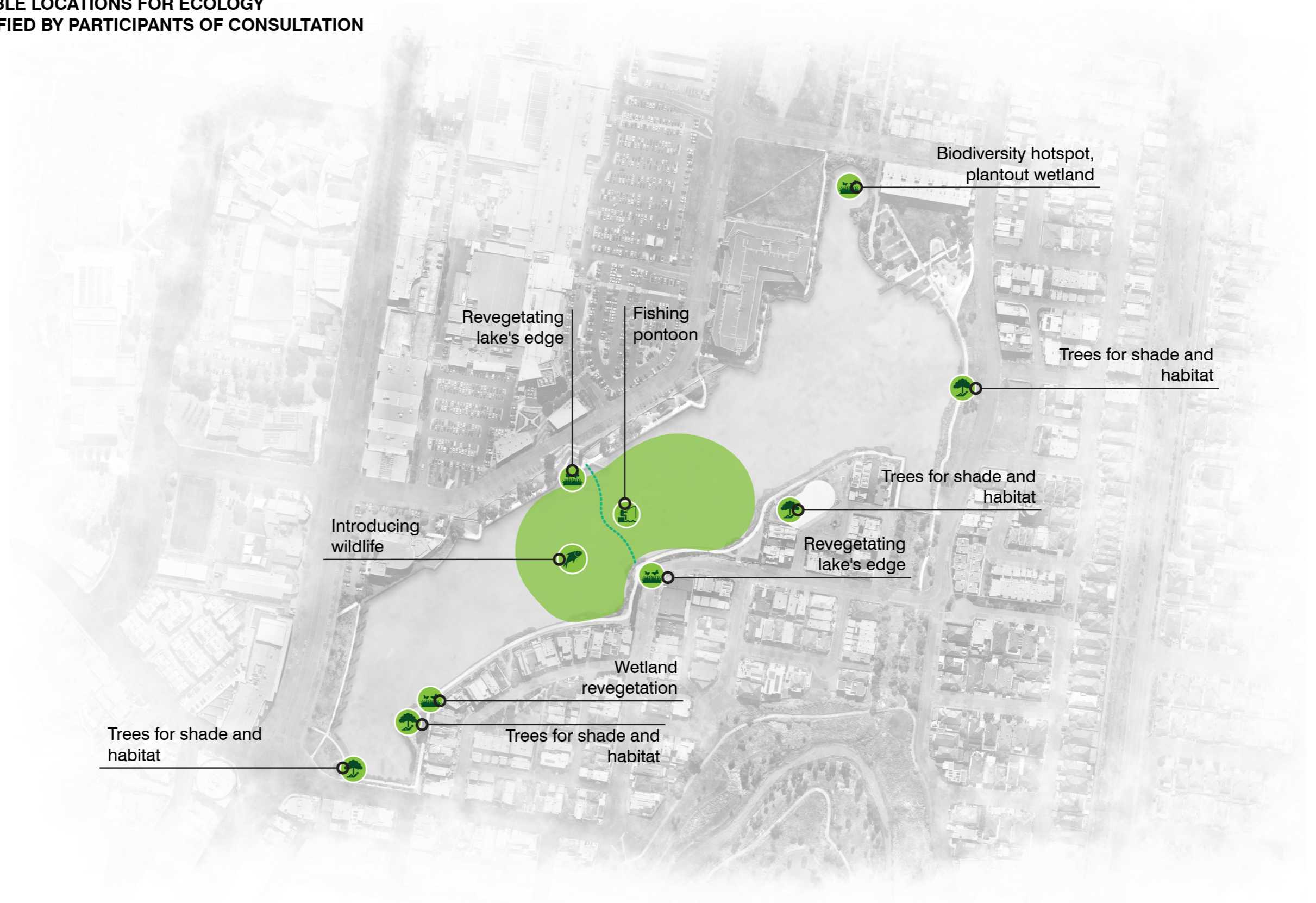
*"Just keeping the lake immaculate and clean. The lake is a leading and vibrant part of Caroline Springs and Melton municipality and should be well looked after"*

*"Make it a place where the community can come and get engaged in nature"*

- Survey response from a local resident



**POSSIBLE LOCATIONS FOR ECOLOGY  
IDENTIFIED BY PARTICIPANTS OF CONSULTATION**



**A2.4 CONNECTIONS-RELATED  
OPINION**

Connections throughout Lake Caroline are looking to better connect the lake's edge to the environment as well as stitch the water with the greater suburban fabric.

**Connecting the Kororoit Creek**

Connections identified by survey participants include connecting the lake to Kororoit Creek better, which would provide better access to the residents who live further from the lake.

**Connecting the Lake Edge with the Water**

**19.61%** of Survey participants identified their first choice for additional lake facilitates as Water Crossings (Including foot bridges and boardwalks). This was the third highest ranking before rentable boats (39.81%) and floating cafes (30.67%).

**Connecting to the Greater Urban Fabric**

Introduction of slow zone and signalised intersections has also been identified to make entering the lake safer and easier from nearby areas.

*" When the lake was constructed there was a causeway from near the corner of Lake St and the West Waters Hotel to the south side of the lake which separated the clean west part from the unfiltered east end. This was very useful from walkers who did not want to do the whole circuit of the lake, a pedestrian bridge at this point would be useful."*

*"When at the lake crossing from the shops through lake street to the lake can actually be difficult even with the pedestrian crossing. The road is busy and people will speed through it and even ignore people crossing."*

*"Intersection of Lake St and Caroline Spring boulevard is very busy during school hours and business hours."*

*"It could also do with a bridge as it takes a long time to get around, and it's disconnected to the shops."*

*"Most importantly for future elevation and access to the lake from surrounding areas, better connected paths throughout other areas to the lake ie. paths along Kororoit creek from Clarke Road Streamside Reserve and further into Kororoit creek regional park once completed."*

*"...bring the foot bridge back and possibly an island with a coffee shop plus an island for the birds to retreat to."*

*"Most importantly for future elevation and access to the lake from surrounding areas, better connected paths throughout other areas to the lake ie. paths along Kororoit creek from Clarke Road Streamside Reserve and further into Kororoit creek regional park once completed"*

- Survey response from a local resident

**POSSIBLE LOCATIONS FOR CONNECTIONS  
IDENTIFIED BY PARTICIPANTS OF CONSULTATION**



## 3.0 SUPPORTING DOCUMENTS & REPORTS

The development of the Lake Caroline Master Plan and Activation Strategy is informed by many background studies, surveys, documents and reports. The project team wishes to acknowledge the assistance and contribution of the authors of the following documents and reports:

- City of Melton Playspace Strategy Background Analysis Report (Draft) - Bricolage Design 2019
- Active Transport: Children and Young People - VicHealth December 2009
- Lake Caroline Spillway Construction Documentation - Urbanedge Landscape Architects 2011
- Boathouse Reserve Assessment - City of Melton 2013
- Caroline Springs Promenade Landscape Documentation Package - Taylor Cullity Lethlean 2004
- Caroline Springs Lake Residential Wall Landscape Documentation - Land Projects & Cardno 2009
- Lake Caroline Construction Documentation Package - Earth Tech 2002
- Open Space Asset Management Plan - City of Melton
- Caroline Springs Boulevard Traffic Survey - City of Melton 2022
- Caroline Springs Town Centre Comprehensive Development Plan - Delfin Limited 2000
- Mobile Food Vehicle Policy - City of Melton 2022
- Open Space Plan 2016 - 2026 - Melton City Council 2016
- Open Space Plan 2016-2026 Background Report - Melton City Council 2016
- Safe City, Proud Communities Plan 2020-2024 - City of Melton
- Green Infrastructure, a vital step to Brilliant Australian cities - Aecom 2017
- Landscape Guidelines for the Shire of Melton - Melton City Council 2010
- Urban Design Guidelines for Victoria - Victoria State Government Department of Environment, Land, Water and Planning 2017
- Kororoit Creek Regional Strategy 2005-2030 - Land Design Partnership Pty Ltd 2006
- Lake Caroline Operation & Maintenance Manual and Dam Safety Emergency Plan - GHD 2013



T.C.L