

Central Coast Recreational Use Study Stage 2: The Tuggerah Lakes







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Central Coast Recreational Use Study Stage 2: The Tuggerah Lakes

April 2023

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Executive Summary

The Central Coast of New South Wales is one of the most valued and iconic coastal regions in Australia: with its beaches, lagoon and lakes providing a range of recreational opportunities for locals, visitors and tourists alike. However, forces such as encroaching residential and commercial development, climate change, a growing population and the need for better environmental conservation are individually and collectively placing increasing pressure on the recreational use of this coastline.



- Central Coast Re

Council is currently developing three Coastal Management Programs (CMP): The Tuggerah Lakes CMP, the Open Coast and Coastal Lagoons CMP, and the Hawkesbury-Nepean River including Brisbane Water. Stage 1 was a scoping study which identified information gaps required to inform the development of management actions in the later stages of developing the CMP.

Coast Council.

Consultancy VisionEnvironment was engaged to carry out this study, which drew on existing information regarding coastal planning, desktop mapping and site visits. The site visited included carrying out a Coastal Recreational Use Audit which involved collecting information on the location of existing infrastructure in the coastal zone. The site visits also enabled observations to be made that supported the report recommendations.

This report should be read in part as a supplement to the Open Coast and Coastal Lagoons report also produced by VisionEnvironment. It contains only a summary of the relevant background sections, a brief overview of the overall methodology, audit and classification framework employed in the original study. Full descriptions can be found in the Open Coast and Coastal Lagoons report. The remainder of this report relates specifically to Tuggerah Lakes and the portion of Lake Macquarie within the boundary of the Central Coast Council.

This report focuses on the Tuggerah Lakes system and the portion of Lake Macquarie within the boundary of the Central The report has a series of maps that show specific uses for the whole coastline, notably:

- · Shared-use paths; and
- Boat launching ramps.

A Coastal Recreational Use Classification Framework was developed which enable the coast to be categorized into either a node or a connector. Nodes are developed areas within a foreshore reserve that have a variety of infrastructure to allow for a range of passive and active recreation activities.

Four types of nodes are recognised:

- Beach/Foreshore Access Nodes provide for only beach and water-based uses;
- Minor Activity Nodes provide additional park-based active and passive uses, with greater capacity for specialist water-based use;
- Moderate Activity Nodes provide a greater variety of park-based recreation, including commercial and indoor uses, however may restrict specialist water-based uses; and
- · Major Activity Nodes provide more extensive commercial opportunities and are typically used for tourism purposes.

Connectors are the foreshore areas that act as links between two nodes. Connectors have a range of values, including ecosystem, recreational, social, aesthetic, wildlife corridors, and, where there is no foreshore reserve (i.e. no public access), private economic. Connectors can be well vegetated, cleared of native vegetation and anything in between. They are mostly free of infrastructure, but some areas have a formal path or track, a track with access to the beach, and the occasional lookout or seat.

Seven types of coastal connectors are recognised, with the first five contained with public reserves, and the last two contained on private land with no public access:

Conservation Connectors – well vegetated areas within

conservation reserves and well separated from urban areas; facilitating primarily land based recreation with high aesthetic, nature and wilderness experiences;

- Landscape connectors well vegetated foreshore reserves with limited infrastructure, set within urban areas. They have limited beach and water-based recreation, however may provide unique aesthetic, nature and wilderness experiences;
- Shared Path Connectors foreshore reserves with native vegetation similar to Landscape Connectors, but typically contain shared paths and supporting infrastructure within the reserve that facilitate a range of additional recreational uses, along with enhanced aesthetic and educational experiences;
- Urban Connectors foreshore areas with enhanced water and beach and path-based uses, however little if any native vegetation, thus negligible nature and wilderness experiences. Either a road or path provides a hard edge to the adjacent residential areas;
- Local Connectors with houses directly abuting, these foreshore reserve areas tend to be narrow and with limited native vegetation. No hard edge separates the houses from the foreshore, thus providing beach and water use primarily to local residents;
- Residential Connectors set within urban areas with no public foreshore and private property directly abutting the water, thus providing beach and water use exclusively to residents of these private properties; and
- Rural Residential Connectors set within rural areas with no public foreshore and private property directly abutting the water, thus providing beach and water use exclusively to residents of these private properties, while often conserving areas of native vegetation.

Part B of this report has a series of maps that show how the foreshore of the lakes have been classified and the location and certain types of key infrastructure.

The report contains an extensive literature review which

included reviewing data collected on four different studies that carried out surveys of users, one of which was Council's "Your Voice" as well as the "Tuggerah Lakes foreshore restoration works - community survey". The key findings of the literature review, observation made on the site visit, the mapping carried out for this report, the review of relevant Council and other reports, and discussion with Council's officers enabled the following recommendations to be made.

Shared use paths

The existing multi-purpose "shared" paths are very popular and well used for walking, cycling and running. Council's bike plan focuses on cycling as a mode of transport. Whilst the social and environmental benefits of providing cycling infrastructure for commuting are acknowledged, Council should reconsider whether it has the correct balance with respect to providing shared path infrastructure, and whether providing infrastructure for recreational purposes, especially around the lakes (as well as the open coast) should be given a higher priority.

Recommendations:

- 1. Council should reconsider whether it has the correct balance with respect to providing shared paths infrastructure and whether providing infrastructure for recreational purposes, especially around the lakes (as well as the open coast) should be given a higher priority.
- 2. Council should develop a 5-10 year plan to extend the existing shared paths network and walking paths within the foreshore reserve of all the lakes and subject to sepecifc recommendations below;
- 3. As Council rolls out the extension of the shared and walking paths network, it should also address the problems of private intrusion and use of public foreshore, remove informal uses and look for opportunities to rehabilitate areas within the foreshore with native species so as to increase the environmental value of the foreshore.

4. The following are specific recommendations:

- a. Lake Macquarie
- Gwandalan: there are sections of the foreshore that are flat and with an open understory and these would be suitable for a shared path, whereas areas such as around Diamond Drill Point are more suitable to have the existing walking track upgraded in parts for easier walking;
- Summerland Point: the northern section has no opportunity for paths as there is no foreshore reserve. The remaining area to the west of Maddison Reserve is suitable for a shared path, but the existing walking track could be upgraded and extended in the short term;
- iii. Chain Valley Bay: the foreshore reserve of the three coastal suburbs of Chain Valley are suitable for shared paths, however are relatively short. Linking the three suburbs with a continuous path has merit. The link between the northern suburbs and the middle suburb is a well vegetated area so this path is probably best to be a low-key walking track. From this middle suburb to the western suburb, a shared path is likely to be the best option, using the existing crossing of Karignan Creek and looking at environmentally sensitive options to link the path from the bridge to foreshore reserve at the end of Lloyd Ave and extending it along the foreshore reserve:
- iv. Kingfisher Shores: the foreshore reserve here is suitable for shared paths, however would be relatively short;
- b. Lake Munmorah
- Other than a small section in the north east corner, all of the urban areas of Munmorah Lake have a foreshore reserve with the capability to support a path;
- ii. The northern urban area has an existing shared path for about half of the foreshore, starting at the western end and finishing at Tom Burke Reserve. The area directly to the east is suitable for a path, however there

are sections that are well vegetated and the terrain is sloped, so a walking path might be more suitable in these sections:

- iii. The south west urban area has a foreshore reserve suitable for continuous shared path;
- iv. The south east urban area also has a foreshore reserve suitable for continuous shared path, with an opportunity to extend this across the existing foot bridge to Dunkey Island, and to construct a new foot bridge to the foreshore at the end of Edward Street: thus making a continuous path across the two urban areas.
- c. Budgewoi Lake
- i. All of the northern shore has a foreshore reserve, whereas the remaining urban areas in the southern half have extensive areas where there is no foreshore reserve, limiting opportunities here for paths.
- The entire northern shore has shared path that extends partly up Wallarah Creek to Pacific Highway. This path provides all the benefits referred to earlier in this report and Council should be commended.
- iii. Providing paths in the southern section of the lake is more problematic, given the number of areas where there is no foreshore reserve, although a shared path has been provided in a section along the south east. By extending the path up Peel Street, Council appears to be looking at safe options to extend this path around the area with no foreshore reserve using the very busy Main Road. This strategy might be more applicable for the western section (i.e. construct a shared path in the foreshore reserve and use the distributor roads around the areas with no foreshore reserve) as the distributor roads are much less busy than Main Road.
- iv. An alternative for the two longer sections of foreshore reserve is to build on the natural values by increasing their biodiversity values, install walking tracks and create a more substantial node that focuses on passive recreation and biodiversity education.

- d. Tuggerah Lake
- i. Most of the residential areas around Tuggerah Lake have a foreshore reserve, the exceptions being in the north, especially to the east of Wallarah Point/Main Road Bridge. This makes most of Tuggerah's lake foreshore suitable for shared paths.
- ii. There is an existing shared path starting at the end of Prawn Beach Lane in the north and ending at March Street, where works are in progress to extend the path further south. The area north of Prawn Beach Lane does not have a continuous foreshore reserve and some of the terrain is steep with cliffs and well vegetated. The area either side of Craigie Park is better suited to building on the natural values by increasing their biodiversity values, install walking tracks and create a more substantial node at Craigie Park that focuses on passive recreation and biodiversity education.
- iii. The lakeside urban areas either side of the outlet of Ourimbah Creek have foreshore reserves that are suitable for shared paths. These reserves have significant conservation value with extensive areas of salt marsh and shallow water. As well, either side of the very eastern end of Ourimbah Creek is a conservation area. Consequently, these foreshores are best suited for walking tracks rather than shared paths. There is an opportunity to link a path in the northern side to the Tuggerah State Conservation Area. Education signs could also be installed.
- iv. A shared path commences near Chittaway Bay Lions Park, crossing over Tumbi Umbi Creek and ending at The Entrance. This path provides all the benefits referred to earlier in this report and Council should be commended.

Access

The need for better access to the lakes - i.e. more and better quality access points – was raised by nearly 75% of Tuggerah Lakes respondents and 86% of Lake Macquarie respondents to Council's Our Coast, Our Waterways community survey. The survey also found that 85% of users do not have direct access to the waterway/beach and providing good access is important for those many residents who do not have direct access to the lakes.

This study reviewed the distribution and quality of existing foreshore access points as well as literature related to the recommended distances residents should be from open space and public infrastructure. The report found that the ideal walkable catchment should be between 400-800m i.e. the optimal spacing of nodes should have catchments of between 400-800m with minimal overlaps.

Recommendations

- 5. Council should increase the number of upgraded access points around the lakes and the three water courses covered in this study.
- 6. It is recommended that an ideal walkable catchment for these access points should be between 400-800m which also means that the optimal spacing of nodes should be 500m but no more than 800m.
- 7. The recommended upgraded access points in this report are a useful starting point for Council's consideration.
- 8. New infrastructure:
- The recommended facilities at these points should be bins, shower where swimming facilities are provided, drinking water, information signage. look out and/ or seating, some shading including for seating, and a small grassed area. Additional infrastructure in some circumstances could be a playground and a toilet/ shower block.
- The flood hazard in the low-lying areas in the foreshore ii. will likely increase in future as sea levels rise and storm

intensity and frequency changes with climate change. As well, wetland vegetation will likely migrate inland. Consequently, the design and placement of any new assets or infrastructure need take this into account including the findings of Council's Wetland Refugia Study.

Upgrading existing nodes

9. The quality of infrastructure at some of the access points we have classified as nodes should be improved and upgraded as noted in the relevant Figures.

Demarcation between private land and the foreshore reserve

There are many examples of private residents, whose properties back onto the foreshore reserve, having placed private facilities and infrastructure within the foreshore for their own private use. Having a shared path through the reserve has the added advantage of bringing the public into the foreshore, which reduces the sense of private ownership and should reduce the private use of the foreshore.

- 10. An audit should be carried out of the foreshore reserve where houses directly abut the foreshore reserve to identify cases of significant intrusion into the reserve.
- 11. To ensure an ongoing and clear demarcation between private property and the public foreshore a property boundary fencing policy should be introduced and implemented.
- 12. Council should work with residents to identify a more suitable location for this infrastructure.
- 13. The removal of these private facilities and infrastructure should also be integrated into the extension of the multiuse paths and walking tracks recommended above.

Biodiversity gain

Council has a biodiversity strategy that gives special attention to its coastal reserves and their important role in conserving and enhancing biodiversity. There are opportunities to

increase the environmental value, notably more plantings in areas of the foreshore in areas with little if any native vegetation.

Recommendations

- 14. An audit should be carried out of the foreshore reserve to identify areas where additional plantings of native vegetation could be carried out.
- 15. Affected residents should be surveyed to identify those who would be willing to have additional plantings in front of their property and work with these residents on species and site selection.
- 16. Council should investigate program options that would increase community awareness of the value of native vegetation, especially for lake side residents, including education programs and biodiversity and carbon credit schemes where discounts on Council services or incentives are offered in exchange for those credits.
- 17. The following reserves are suitable for enhanced management that focuses on environmental values, which would include working with the local community to develop a suitable management plan, upgrading passive recreational facilities and conservation and interpretive material:
- a. Budgewoi Lake Ocowolrolong Point end of Tingira Street:
- b. Budgewoi Lake, The Corso Reserve at the northern end of The Corso;
- c. Budgewoi Lake, Chelmsford Road Reserve opportunity to work with students at Gorokan High school;
- d. Tuggerah Lake Craigie Park; and
- e. Lake Munmorah Reserve at the end of Andrew Street.



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1. Introduction

The Central Coast of New South Wales is one of the most valued and iconic coastal regions in Australia: with its beaches, lagoon and lakes providing a range of recreational opportunities for locals, visitors and tourists alike. However, forces such as encroaching residential and commercial development, climate change, a growing population and the need for better environmental conservation are individually and collectively placing increasing pressure on the recreational use of this coastline.



Council is currently developing three Coastal Management Programs (CMPs): The Tuggerah Lakes, the Open Coast and Coastal Lagoons, and the Hawkesbury-Nepean River including Brisbane Water. Stage 1 was a scoping study which identified information gaps required to inform the development of management actions in the later stages of developing the CMP. It was identified that a Recreational Use Study was required to better understand the various coastal recreational activities occurring in the Central Coast area and determine the adequacy of public amenities and infrastructure to accommodate for those activities now and into the future.

The Tuggerah Lakes system is an estuary made up of three interconnected lakes: Tuggerah Lake, Budgewoi Lake and Lake Munmorah. The Tuggerah Lakes are shallow estuarine wetlands where the water levels within the lakes are between 0.2m and 0.4m above sea level (WMAwater 2014). The average depth of each lake is 3.0m, 2.0m and 2.5m for Munmorah, Budgewoi and Tuggerah respectively (Glamore, Waters et al. 2020). The lakes have large areas of seagrasses especially in the shallow bays (Chapman and Roberts 2004).

The system is connected to the ocean through a single narrow point roughly in the middle of eastern side of Tuggerah Lake called 'The Entrance'. The system is fed by several freshwater rivers and creeks so that the salinity of the lakes is usually below sea water levels, ranging from around 15-35 milligrams of salt per litre which is from highly saline to brine (sea water) (Roberts and Dickinson 2005). In the past, the lakes had large areas of salt marsh on the foreshores, however the 2001 Tuggerah Lakes Estuary Process Study for the then Wyong Council (Roberts 2001) found that around 85% of the saltmarsh habitat has been lost to development on the foreshore. The Tuggerah Lakes support a highly diverse natural ecology: most notably water birds, aquatic fauna, aquatic flora (phytoplankton and seagrasses) and the complex ecosystem the flora supports (Glamore, Waters et al. 2020). Council's biodiversity strategy notes that:

Marine and estuarine habitats (tidal sandflat, tidal mudflat, lake, rocky shores, beach, and ocean) are used by a wide range of resident and migratory wading, estuarine, ocean and shore birds. (Central Coast Council 2020, 16)

The lakes are important for both recreational and commercial fishing. They also have important cultural significance for the Darkinjung people, with sites around Tuggerah Lakes used for shelter, cultural meetings, traditional burials and hunting (McCann, Donaldson et al. 2021, 30). The waterways and foreshore are important for a range of active and passive recreational activities (Dye, Dickinson et al. 2006).

Consultancy VisionEnvironment was engaged to carry out two separate studies. The first study focused on the Open Coast and Coastal Lagoons, which is the subject of a separate report ("Stage 1"). This report is on the Tuggerah Lakes system ("Stage 2"). The portion of Lake Macquarie within Central Coast Council's boundary was also included in Stage 2; for the purpose of this report, the Tuggerah Lakes and the southern portion of Lake Macquarie will be referred to as 'the lakes'. The study areas for both stages are illustrated in Figure 1.

This study drew on existing information regarding planning for the lakes, two site visits and discussions with Council officers. The site visits included carrying out a Coastal Recreational Use Audit which involved collecting information on the location of existing infrastructure in the coastal zone of the lakes. The site visits also enabled observations to be made that supported the report recommendations.

2. Report Structure

The report should be read as a supplement to the Open Coast and Coastal Lagoons report. A summary of the relevant background sections are provided in Section 3 of this report. Sections 4 to 6 contain a brief overview of the overall methodology, audit and classification framework employed in this study, which are elaborated on in more detail in the Stage 1 report. Section 7 contains a series of maps that show how the lakes have been classified and the location and certain types of key infrastructure. Section 8 contains the study recommendations, and the final Section is a discussion of the recommendations and their relationship to, and consistency with, Council's approved strategic and policy context.

Brisbane Waters

Patonga Beach



Figure 1: Study area extent, with Stage 1 in yellow and Stage 2 in green.

3. Review of the Literature

This review contains two broad sections. This first is a overview of the relevant high level strategic and policy documents within which the planning and management of the lakes need to be seen. The discussion here has been adapted from the Stage 1 Open Coast and Coastal Lagoons report. It also includes discussion of Council reports and other information on the lakes, mostly the Tuggerah Lakes.

This is followed by a summary of the broader relevant literature, both academic and technical reports which was also carried out for the Stage 1 report. These discussions, along with observation from the field trip and discussions with Council officers, are used to inform recommendations in this report in Section 8.

3.1 Review of relevant council reports and studies

3.1.1 Broad Strategic and policy context

Council has produced several reports, strategies and policies that are relevant to this study and to certain recommendations.

Council's Community Strategic Plan 2018-2028 (Central Coast Council 2020) sets the broad and overall objectives for Council across all its operations and responsibilities. There are five Themes and Focus Areas, and under the "Belong" theme the following focus area objective is relevant:

B4 Activate spaces and places to complement activity • around town centres, foreshores, lakes and green spaces

Under the theme "Green" the following focus area objectives are relevant:

• E1 Educate the community on the value and importance of natural areas and biodiversity and encourage community involvement in caring for our natural environment;

- F1 Protect our rich environmental heritage by conserving beaches, waterways, bushland, wildlife corridors and inland areas and the diversity of local native species;
- F2 Promote greening and ensure the wellbeing of communities through the protection of local bushland, urban trees, tree canopies and expansion of the Coastal Open Space System (COSS);
- F3 Improve enforcement for all types of environmental non-compliance, including littering and illegal dumping, and encourage excellence in industry practices to protect and enhance environmental health: and
- F4 Address climate change and its impacts through collaborative strategic planning and responsible land management and consider targets and actions.

Under the "Responsible" theme the following focus area objective is relevant:

• H1 Solve road and drainage problem areas and partner with the State Government to improve road conditions across the region.

Under the theme "Liveable" the following focus area objectives are relevant:

- K1 Create a regional network of interconnected shared pathways and cycle ways to maximise access to key destinations and facilities;
- K2 Design and deliver pathways, walking trails and other pedestrian movement infrastructure to maximise access, inclusion and mobility to meet the needs of all community members;
- K3 Provide signage, public amenities and playgrounds to encourage usage and enjoyment of public areas;
- K4 Repair and maintain wharves, jetties, boat ramps and ocean baths to increase ease of access to and enjoyment of natural waterways and foreshores; and
- · L1 Promote healthy living and ensure sport, leisure, recreation and aquatic facilities and open spaces are

well maintained and activated.

Relevant community indicators are:

- Access to transport walking and cycling;
- Participation in sport, recreation and community life;
- sports and recreational activities; and
- access and enjoyment of local environment;
- Conservation and protection of natural areas:
- quality of the local environment; and
- voluntary land conservation in perpetuity;
- Governance, consultation and service delivery:
- Condition of assets and infrastructure.

Sitting beside this Plan is the NSW State Government's Central Coast Regional Plan (NSW Planning & Environment 2016). That Plan predicts the population of the Central Coast will grow from 339,550 in 2016 to 415,050 by 2036, an increase of 22.2%.

The section that sets out the Vision for the Plan notes:

"A 'green grid' criss-crosses the region allowing residents to connect to a network of open space, natural areas and recreational facilities. Protecting the region's coastal areas, water resources and biodiversity has assured the lifestyles, economic prosperity and environmental health of the region." (p8)

As well, it notes that "Tourism and recreation have become mainstays of the economy" (p8) and that "The region's unique and productive natural environment, including its coastline, will support growth in the tourism, lifestyle housing, agriculture and resource sectors" (p15). Further, "There are ongoing opportunities to promote the tourism appeal of the region's bush, beaches and waterways" (p22).

The plan has four Goals, and Goal 2 is "Protect the natural environment and manage the use of agricultural and resource lands". A key action for this Goal is Action 12.4:

"Strengthen the Coastal Open Space System by expanding its links and extending new corridors to balance growth in the north of the region and protect the network of natural areas across the region." (p35)

Actions 14.1-14.3 are

14.1 Manage the risks of climate change and improve the region's resilience to hazards such as flooding, coastal erosion, bushfire, mine subsidence and land contamination.

14.2 Review and update floodplain risk and coastal management programs to manage flood risk and protect the coast, particularly where urban growth is being investigated.

14.3 Incorporate new knowledge on regional climate projections and related cumulative impacts in local plans for new urban development.

Goal 3 is "Well-connected communities and attractive lifestyles", and the relevant actions are:

15.3 Plan for communities to be better connected by an integrated transport system that prioritises safe walking, cycling and public transport.

18.3 Enhance the amenity and attractiveness of existing places.

18.5 Implement strategies to invest in open space, sporting and recreational infrastructure.

Council's biodiversity strategy (Central Coast Council 2020) gives special attention to its coastal reserves and their important role in conserving and enhancing biodiversity.

Under the section "Iconic and Unique Species" it notes:

"... our estuaries and coastal lakes are immensely important for the fisheries industry" (p14).

As noted in Section 1, the Strategy states that:

"Marine and estuarine habitats (tidal sandflat, tidal mudflat, lake, rocky shores, beach, and ocean) are used by a wide range of resident and migratory wading, estuarine, ocean and shore birds." (p16)

The salt marshes of the lakes get special attention:

"Coastal saltmarsh is a threatened ecological community. The on-going threats to saltmarsh include illegal in-filling, grazing, weed invasion and recreational vehicles." (p18)

"Saltmarsh protects the coastline from storm erosion and acid sulphate soil exposure. Saltmarsh provides a valuable source of food in the form of crabs, molluscs and many insects for wading birds, many of which are migratory." (p19)

The desired outcome of the strategy is to:

"... protect and enhance the landscape and biodiversity values of the Central Coast, which includes maintaining functional connections between areas of habitat, maintaining core habitat as well as restoring marginal habitat, preserving threatened and iconic species and ecological communities, preserving significant Aboriginal cultural places, and protecting the scenic amenity of the region." (p25)

The strategy identifies the following key threats to biodiversity:

- Weed invasion;
- · Grazing or predation by feral or domestic animals;
- Firewood collection;
- Rubbish dumping; and
- Clearing of native vegetation.

The goals in that strategy relevant here are:

1.2.1 – Implement site management plans to rehabilitate degraded bushland and coastal ecosystems;

1.2.2 - Prepare a policy for natural area encroachment management, and resource and implement a program to identify and manage threats to natural areas from

encroachment

A key specific action related to 1.2.1 is "fencing, gates and access control to prevent dumping, damaging activities and encroachment" (p37).

The strategy also notes the importance of connectivity and biodiversity corridors. It notes

"Maintaining and restoring connections between protected areas and areas of high biodiversity value are vital to landscape health and biodiversity of the region." (p60).

Whilst the lakes were not identified as a biodiversity corridor in the strategy, given the biodiversity significance of estuarine and foreshore vegetation, improving the connectivity around the lakes should be explored.

Council has adopted a bike plan (Bitzios Consulting and Zwart Transport Planning 2019) which, whilst focusing primarily on cycling as a mode of transport, one of the five priorities relate to recreation and tourism routes. This focus on cycling as a mode of transport rather than as a recreational pursuit is reflected in shared path hierarchy where all the three levels are about connecting places with no mention of recreational opportunities. The plan notes that recreational and tourist cycling connections are part of the plan, and recognises that there is community pressure to build missing links in the recreational focused dual use paths especially around the lakes, it states:

"There are a number of missing links along these routes and priority links would serve multiple purposes such as connecting to centres, schools and public transport as well as contributing to the completion of the NSW Coastline Cycleway. Lower priority links would be those serving recreational trips only and lower density populations."

And:

"Whilst there was considerable community feedback requesting completion of a number of missing links in the lake routes, Council's priorities should be communicated to the community so there is better understanding on what Council is trying to achieve in terms of prioritising utility and commuting trips over solely recreational trips." (p82) This is unfortunate and undervalues the benefits of outdoor recreation and the popularity of cycling for recreation and exercise.

Council has a Disability Inclusion Access Plan (Central Coast Council 2021). Focus Area 2 is Liveable Communities, and the plan notes that:

"On the Central Coast we love our beaches, waterways and bushland. People with disability want better access to these natural places. The beaches that are accessible are highly valued." (p24)

Focus area's 2 objective is - "To make the Central Coast more accessible, inclusive and liveable.".

The key relevant actions that Council has carried out to date are:

- Beach matting provided at Umina Beach, Avoca Beach • and Toowoon Bay, and
- Beach wheelchairs provided for use at 12 of beaches. .

A key action for the proceeding four years is:

LC1.1 Continue to make beaches more accessible with installation of beach matting and other accessible features. (p27).

3.1.2. Tuggerah Lakes foreshore restoration works community survey.

Between June 2020 and March 2023, the Central Coast Council undertook a series of projects around the Tuggerah Lakes estuary and catchment, aimed at restoring the quality of ecosystems and improving the water quality of the catchment. These projects focused on the foreshores, saltmarsh areas, riparian zones and streambanks. At the same time these works were being carried out, Council conducted a community survey to better understand how the foreshore areas were used and how the Tuggerah Lakes were valued.

On January 11 2023, as part of the consulting work for this study, the comments and subsequent 'like' and 'dislikes' submitted on that webpage were analysed. Three broad headings were used in this analysis: issues raised, activities and uses reported, and additional comments. Figures 2 to 4 below summarise that analysis for all three lakes. This analysis should not be seen as quantitatively or necessarily representative of the Central Coast community, but is a useful snap shot of community views about the lakes and will be used, along with other inputs, to draw some conclusions.

The concerns raised most frequently was the problems related to wrack, which included loss of visual amenity, odours, problems of access the waterbody and loss of property values. Concern about weeds was the next most important concern, mostly for environmental reasons. The next concern related to the impacts of restoring the salt marsh communities and other native vegetation, as well as protecting existing native vegetation. The concern was about reducing access to the waterbody, mostly from residents who back onto the lakes. Submitters were evenly divided in opposing restoration and protection, and supporting it.

The main activities engaged in were land-based activities that occurred on the foreshore, notably cycling and walking, with the main water-based activity being kayaking. Swimming and related activities were only reported by less that 3% of submitters.

The most reported comment was a desire to either extend the existing multi purpose (i.e. shared) path, or construct a new one where absent. This reflects the popularity of cycling and walking (and running) as activities on the existing shared paths. Interestingly, in analysing the comments, support for restoration was about 7 times higher than opposition to it. The next most important issue was a request to increase access to the foreshore and lakes for residents who do not have direct access. The need for better drainage to reduce flooding in the foreshore was a particular concern for Lake Tuggerah. residents



Figure 2: Issues raised in the submissions for all lakes





Figure 3: Activities and uses for all lakes.

Figure 4: Additional comments for all lakes

3.1.3 Wrack

As noted in Section 3.1.2, the presence and negative impacts of wrack on the lakes' foreshores was the most commonly raised issue in the comments, 'likes' and 'dislikes' in the community survey associated with the Tuggerah Lakes foreshore restoration works.

Wrack refers to algae or seagrass detached from reefs or the seabed that is often washed up on to shorelines. It is a natural process caused by strong winds, waves and tidal currents and can be increased by storms (Menicagli, De Battisti et al. 2022) and human activity. Several studies have estimated that between 15-20% of seagrass ends up as wrack (Pan, Flindt et al. 2021). Wrack has a number of important natural functions, including: stabilising beaches subject to eroding forces, increasing nutrient content of foreshore soil, and providing habitat for a range of invertebrates species, which in turn provides food for waterbirds and fish species that inhabit the surf zone (Department of Environment Conservation 2007, Paice and Chambers 2016).

Wrack has a number of impacts on beach users and residents as it can trap human marine litter, mostly plastic (Battistia, Fanellib et al. 2020), and produces unpleasant odours as it decomposes. This negatively impacts on amenity of local residents, reduces recreational activities and reduces tourism numbers (Pan, Flindt et al. 2021). The most common response to these concerns is to remove wrack from the beaches. Whilst this addresses concerns of users and residents, it will have an inevitable environmental impact through a direct loss of biodiversity. As well, wrack is part of the natural nutrient and organic matter cycle of the water body. Removing wrack removes those nutrients and organic matter from the cycle, which will have longer term consequences.

Managing wrack is a difficult problem for Council to address, with the environmental benefits of wrack needing to be weighed up against negative human impacts.

3.1.4 Tuggerah Lakes Estuary Management Plan

In 2006, the then Wyong Council adopted The Tuggerah Lakes Estuary Management Plan (TLEMP) which was developed over a nine-year period. This plan provides the strategic direction for the management of the Tuggerah Lakes estuary and its catchment. It set seven attribute goals as part of the vision for the lakes, one of which is relevant to this study:

Public facilities - Excellent recreational facilities at access points. (p8)

It also set six primary objectives, two of which are relevant to this study:

- Ensure that human activities can take place while protecting cultural heritage and enhancing soil, water and ecosystem health.
- Ensure that the social and economic needs of the community are met while protecting the environment of the coastal zone.

Within this main plan was a specific Socio-economic Action Plan, with the first of five goals being:

1. Improve recreational facilities around the lakes and creeks (p20)

Two of the six other Action Plan actions are:

Provide better facilities in foreshore recreation areas,

Maintain foreshore recreation areas and beaches. (p23)

3.1.5 2021 "Our Coast, Our Waterways" Community survey

In 2021 Central Coast Council carried out a survey of residents titled "Our Coast, Our Waterways" community survey. The purpose of the study was to "understand the value our community places on waterways, their uses, opinions on the current state and management practices and their opinions on future management." (Brown-Mason, McCann et al. 2021, 4). A total of 1,168 people responded to the survey. Waterways included the beaches, lagoons, lakes and rivers. The survey data in the main report made no distinction between the marine coast, the lagoons or the lakes. Council also produced two separate 'mini' reports that had separate results for residents of Tuggerah Lakes and Lake Macquarie.

Some of the key findings from the survey are:

- · % respondents said they used or visited Council's waterways
- 96% of all respondents,
- 100% of Tuggerah Lake respondents, and
- 100% of Lake Macquarie respondents;
- % respondents who said they visit or use a waterway at least weekly
- 84% of all respondents (40% said they visited daily),
- 80% of Tuggerah Lake respondents (33% said they visited daily), and
- 82% of Lake Macquarie respondents (36% said they visited daily);
- When asked are waterways a significant reason they choose to live on the Central Coast
- 95% of all respondents either strongly agreed (83%) or agreed (12%);
- 96% of Tuggerah Lake respondents either (82%) strongly agreed or agreed (14%) and
- 97% of Lake Macquarie respondents either (89%) strongly agreed or agreed (8%);
- · When asked do the waterways contribute to their personal health and wellbeing
- 98% of all respondents said they either strongly agree (91%) or somewhat agree (7%),
- 99% of Tuggerah Lake respondents said they either strongly agree (92%) or somewhat agree (7%), and
- 97% of Lake Macquarie respondents said they either strongly agree (89%) or somewhat agree (8%);

- Of the 1,168 respondents, 844 (72%) said the used one of the four lakes with the three most popular locations being
- The Entrance (27%).
- Tuggerah Lake (27%) and
- Lake Macquarie (17%);
- When asked should more be done to enhance access to waterways
- 68% of all respondents said they either strongly agree (43%) or somewhat agree (25%),
- 75% of Tuggerah Lake respondents said they either strongly agree (51%) or somewhat agree (24%), and
- 86% of Lake Macquarie respondents said they either strongly agree (61%) or somewhat agree (25%);
- When asked what they valued most about the waterways, the top four responses were the same for all users as shown below. The % for all users, Tuggerah Lakes an Lake Macquarie are shown in that order
- Recreational opportunities and access to waterways -28%, 26%, 31%;
- Beauty & aesthetics 16%, 17%, 15%;
- Cleanliness of waterways 13%, 12%, 11%; and
- Environmental & natural amenity 11%, 13%, 10%;
- · When asked how satisfied there were with the improvement of lakes, estuaries and lagoons (including foreshores, rivers, creeks and catchments), the following results were:
- For all users only 23% said they were either extremely satisfied (2%) or somewhat satisfied (21%) compared to 44% being either extremely dissatisfied (20%) or somewhat dissatisfied (24%),
- For Tuggerah Lakes users only 24% said they were either

extremely satisfied (2%) or somewhat satisfied (22%) compared to 51% being either extremely dissatisfied (23%) or somewhat dissatisfied (28%), and

For Lake Macquarie users only 24% said they were either extremely satisfied (3%) or somewhat satisfied (21%) compared to 46% being either extremely dissatisfied (22%) or somewhat dissatisfied (24%)

The survey also asked what should the focus areas for the Coastal Management Programs (CMP) be, with the results shown in Figure 5 on the following page. It shows the results for all users and separately for Tuggerah Lakes and Lake Macquarie users. The results are uniform across all respondents with the top focus areas being:

- Reducing pollutant loads (sediment, nutrients and microbes) entering waterways;
- Improving and maintain water quality;
- Educating the community on their role in maintaining and improving the health of waterways;
- Managing coastal erosion & other hazards such as tidal inundation and flooding; and
- A range of responses related to protecting the natural environment of the waterways.

Figure 6 shows the percent of respondents who carrying out different recreational activities at least once a month. It shows the results for all users and separately for Tuggerah Lakes and Lake Macquarie users. The results are uniform across all respondents with the top focus areas being:

- Walking cycling or running in foreshore,
- Enjoying nature,
- Swimming, and
- Picnics, BBQs in foreshore.

The popularity of the first and forth activities highlight the need to provide good quality infrastructure that supports these activities. The popularity of enjoying nature highlights the value of the natural environment and that its protection and enhancement should be a priority. The popularity of swimming has resonance with key areas the CMPs should focus on - the top two being about water quality.

The importance of the waterways for recreation and as natural features is also reflected in the responses to the survey question, which asked what respondents value about the waterways, which is shown in Figure 7.

As can be seen, 'Recreational opportunities and access to waterways' is by far the most important value, with 'Environmental & natural amenity' and 'Beauty & aesthetics' the next most important.

Concerns about enough access to the waterways is a relatively more important issue for users on Tuggerah Lakes and Lake Macquarie compared to other respondents. If the Tuggerah Lakes and Lake Macquarie respondents are taken out of the 'all respondents' calculations, the % of respondents who said they either strongly agree or somewhat agree drops to 60%, compared to 75% for Tuggerah Lakes and 86% Lake Macquarie. The reasons for this difference are likely to be the relatively long stretches of foreshore where there is no public access to the waterbody (no foreshore) and the lack of good quality access points with basic facilities. The data on proximity to the waterways also supports this, highlighting the need for an adequate number of good quality access points with basic facilities - with 83% of all users not having direct access to the foreshore and waterway.

This matter is addressed in the recommendations.





Figure 5: Survey results for the question "What should the focus areas for the Coastal Management Programs (CMP) be?





Figure 7: Most valued aspects of the Central Coast waterways.

3.1.6 Tuggerah Lakes Estuary Coastal Management Program Scoping Study

In 2021 Council released the "Tuggerah Lakes Estuary Coastal Management Program Scoping Study" (McCann, Donaldson et al. 2021) which set nine broad objectives, the second one being:

• b) Support community connection with and use of the estuary, in an ecologically sustainable and culturally sensitive manner.

3.1.7 Key conclusions

The recreational value of the Tuggerah Lakes is significant, with 96% of residents either use or visit Council's waterways with 84% visiting or using a waterway at least weekly, and 73% carrying out some form of recreation in or around the lakes. This is recognised in the key Council policy documents relevant to the lakes.

The most important value that the lakes offer to the community is recreational opportunities and access to waterways. The most popular recreational activities associated with the lakes are likely to be walking, cycling and running, picnicking, enjoying nature and boating. The existing shared paths around some sections of the lakes are very popular, and there is demand from the community to extend the existing paths and construct new ones.

Nearly 70% of residents believe that more should be done to enhance access to waterways for those who do not have direct access.

The key management issues include:

- The management of wrack to reduce social impacts whilst balancing its environmental benefits;
- · Whilst there is strong community recognition of the environmental values of the lakes, and strong support for restoration of native vegetation including salt marshes, there is resistance from some residents who have direct access to the foreshore and waterways to restoration;
- · There is strong demand to provide more recreational

facilities as well as better public access to the lakes, but this needs to be done in an environmentally sustainable manner; and

More effort is needed to better manage flooding in the foreshore areas.

3.2 Summary of the relevant background information from the Open Coast and Coastal Lagoons report

A comprehensive literature review was carried out as part of the Stage 1 report, which was a key input into developing our recommendations with respect to improving the recreational and social values of Central Coast Council's coast, including the open coast, lagoons and the lakes. A summary of the full literature review is provided here as context.

The review started with an analysis of the benefits of outdoor recreation in general and then recreation at the coast. This was followed by a discussion of how beaches are used based on four studies that had data from surveys of visitors to various beaches in Australia. The next part discussed three issues: the importance of users' experiences when participating in outdoor recreation; the importance of providing a range of opportunities for participating in outdoor recreation; and the idea that participating in outdoor recreation enhances the sense of place an individual feels for the location where they pursue and outdoor recreation activity.

The key findings of the literature review were as follows.

- Social and economic benefits outdoor recreation offers a range of important social and economic benefits;
- · The importance of the coast for outdoor recreation the Coastal Zone and Council Reserves are the most important resource for people to pursue outdoor recreation;
- When users visit the beach usage of the beach and coastal zone is fairly consistent throughout the day with mornings marginally preferred over the afternoons, and

early mornings preferred to late afternoon/evenings;

- Activities engaged in at the beach:
- the three most reported uses of the beach are for walking, swimming and sitting and relaxing;
- highly active pursuits (running and cycling) are underreported with participation in cycling likely to be similar to swimming;
- the lack of hard coastal paths through or adjacent to the foreshore in the Central Coast Council area limits the use of the coast for cycling and running and represents a future opportunity to add recreational value to the coast:
- participation in activities that require special features or controls - surfing, fishing and walking the dog - will be higher in those specific beaches;
- Mode of transport to get to the beach:
- arrivals by car is by far the most popular mode;
- facilitating cycling at the coast would attract more users to the coast and could reduce the number of people who arrive by car;
- during the field trip it was observed that several carparks have insufficient number of bays to manage the number of arrivals during peak periods;
- Where beach users come from Popular beaches with significant infrastructure, including commercial, have a higher proportion of visitors from outside the local area compared to the typically local beaches with minimal infrastructure:
- Visitation patterns at popular beaches with significant infrastructure - the commercial and grassed areas associated with these beaches are well used with up to 40% of visitors using these areas at any one time;
- Frequency of visiting beaches between 50-70% of local users visit the beach at least 2-3 times a week;

- Importance of built infrastructure the built infrastructure • that users find to be the most important are:
- beach close to carpark;
- lifesaving patrol;
- footpaths/shared paths;
- amenities (toilet, showers, BBQs etc).
- As noted previously, the lack of hard coastal paths in the Central Coast Council area represents a future opportunity to add recreational value to the coast.
- Importance of users experiences an important aim in providing outdoor recreation should be to enhance the users' experiences. A positive experience will encourage people to continue that activity at a specific location, and will add to a user's attachment to that place;
- Place attachment:
- increasing place attachment will add value to the coast, lead to better community involvement in management, and increase participation in outdoor recreation;
- increasing place attachment will be particularly helpful for those sites that are more remote, less developed and less visited:
- changing the sense of place through increasing facilities and infrastructure will create tensions between those whose sense of place favours no change and those who want to see change. In these cases, introducing change will require careful and considered consultation. This is most likely to be the case for those coastal areas where houses directly abut the beach and foreshore;
- Enhancing users' experiences:
- the infrastructure provided should enhance the user's experience by being a good quality;
- the activity itself is important in deriving pleasure from the experience therefore outdoor recreation

planners need to provide for a diversity of recreation opportunities; and

- strong community involvement in planning for outdoor recreation is essential to ensure the range of users' experiences are catered for and that those experiences are good quality;
- Recreation Opportunity Spectrum (ROS):
- ROS is a useful way to conceptualise the planning and management of outdoor recreation; and
- it involves providing a diversity of recreation

opportunities based upon a combination of biophysical, social, and managerial attributes appealing to a wide range of people and therefore maximising community involvement in outdoor recreation;

- Disabled access to the beach key barriers to disabled people having greater access to the beach are:
- lack of ramps or mats making difficult getting across the sand;
- lack of suitable change and toilet facilities; and
- lack of accessible car parking.



Figure 8: Seating provided within the public foreshore reserve.



4. Methodology

The main method adopted in the study was the development and application of an audit of the coastline, which identified and mapped recreational infrastructure and, where possible, specific recreational uses. The audit findings were then interpreted to gain a broader picture and understanding of the recreational use of the coast.

An action research approach was adopted, comprising five key stages that can be understood to be largely sequential, with some overlap due to the iterative and responsive nature of the research approach. They included:

- Desktop Study;
- Site Visits;
- Desktop Mapping;
- Consultation and Verification; and
- Analysis and Classification.

5. Coastal Recreational Use Audit Tool

Table 1 shows the full list of recreational infrastructure and uses mapped in the study. As it was developed for the Stage 1 study of the open coast, some of the icons are not relevant to the lakes: for example surfing and surf life saving clubs. All paths within the foreshore were identified and mapped, including both shared-use and walking paths. Individual beach/ foreshore access paths were also mapped and are available in GIS format, however it was not practical to show these paths in the final maps produced for this report.

Black icons are used to indicate key recreational infrastructure, arranged in a number of subcategories. These categories of infrastructure can be used as general proxies for the presence of different recreational uses.

Blue icons are used to identify specific locations where specialist recreational uses are known to occur. These icons are not used to identify more general uses (specifically water-base use such as swimming, as well as other beach and park-based uses), which are assumed to occur along the majority of the study area.

Discrete areas of the coast that had been explicitly designated for (or sometimes to prohibit) certain recreational uses are identified through hatchings of various designs and colours.

The Coastal Recreational Use Audit Tool was applied to audit the entire foreshore within the Tuggerah Lakes study area. Two examples are provided in the following pages - shared paths and boat launching - with the full results found in the maps in Section 7.

Table 1. Mapped infrastructure and uses

Paths				
Paths	- — — - Shared use path	Walking	path	Beach/foreshore access path
Infrastructure				
Beachside/park access and facilities	Covered picnic tables BBQs	Showers	 Bike racks Car parking 	८ Universal access
Active recreation facilities	Skate park Swimming pool	Playground Each volleyball	Fitness equipment	Basketball court/ring
Boating facilities	Jetty	Boat ramp	Boat moorings	Water sports club
Community and commercial facilities	Cafe∕kiosk	Shopping area	Community centre	
Attractions	Lookout	Cultural heritage site	Public artwork	
Safety/rescue organisations	Surf Life Saving (SLS) club	SLS observation tower	Sea rescue	
Use Locations				
Use locations	Surfing	Diving	Fishing	
	Kite/wind surfing	Snorkeling	Kayaking/canoeing/ stand up paddle boa	/ arding
Designated Use Areas				
Designated beaches	Dog Exercise	SLS patro	olled beach	

Shared Paths

Paths suitable for use by both pedestrians and cyclists are one of the most significant pieces of recreational infrastructure along the coastline and foreshore areas. Shared paths serve a range of functions: providing largely uninterrupted transport links between coastal nodes and other significant suburban locations - hence facilitating physical activity both through transport and recreational use - while providing aesthetic and educational experiences at various intervals.

In Stage 1, the provision of coastal shared paths was the most salient difference between the Central Coast and Perth coastlines: the latter being far better provided with this recreational resource, with the only significant shared path on the Central Coast running from Ettalong Wharf to Ocean Beach. Figure 9 shows that shared paths are much better provided for in the Tuggerah Lakes study area. While Lake Macquarie and Munmorah have only single short sections, continuous paths run along the extent of the NE bank of Budgewoi Lake and the SW bank of Tuggerah Lake. The former runs approximately 8km from Pacific Highway in San Remo to Budgewoi Point (Figure 10). The latter path, running from The Entrance to Chittaway Bay (Figure 11), is the longest in the study area at approximately 10km, and continues North of the bridge for several more kms. Additional smaller paths are found along Tuggerawong and Canton Beach.



Figure 9: Distribution of shared paths along the Tuggerah Lakes study area..



Chittaway Bay Lions Park Bluebell Park Liona Howlett Reserve Tumbi Umbi Boat Ramp Licinda Avenue Reserve Satwater

Figure 10: A shared path runs along the northern bank of Budgewoi Lake from Pacific Highway in San Remo to Budgewoi Point.

Figure 11: The longest continuous shared path in the study area runs along Tuggerah Lake between The Entrance and Chittaway Bay.





Figure 14: Aerial view of the Budgewoi Lake shared path running through Green Point Reserve.



Figure 12: Pedestrian bridges ensure the continuity of shared paths despite watercourse inlets, such as this one over Saltwater Creek.



Figure 13: Shared paths allow use by both cyclists and pedestrians, and in this case dog walkers.

Boating

The presence of boat launching facilities, or boat ramps, was another significant difference between the coastline and lakes areas of the Central Coast. Only three ramps providing boat access straight into the ocean were identified in Stage 1, with a further 5 in the sheltered near-shore areas of Brisbane Waters and Patonga. Not surprisingly, given the lakes are more protected than the coastline, boat launching ramps are far more common in the Tuggerah Lakes study area.

Figure 15 shows that each of the 4 lakes are well provided with lake access points for boating. Even in these more sheltered waters, ramps are typically still situated in inlet areas. Several additional locations were not mapped, such as Tom Burke Reserve in Figure 16, as they contain smaller vehicular access ramps suitable only for launching boards and small non-motorised boats.

Most ramps, particularly those recently developed and of higher quality, have adjacent jetties (Figure 17). Dedicated fish cleaning stations, such as that found at Slade Park in Figure 18, are provided for recreational fishers, and are considered proxies for this recreational use. Several ramps were observed to be of poor quality, and are discussed in the recommendations for upgrades in Section 8.



Figure 15: Distribution of boat launching ramps along the Central Coast.



Figure 16: A small ramp at Tom Burke Reserve provides vehicular access to remove wrack, and could also be used for launching boards.



Figure 17: High quality boat ramp and adjacent jetty at San Remo.



Figure 18: A fish cleaning station lies directly adjacent to Slade Park Boat Ramp, with fishermen visible on the jetty.

6. Coastal Recreational **Use Classification** Framework

A Coastal Recreational Use Classification Framework was developed in Stage 1 of this study, which enabled the entirety of the coast to be categorized into either a node or a connector. Nodes are developed areas within a foreshore reserve that have a variety of infrastructure facilitating a range of passive and active recreation activities.

Four types of nodes are recognised:

- · Beach/Foreshore Access Nodes provide for only beach/foreshore and water-based uses;
- Minor Activity Nodes provide additional park-based active and passive uses, with greater capacity for specialist water-based use;
- Moderate Activity Nodes provide a greater variety of park-based recreation, including commercial and indoor uses, however may restrict specialist water-based uses;
- Major Activity Nodes provide more extensive commercial opportunities and are typically used for tourism purposes.

Connectors are the foreshore and beach areas that act as links between nodes. They have a range of values, including ecosystem, recreational, social, aesthetic, wildlife corridors and - where there is no foreshore reserve (i.e. no public access) - private economic. Connectors can be well vegetated, cleared of native vegetation and anything in between. They are mostly free of infrastructure, but some areas have a formal path or track running through the foreshore, perpendicular paths with access to the beach, and the occasional lookout or seat.

Seven types of coastal connectors are recognised, with the first five contained with public reserves, and the last two contained on private land with no public access:

- Conservation Connectors well vegetated areas within conservation reserves and well separated from urban areas; facilitating primarily land based recreation with high aesthetic, nature and wilderness experiences;
- Landscape connectors well vegetated foreshore reserves with limited infrastructure, set within urban areas. They have limited beach and water-based recreation, however may provide unique aesthetic, nature and wilderness experiences;
- Shared Path Connectors foreshore reserves with native vegetation similar to Landscape Connectors, but typically contain shared paths and supporting infrastructure within the reserve that facilitate a range of additional recreational uses, along with enhanced aesthetic and educational experiences;
- Urban Connectors foreshore areas with enhanced water and beach and path-based uses, however little if any native vegetation, thus negligible nature and wilderness experiences. Either a road or path provides a hard edge to the adjacent residential areas;
- Local Connectors with houses directly abuting, these foreshore reserve areas tend to be narrow and with limited native vegetation. No hard edge separates the houses from the foreshore, thus providing beach and water use primarily to local residents;
- Residential Connectors set within urban areas with no public foreshore and private property directly abutting the water, thus providing beach and water use exclusively to residents of these private properties; and
- Rural Residential Connectors set within rural areas with no public foreshore and private property directly abutting the water, thus providing beach and water use exclusively to residents of these private properties, while often conserving areas of native vegetation.

The number of, examples of and colour code for each of the nodes and connector types found in the lakes is shown in Table 2.

Table 2. Classification Typology Examples

Туре	#N	Exa
Beach/Foreshore Access Node	22	Gar San
Minor Activity Node	34	Vale Hov Bea
Moderate Activity Node	12	Sun Res Parl
Major Activity Node	1	The
Conservation Connector	14	Poir Pen Nat
Landscape Connector	20	Yell Cas
Shared Path Connector	25	Buff Fore
Urban Connector	15	The Fore Jett
Local Connector	31	Fryi Pan Fore
Residential Connector	29	Sun Fore
Rural Residential Connector	3	Blac Fore

mples
ema Road Boat Ramp, Alister Avenue Reserve, Remo Boat Ramp.
es Point, Tom Burke Reserve, John Peter vard Reserve, Green Point Reserve, Canton ch Reserve, Picnic Point Reserve, Long Jetty.
nmerland Point Reserve, Colongra Bay erve, North Lakes Oval, Wallarah Point Peace K.
Entrance Waterfront.
nt Wolstoncroft, Colongra Swamp, Budgewoi insula, Toukley Golf Club, Wyrrabalong ional Park.
ow Rock, Orooaloo Point, Dunkey Island, uarina Reserve.
^F Point Avenue Foreshore, Tuggerawong Road eshore, Lakedge Avenue Foreshore.
Entrance Road Foreshore, Wolseley Avenue eshore, South Tacoma Road Foreshore, Long y Foreshore.
ng Pan Point, Sunrise Avenue Foreshore, orama Avenue Foreshore, Kalua Drive eshore.
nmerland Point Foreshore, Greenacre Avenue eshore, Main Road Foreshore.
ck Neds Point, Colongra Point, Wyong River

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7. Detailed Coastal Recreational Use Maps

This section of the report contains a series of maps covering each of the four lakes, commencing at the North with Lake Macquarie, and concluding with Tuggerah Lake in the South. More detailed maps are also provided for each locality.

Each of the regional maps and local maps set out in detail the results of the Coastal Recreational Use Audit, the categories of the Coastal Recreational Use Classification Framework applied to the area, and a description of the specifics of the area – complete with supporting photos. The maps are based on the spatial geocoded dataset compiled during the audit tool application and classification process. A complete Legend for all symbols used in these maps is found on Page 15.

Point Wolstoncroft Frying Pan Point Vales Point **Summerland Point** Wyee Bay Mannering Park **Black Neds** Point Gwandalan **Chain Valley** Bay **Kingfisher Shores** Conservation Landscape **Crangan Bay** Shared Path Urban Local Residential **Rural Residential** Access Node Minor Node arignan Cree Moderate Node Major Node

Map 1: Lake Macquarie





The Tuggerah Lakes study area includes the southern portion of Lake Macquarie, stretching from Wyee Bay in the West to Crangan Bay in the East. It includes 4 distinct residential areas that are each mapped separately on the following pages: Mannering Park, Kingfisher Shores/Chain Valley Bay, Summerland Point and Gwandalan. Each area has at least one boat ramp, making use of the sheltered waters of the numerous bays. A notable feature of the Lake Macquarie shoreline is the lack of shared paths, with only one segment along Mannering Park and otherwise a prevalence of less developed Local Connectors (Figure 20).

Figure 20: Lake Macquarie Foreshore is characterised by Local Connectors (highlighted in grey on the map), which provide residents with direct frontage to the lake foreshore alongside general public access.

Figure 19: Drone image of Lake Macquarie.

Map 1A: Mannering Park



Mannering Park contains the only foreshore shared path in the Lake Macquarie study area, running from Waverley Road in the North through Grace Street Reserve (Figure 23) to the old Scout Hall in the South. In contrast, a long Local Connector, with minimal development aside from two small carparks, runs along the Eastern bank of Wyee Bay: providing residents with more direct access to the foreshore (Figure 21). Two boats ramps (one for holiday park residents), a jetty and a sailing club lie within Grace Street Reserve, however there is limited parking. The other node in the area is Vales Point (Figure 22 and 24): it contains an additional boat ramp, a long jetty and adjacent swimming net, along with public toilets and picnic facilities.



Figure 22: The jetty and boat ramp at Vales Point.





Figure 23: A shared path runs in either direction from the boat ramp at Grace Street.

Figure 21: Residents have direct access to the foreshore along the Wyee Bay Local Connector.



Figure 24: Looking east over Vales Point: the jetty and swimming net can be seen on the right, while Residential Connectors with private jetties run in both direction.

Map 1B: Kingfisher Shores & Chain Valley Bay



The combined localities of Kingfisher Shores and Chain Valley Bay lie either side of the mouth to Karignan Creek - the two sides are connected via a shared path running over the watercourse. Local and Landscape Connectors dominate the foreshore, often showing a high degree of ownership by local residents (see Figures 25, 26 and 28). The bay is accessed from either side from boat launching ramps at Joshua Porter Reserve and Mulloway Road Reserve, which also contain a playgrounds, picnic facilities and (in the case of Joshua Porter Reserve) public toilets and a BBQ. Playgrounds are also found at the two other minor nodes: Kingfisher Reserve (Figure 27) and Sunset Parade Reserve.



Figure 25: Looking south along Lloyd Avenue Local Connector to the mouth of Karignan Creek.



Figure 27: The playground at Kingfisher Reserve.



Figure 26: With hammocks, basketball rings and play equipment, the Teragalin Drive Local Connector functions somewhat as a communal backyard.



Figure 28: The view across Chain Valley Bay from one of the many privately constructed jetties along Sunset Parade Local Connector.

Map 1C: Summerland Point





The foreshore along Summerland Point consists primarily of two connectors around each point: a Local Connector around Frying Pan Point (Figure 29) and a shorter Residential Connector around Summerland Point itself (Figure 32). Lying between the connectors is the largest node along the Lake Macquarie foreshore: Summerland Point Reserve. Centred around a sheltered inlet ideal for boat launching (Figure 31), the node also contains two jetties - one facing inwards and one outwards - along with toilets, play and picnic facilities. At the south of the node is a second carpark adjacent to the Summerland Point Community Hall. An additional node with both play and picnic facilities is found at Sandy Beach (Figure 30), on the edge of the adjacent Rural Residential Connector around Black Neds Point.



Figure 31: The boat launching area at Summerland Point Reserve.



Figure 30: Playground and picnic table at Sandy Beach Reserve.

Figure 29: Boats and a bridge along the Frying Pan Point Local Connector.



Figure 32: Looking south west over Summerland Point, with private jetties along the residential connector visible in the foreground, and the inlet to Summerland Point Reserve in the back left.

Map 1D: Gwandalan



Gwandalan Foreshore is comprised primarily by Local Connectors, punctuated by 4 nodes. At the north is a small boat launching node with adjacent public toilets (Figure 33); to the south is a minor node with a boat ramp, jetty and playground. Gwandalan Bowling Club is classified as a Beach Access Node given it has minimal public facilities aside from a carpark and jetty: the bowling club premises (Figure 34) are for private use only, thus not considered within the node. The largest node is Lioness Park: containing a second boat ramp and jetty, along with an adjacent swimming net (Figure 36). On land are a toilet, play and picnic facilities, while the node also contains both a community centre and scout hall.



Figure 34: Gwandalan Bowling Club.premises are private however provide a large carpark for foreshore users.





Figure 35: An informal walking path runs along much of Gamban Road Foreshore.

Figure 33: Garema Road Boat Ramp.



Figure 36: Jetty and swimming net at Gwandalan Lioness Park.

Map 2: Lake Munmorah



Lake Munmorah shoreline is comprised of two long residential strips - Lake Munmorah suburb to the north and Budgewoi/Halekulani to the south - separated by two conservation connectors: Budgewoi Peninsula to the east (Figure 37) and Colongra Swamp to the west (Figure 38). A continuous shared path runs along the western portion of Lake Munmorah suburb, while Budgewoi and Halekulani are comprised primarily of Local Connectors with less developed foreshores.



Figure 37: Looking south along Budgewoi Peninsula.



Figure 38: Looking north from Colongra Point over Colongra Swamp Nature Reserve and Colongra Lake.


Figure 39: Looking south over Colongra Point and Ingenia Lifestyle Village.

Map 2A: Lake Munmorah West





Figure 40: Colongra Bay Reserve is the only Moderate Activity Node along Munmorah Lake, classified as such due to the Colongra Bay Community Centre.

The western portion of Lake Munmorah encompasses the extent of the continuous shared path from Kamilaroo Avenue carpark to Tom Burke Reserve. The latter is a typical Minor Activity Node in the land based recreation it facilitates, as well as containing a small net for safe swimming. A small ramp is located adjacent to the swimming net (Figure 41), however has restricted vehicle access and likely functions only for launching small boats and boards. The largest node, and the only Moderate Node around Lake Munmorah, is Colongra Bay Reserve. It contains a community centre (Figure 40), as wall as a playground, fitness equipment and boat launching ramp (Figure 43). An additional small node is found at the carpark at Alister Avenue (Figure 42), which also contains bike racks for cyclists using the shared path.



Figure 42: Sunset over the small node at Alister Avenue.



Figure 41: Swimming net and small ramp with restricted access at Tom Burke Reserve.



Figure 43: Boat ramp and jetty at Colongra Bay Reserve, with the shared path visible in the foreground..

Map 2B: Lake Munmorah East





Figure 44: Looking east over the Greenacre Avenue Residential Connector. with the boat ramp at Elizabeth Bay visible at the bottom right.

The eastern portion of Lake Munmorah suburb runs south east from Tom Burke Reserve to the edge of Budgewoi Peninsula at Elizabeth Bay. Terence Avenue Foreshore is classified as a single Local Connector, however access to the foreshore for local residents is restricted in some sections by steep cliff faces (Figure 46). The foreshore narrows at Greenacre Avenue into a short Residential Connector (Figures 44 and 47), before opening back up to the public at Elizabeth Bay Boat Ramp (Figure 45).



Figure 46: Cliffs make up much of the foreshore along Terence Avenue.



Figure 45: Elizabeth Bay Boat Ramp.



Figure 47: Looking south east over Greenacre Avenue and Elizabeth Bay.

Map 2C: Budgewoi North





Figure 48: Looking north east over Budgewoi Holiday Park.

Budgewoi North centers around the inlet to Budgewoi Creek, which connects Lake Munmorah to Budgewoi Lake. Along the western bank of the creek is a Local Connector with a high degree of local resident ownership (Figure 49); on the eastern bank are short Urban and Residential Connectors, leading up to MacKenzie Reserve at the mouth of the creek. The park provides footbridge access to Dunkey Island (Figure 51), a small swimming beach with adjacent toilet, play and picnic facilities, as well as some additional hidden recreational and educational features (Figure 50). A Local Connector runs East along Budgewoi Holiday Park Foreshore (Figure 48), while another Local Connector also runs West to Halekulani.



Figure 50: Educational feature for local birdlife at MacKenzie Reserve.



Figure 49: Private jetty and boat mooring along the Natuna Avenue Local Connector.



Figure 51: Deckchairs at MacKenzie Reserve looking over Budgewoi Creek, with the footbridge to Dunkey Island visible in the background.

Map 2D: Halekulani



Halekulani Foreshore is comprised almost entirely of a long Local Connector along Sunrise Avenue. As shown in Figures 53 to 55, there is a high degree of local ownership of the foreshore, with recreational features such as seating, vehicle tracks and play equipment found along the connector. A single node, Ashley Chapman Reserve, lies at the South of Sunrise Avenue (Figure 52), providing a formal boat ramp, carpark and toilet facilities.



Figure 52: Boat ramp and picnic table at Ashley Chapman Reserve.



Figure 54: Private boat launching tracks along Sunrise Avenue Foreshore.



Figure 53: Seats set up by local residents at Taylor Point.



Figure 55: For these Halekulani residents, Lake Munmorah is their backyard.

Spring Creek San Remo Wallarah Creek **Green Point** Charmhaven **Buff Point Toukley Golf Club** Lake Haven 0 200 500m 1km Gorokan Budgewoi Lake stretches from Spring Creek in the west, Budgewoi Creek in the Toukley east to Main Road Bridge in the south. It contains a single continuous shared path along its northern shore: cyclists can turn off Pacific Highway and ride uninterrupted to Budgewoi Point. In contrast, aside a short shared path south Main Road Bridge

Map 3: Budgewoi Lake

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of Toukley Golf Club, the southern banks of the Lake are primarily Residential

Connectors, with limited public access to the foreshore. The foreshore from

Gorokan to Charmhaven is particularly underdeveloped: with four potential

recreational nodes lacking the infrastructure to be classified above Beach Access.



Tuggerah Lake



Figure 56: Looking east along Main Road Foreshore.

Map 3A: Wallarah and Spring Creeks





Figure 57: The entrance to Bamayi Reserve, with the playground, BBQ and shelters visible in the background.

Wallarah Creek branches off Budgewoi Lake at Orooaloo Point, running under Pacific Highway before branching south. Spring Creek continues north, running adjacent to the suburb of Blue Haven. The majority of the foreshore is Residential Connectors, with a small undeveloped reserve providing public river access at McKellar Boulevade. The main recreational node is Bamayi Reserve (Figure 57), located at the north, with an additional smaller playground provided along Birdwood Drive (Figure 58). The only boat launching ramp lies to the East of Pacific Highway at Brudenell Avenue (Figure 59).



Figure 59: The small jetty and boat ramp at Brudenell Avenue.



Figure 58: Drone view of Birdwood Drive Reserve.



Figure 60: Looking west over the bridge across Wallarah Creek, with the start of the foreshore shared path visible through the trees, as is Brudenell Avenue Boat Ramp behind it.

Map 3B: San Remo





Figure 61: San Remo Boat Ramp.

The San Remo foreshore and its continuous shared path runs from Pacific Highway in the West to the entrance to Hammond Canal (Figure 63), adjacent to the primary boat ramp node (Figure 61). An additional boat ramp is found adjacent to North Lakes Oval (Figure 62), which also contains a clubrooms and skate park. Breaking up Liamena Avenue Foreshore and opposite San Remo Convenience Centre is John Peter Howard Reserve, a large recreational node with a playground, BBQ and sheltered picnic tables (Figure 64). Bike racks are found along the extent of the foreshore, including in some locations along the connectors adjacent to seating.



Figure 63: A high quality shared path runs from Pacific Highway east along the San Remo foreshore, linking to Buff Point via a bridge across Hammond Canal.



Figure 62: A poorer quality boat ramp is also found opposite North Lakes Oval.



Figure 64: Bike racks and playground at John Peter Howard Reserve, with the shopping centre visible in the background.

Map 3C: Buff Point



The shared path from San Remo continues along Buff Point Foreshore (Figure 68), which despite being more developed than a typical Local Connector does still show some evidence of local ownership from residents (Figure 65). The main recreational node is Edgewater Park, which provides boat access to the lake (Figure 66) as well as a playground and toilets. A smaller node is found at Mutumba Road, whose main feature is a poor quality jetty (Figure 67).



Figure 65: Makeshift goals adjacent to the shared path running along Buff Point Avenue.



Figure 67: The jetty at Mutumba Road Reserve has seen better days.



Figure 66: Boat ramp at Edgewater Park.



Figure 68: Looking west along Buff Point Avenue towards Buff Point.

Map 3D: Green Point Foreshore





Figure 69: Picnic area and bike racks at Woodland Parkway Reserve.

Green Point Foreshore is similar to the neighbouring Buff Point, being a Shared Path Connector interspersed with small recreational nodes. Playgrounds are found at both Green Point Reserve (Figures 71 and 72) and Woodland Parkway Reserve, with the latter also picnic facilities (Figure 69). An additional beach access node is found at the end of Brandon Close (Figure 70), which appeared to be used for small boat and board launching. No other formal boat ramps are provided along Green Point Foreshore, with the nearest to the West at Edgewater Park, or to the East at Budgewoi Point.





Figure 71: Dog walker at Green Point Reserve, with the small playground in the background.

Figure 70: The small node at the end of Brandon Close.



Figure 72: Drone view of the carpark and playground at Green Point Reserve, with the shared path running through from west to east.

Map 3E: Budgewoi South



Figure 73: The fishing station adjacent to Slade Park boat ramp and jetty.

Budgewoi South encapsulates the mouth of Budgewoi Creek, linking Budgewoi Lake to Lake Munmorah. Boat ramps lie on both side of the mouth to the creek, at Budgewoi Point (Figure 74) and the Northern carpark at Slade Park - adjacent to which is a jetty and fish cleaning station (Figure 73). Budgewoi Point is linked to the west of the lake by a continuous shared path, which runs along Diamond Head Drive (Figure 76) through Green Point Reserve, Buff Point and San Remo to Pacific Highway. South of the Slade Park boat ramp is a larger recreational area, including a picnic area, playing field, clubrooms and public toilets. A Conservation Connector runs further South along Budgewoi Road to Toukley Golf Club.



Figure 75: The view of Budgewoi Lake from Slade Park.



Figure 74: Budgewoi Point Boat Ramp and Jetty.





Figure 76: Looking north east along Diamond Head Drive Foreshore, with Lake Munmorah and the coast visible in the background..

Map 3F: Toukley





Figure 77: Looking east over Osbourne Park.

Toukley foreshore runs from the golf course foreshore in the east to Main Road Bridge in the west. It is the only residential area along the South of Budgewoi Lake with a Shared Path Connector: commencing to the south of a short Residential Connector, running down to Osbourne Park playground (Figure 78) and recommencing briefly along Peel Street Foreshore. A small node at a public jetty at Cross Street (Figure 80) breaks up an otherwise continuous Residential Connector along Main Street. A Minor node at Toukley Gardens lies adjacent to the foreshore reserve however is fenced off from the foreshore which remains under private ownership (Figure 79).



Figure 79: While Toukley Gardens lies within the foreshore reserve, it is fenced off and does not permit access to the lake.

Figure 78: Bike racks and playground at Osbourne Park, with the Marine Rescue building in the background.





Figure 80: Looking east over the private jetties along Main Road Foreshore: the longer public jetty at Cross Street is visible just before the resort building.

Map 3G: Gorokan



The Gorokan foreshore stretches along the extent of The Corso (Figure 82), which begins at Wallarah Point Peace Park and concludes at a small Beach Access Node to the north. The foreshore is primarily Residential with restricted public access, aside from a short Local Connector (Figure 81). Wallarah Point Peace Park is one of the most diverse nodes in the study area: including play and picnic facilities, a small fitness circuit, boat ramp and jetty, as well as an art gallery and associated cafe. Evidence of kayak launching was also observed (Figure 83). A footpath under Main Road Bridge connects to the Vietnam Veterans Memorial Park (Figure 84).



Figure 82: Looking south along The Corso towards Main Road Bridge.



Figure 83: Kayaks parked along Wallarah Peace Park foreshore.



Figure 81: Privately constructed jetty along The Corso Foreshore Local Connector.



Figure 84: The Vietnam Veterans Memorial Park lies adjacent to Wallarah Point Peace Park south of Main Road Bridge.

Map 3H: Charmhaven and Lake Haven



Similar to Gorokan to the south, Charmhaven and Lake Haven Foreshore is comprised mainly of Residential and Local Connectors along Panorama Avenue (Figures 87 and 88), providing a clear contrast to the Shared Path Connectors dominating the northern foreshore of Budgewoi Lake. Only one formal carpark was identified at Bark Park (Figure 86); other potential nodes at Goobarabah Point and Chelmsford Road (Figure 85) lacked any formal recreational infrastructure: discussion and recommendations for upgrading these and similar underdeveloped lake access points is found in Section 8.



Figure 87: Backyards along Panorama Avenue Foreshore.



Figure 85: This lakeside picnic table is one of the few pieces of infrastructure provided within Chelmsford Road Reserve.



Figure 86: The small carpark at Bark Park node.



Figure 88: Local residents making themselves at home in the undeveloped Panorama Avenue foreshore.

Map 4: Tuggerah Lake







Figure 89: Fitness equipment and the ferris wheel along The Entrance Waterfront.



Figure 90: Looking north west along Gorokan foreshore towards Main Road Bridge, with Budgewoi Lake lying beyond.

Figure 91: Looking north from Chittaway Point across Tuggerah State Conservation Area.

Tuggerah Lake is the largest of the three lakes that together form the Tuggerah Lakes estuary. Connecting to Budgewoi Lake under Main Road Bridge (Figure 90), it flows directly into the ocean at The Entrance Channel: whose Waterfront area is the only Major Activity Node in the study area (Figure 89). It has two main watercourse inlets, Wyong River and Ourimbah Creek, and lying between the two is Tuggerah State Conservation Area (Figure 91). On the opposite side of the Lake is Wyrrabalong National Park, which contains the popular Red Gum and Lillypilly walk trails. A continuous foreshore shared path runs from The Entrance Bridge North to Chittaway Bay (see discussion on shared paths on Page 16 for more detail).

Map 4A: Wyong River



Wyong River branches off Tuggerah Lake at the edge of Tuggerah State Conservation Area, running adjacent to the residential areas of Tacoma and Wyong up to Alison Road. Its main recreational nodes are Lions and Centennial Parks (Figure 94), which are connected via a path underneath Pacific Highway. A fishing platform is found at the end of a short shared path running along River Road Reserve (Figure 93), with one of the few Rural Residential Connectors in the study area lying adjacent (Figure 95). A pair of boat launching ramps are found at small nodes either side of Tacoma (Figure 92), each lying within long urban connectors that run up to the mouth of the river at Don Small Oval.



Figure 94: Looking over the river at Centennial Park.





Figure 92: South Tacoma Boat Ramp and Jetty.

Figure 93: River Road fishing platform.



Figure 95: Looking east towards Pacific Highway: River Road Urban Connector is visible on the left bank, and the Rural Residential Connector on the right bank.

Map 4B: Rocky Point to Wyongah





Rocky Point to Wyongah encapsulates the foreshore area adjacent to Tuggerawong Road, which runs from Don Small Oval north east to Gorokan. It includes a recent (and still under construction to the west, see Figure 97) shared path. When completed, the path will run most of the way between Wyongah and Rocky Point, which is currently a Local Connector (Figure 98). A minor node lies at the end of Tuesday Street near the mid-point of the shared path (Figure 99), and another node at Wyongah Boat Ramp (Figure 96).



Figure 98: Looking east along the Rocky Point Local Connector from the end of Hastings Road.



Figure 97: The end of the shared path (as of the start of 2023) at March Street.

Figure 96: View of the lake from Wyongah Boat Ramp.



Figure 99: Playground and shared path at Tuesday Street Reserve.

Map 4C: Gorokan South





Figure 100: A look westward along Lett Street Local Connector.

Two Minor Activity Nodes are found along the Gorokan foreshore: to the west, Craigie Park provides a playground and public toilets within retained vegetation, through which runs an informal walking path (Figure 103). To the east, a playground is provided adjacent to Pipeclay Point (Figure 101). Outside of the two nodes, the majority of the Gorokan foreshore is provided as Local Connectors (see Figure 100): the exception being a short Residential Connector West of Dalnott Reserve (Figure 102). A further Residential Connector runs East of Lett Street all the way to the Vietnam Veterans Park at Main Street Bridge (See Gorokan North discussion on Page 54).



Figure 102: The foreshore briefly turns into a Residential Connector west of Pipeclay Point.



Figure 101: The playground at Pipeclay Point.



Figure 103: A bridge over the creek inlet forms part of an informal walking path through Craigie Park.

Map 4D: Toukley South to Canton Beach



The southern foreshore of Toukley is a long Residential Connector, running from Main Road Reserve adjacent to Wallarah Point (Figure 107) to the short Local Connector at Moss Avenue. The Canton Beach Reserve Node and shared path begins at Toukley Sailing Club (currently lacking a formal carpark) and runs to the boat ramp at Belbowrie Street. Along the reserve is a public fitness circuit (Figure 105), as well as a playground, public toilets and picnic facilities (Figure 104). Adjacent to the boat ramp is a second playground and toilets. The shared path continues past the boat ramp, along the holiday park foreshore to Oleander Street, where the foreshore changes to a Landscape Connector up to the start of the National Park foreshore.



Figure 106: The foreshore reserve changes to a short Local Connector at Yarallah Street, with the start of Canton Beach node at Toukley Sailing Club visible in the background.



Figure 104: Canton Beach Playground.



Figure 105: One component of the fitness equipment circuit along Canton Beach Reserve.


Figure 107: Looking north over Wallarah Point, with Main Road Bridge behind it.





The section of The Entrance Foreshore north of The Entrance Bridge contains nodes at Terilbah Reserve and Pelican's Wharf. The former contains a dedicated fishing platform (Figure 108), while the latter contains a boat ramp and jetty, sea rescue club, cafe, and an adjacent sensory garden and lookout (Figure 110). Running through the foreshore is a continuous shared path from the bridge north to Terilbah Place (Figure 109). The shared path continues through the National Park foreshore reserve (Figure 111), opening up at Central Coast Highway opposite the entrance to Magenta Golf Course.



Figure 109: Looking south along Terilbah Place Foreshore.



Figure 110: The view from Pelican's Wharf Sensory Garden Lookout.



Figure 108: The fishing platform at Terilbah Reserve.



Figure 111: Looking north along Wyrrabalong National Park Foreshore, with the shared path visible through the vegetation.







Figure 112: Picnic Point boat ramp, with the sheltered fishing station visible in front.

The southern foreshore of The Entrance Channel contains the only Major Activity Node in the study area: The Entrance Waterfront strip from the bridge to the start of the shared path on Marine Parade. It contains numerous unique recreational features, including a ferris wheel, water playground, war memorial, and various dining and commercial premises (Figures 114 and 115). Small boat hire is available just north of the bridge. An additional, more conventional recreational node is found at Picnic Point (Figure 112), which contains a boat launching ramp and adjacent fishing station, public toilets, a picnic area, several playgrounds and fitness equipment. A shared path begins at the bridge, running along The Entrance Road Urban Connector (Figure 113), through Picnic Point and continuing south to Long Jetty and beyond.



Figure 114: Views from the waterfront dining precinct.



Figure 113: Looking east along The Entrance Road shared path.



Figure 115: Looking north along the waterfront, beyond the fitness equipment, bike racks and commercial vendors to The Entrance Bridge.

Map 4G: Long Jetty



Long Jetty Foreshore is one of the most iconic locations in the Tuggerah Lakes study area. It contains three separate Minor Activity Nodes centered around jetties: Long Jetty, the longest of the three at almost 400m, as the name suggests (Figure 117), has a small beach adjacent with deckchairs giving a view across the lake (Figure 119). Similar facilities are found at each node (Figure 116), with only Watkins Jetty lacking toilets and Parry's Jetty lacking a playground. A shared path runs along the foreshore (Figure 118), connecting Picnic Point in the north to Saltwater Reserve in the South, with regular bike racks and sheltered seating provided. These connectors are classified as Urban, given a main road separates it from private residences.



Figure 117: The view up Long Jetty.



Figure 118: The shared path running parallel to Parry's Jetty.



Figure 116: The playground at Watkins Jetty.



Figure 119: Deckchairs and sheltered seating looking over the beach at Long Jetty.

Map 4H: Killarney Vale





Figure 121: The view of Saltwater Creek Bridge from the boardwalk lookout.

Killarney Vale Foreshore forms part of a continuous shared path link: beyond Long Jetty to The Entrance Bridge towards the north east, and through Berkeley Vale to Chittaway Bay towards the north west (Figure 123). The path crosses Saltwater Creek at a pedestrian bridge (Figure 121): to the east of the bridge is a large recreational reserve that includes a boat ramp, playground and skate park; to the west is a boardwalk walking trail leading to a lookout over the lake (Figure 120). A further playground is found at Lucinda Avenue Reserve (Figure 122), after which the foreshore changes from an Urban to Shared Path Connector. An additional boat ramp found at the mouth of Tumbi Umbi Creek, over which another bridge connects the shared path north to Berkeley Vale..



Figure 122: Playground at Lucinda Avenue Reserve.



Figure 120: Saltwater Creek Boardwalk (photo courtesy of Central Coast Council).



Figure 123: Looking south east along Lucinda Avenue Foreshore, with the entrance to Saltwater Creek visible in the top left.

Map 4I: Berkeley Vale to Chittaway Bay



Berkeley Vale to Chittaway Bay forms the north-western most component of the foreshore shared path that runs to The Entrance. Three nodes break up the Shared Path Connectors along Lakedge Avenue (Figure 125), each with small playgrounds. Following the small playground at Ewan Howlett Reserve (Figure 126), Bluebell Park is located directly adjacent to a small commercial area, with a small playground and toilets to the north, and dual jetties to the south (Figure 127). Lions Park also contains fitness equipment and picnic facilities (Figure 124): it is here that the foreshore shared path ends, with the path turning west towards Pacific Highway.



Figure 125: Looking south along Lakedge Avenue Foreshore.



Figure 126: Facilities at Ewan Howlett Reserve.



Figure 124: The playground at Lions Park.



Figure 127: A jogger recovers in front of one of the Bluebell Park jetties.

Map 4J: Ourimbah Creek





Figure 128: Looking west along the creek towards Sunshine Reserve, highlighting the Local Connector along the south bank and the Residential Connector along the north.

Ourimbah Creek flows into Tuggerah Lake at Chittaway Point, with Landscape Connectors surrounding the mouth of the creek. The foreshore up to Wyong Road Bridge is primarily Local along the south bank and Residential along the north (Figure 128 and 130), with short Urban Connectors adjacent to the commercial area. There is only one node along the creek, however it is a significant one. Sunshine Reserve contains the only boat ramp in the region, as well as various play facilities (Figure 131). The main feature in the park is Chittaway Point Community Hall (Figure 129), which also contains a public toilets; adjacent to the club premises is a sheltered seating area with a BBQ. The creek can be accessed directly west of Wyong Road at Lees Reserve. however is restricted beyond that due to the ecological status of the vegetated foreshore.



Figure 130: Houses along Geoffrey Road Residential Connector, viewed from the Local Connector on the south bank.



Figure 129: A closer look at Chittaway Point Community Hall in Sunshine Reserve.



Figure 131: Looking east along Geoffrey Road, with Sunshine Reserve in the foreground.



The recommendations in this Section are based on the Literature Review findings in Section 3, the mapping data presented in Section 7, observations made during the field trip and discussions with officers from the Central Coast Council. These recommendations and their relationship to relevant planning policy are summarised in Section 9.

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8. Study Recommendations

8.1. Increasing and enhancing recreational opportunities

8.1.1. Shared use paths

As noted in Section 3, the existing multi-purpose "shared" paths are very popular and well used for walking, cycling and running. More specifically:

- Over 50% of respondents to the Community survey for the Tuggerah Lakes restoration study said they used the multi-purpose paths for walking and cycling;
- · The most common comments in the survey were towards extending the existing shared path network or building new ones in areas that are lacking;
- The Our Coast, Our Waterways community survey found that over 90% of residents participated in cycling, walking or running at least once a year, which was the most popular activity;
- The literature review of beach users found that the three most reported uses of the beach are for walking, swimming and sitting/relaxing. Cycling and running were likely to be under reported and have a participation rate about the same as swimming;
- Whilst the open coast areas have extensive stretches of beach that can facilitate walking and running, this is not the case for the lakes: shared paths are thus needed to provide opportunities for these activities. As well, formal sealed paths are essential for cycling;
- An important aim in providing outdoor recreation should be to enhance the users' experiences, as a positive experience will encourage people to continue that activity. Recreating in the foreshore provides the users with a much more aesthetic and enjoyable experience than recreating in an urban context.

There are many references to the importance of recreation and the need to provide adequate infrastructure in Council's key strategic and policy documents, but the emphasis is in providing that infrastructure for commuting and linking key locations. Whilst Council's Community Strategic Plan 2018-2028 has the following objective under the Liveable theme - "K2 Design and deliver pathways, walking trails and other pedestrian movement infrastructure to maximise access, inclusion and mobility to meet the needs of all community members" - the priority community need is commuting. As noted above, Council's bike plan focuses on cycling as a mode of transport. Whilst it notes the demand from the community for more recreational focused cycling infrastructure, it states:

"Whilst there was considerable community feedback requesting completion of a number of missing links in the lake routes, Council's priorities should be communicated to the community so there is better understanding on what Council is trying to achieve in terms of prioritising utility and commuting trips over solely recreational trips." (p82)

As noted above, this is unfortunate and undervalues the benefits of outdoor recreation and the popularity of cycling for recreation and exercise. As well, whilst there is clear community support for a greater focus on recreational cycling, the provision of cycling paths as shared paths will provide more opportunities for the walking, running and better access to the lakes.

Whilst the social and environmental benefits of providing cycling infrastructure for commuting are acknowledged, Council should reconsider whether it has the correct balance with respect to providing shared path infrastructure, and whether providing infrastructure for recreational purposes, especially around the lakes (as well as the open coast) should be given a higher priority.

Further, providing shared path infrastructure around the lakes will also assists in dealing with the issues of providing a clear demarcation between private land and the foreshore reserve, allowing for better management of informal use and the damage caused. This would, in turn provide opportunities to increase the environmental value of the foreshore.

There are some locations where extending the multi-use path network may not be appropriate but that walking tracks should be provided instead, especially where there is good quality native vegetation and the terrain is very steep.

Recommendations

1. Council should reconsider whether it has the correct balance with respect to providing shared paths infrastructure and whether providing infrastructure for recreational purposes, especially around the lakes (as well as the open coast) should be given a higher priority.

- 2. Council should develop a 5-10 year plan to extend the existing shared paths network and walking paths within the foreshore reserve of all the lakes and subject to sepecifc recommendations below;
- 3. As Council rolls out the extension of the shared and walking paths network, it should also address the problems of private intrusion and use of public foreshore, remove informal uses and look for opportunities to rehabilitate areas within the foreshore with native species so as to increase the environmental value of the foreshore.
- 4. The following are specific recommendations:
- a. Lake Macquarie
- i. Gwandalan: there are sections of the foreshore that are flat and with an open understory and these would be suitable for a shared path, whereas areas such as around Diamond Drill Point are more suitable to have the existing walking track upgraded in parts for easier walking;
- ii. Summerland Point: the northern section has no opportunity for paths as there is no foreshore reserve. The remaining area to the west of Maddison Reserve is suitable for a shared path, but the existing walking track could be upgraded and extended in the short term;
- iii. Chain Valley Bay: the foreshore reserve of the three coastal suburbs of Chain Valley are suitable for shared paths, however are relatively short. Linking the three suburbs with a continuous path has merit. The link between the northern suburbs and the middle suburb is a well vegetated area so this path is probably best to be a low-key walking track. From this middle suburb to the western suburb, a shared path is likely to be the best option, using the existing crossing of Karignan Creek and looking at environmentally sensitive options to link the path from the bridge to foreshore reserve at the end of Lloyd Ave and extending it along the foreshore reserve;
- iv. Kingfisher Shores: the foreshore reserve here is suitable for shared paths, however would be relatively short;

b. Lake Munmorah

- i. Other than a small section in the north east corner, all of the urban areas of Munmorah Lake have a foreshore reserve with the capability to support a path;
- The northern urban area has an existing shared path ii. for about half of the foreshore, starting at the western end and finishing at Tom Burke Reserve. The area directly to the east is suitable for a path, however there are sections that are well vegetated and the terrain is sloped, so a walking path might be more suitable in these sections;
- The south west urban area has a foreshore reserve suitable for continuous shared path:
- iv. The south east urban area also has a foreshore reserve suitable for continuous shared path, with an opportunity to extend this across the existing foot bridge to Dunkey Island, and to construct a new foot bridge to the foreshore at the end of Edward Street: thus making a continuous path across the two urban areas.
- c. Budgewoi Lake
- i. All of the northern shore has a foreshore reserve. whereas the remaining urban areas in the southern half have extensive areas where there is no foreshore reserve, limiting opportunities here for paths.
- The entire northern shore has shared path that extends ii. partly up Wallarah Creek to Pacific Highway. This path provides all the benefits referred to earlier in this report and Council should be commended.
- Providing paths in the southern section of the lake is more problematic, given the number of areas where there is no foreshore reserve, although a shared path has been provided in a section along the south east. By extending the path up Peel Street, Council appears to be looking at safe options to extend this path around the area with no foreshore reserve using the very busy Main Road. This strategy might be more applicable for the western section (i.e. construct a shared path in the foreshore reserve and use the distributor roads around the areas with no foreshore reserve) as the distributor roads are much less busy than Main Road.

- iv. An alternative for the two longer sections of foreshore reserve is to build on the natural values by increasing their biodiversity values, install walking tracks and create a more substantial node that focuses on passive recreation and biodiversity education.
- d. Tuggerah Lake
- i. Most of the residential areas around Tuggerah Lake have a foreshore reserve, the exceptions being in the north, especially to the east of Wallarah Point/Main Road Bridge. This makes most of Tuggerah's lake foreshore suitable for shared paths.
- ii. There is an existing shared path starting at the end of Prawn Beach Lane in the north and ending at March Street, where works are in progress to extend the path further south. The area north of Prawn Beach Lane does not have a continuous foreshore reserve and some of the terrain is steep with cliffs and well vegetated. The area either side of Craigie Park is better suited to building on the natural values by increasing their

biodiversity values, install walking tracks and create a more substantial node at Craigie Park that focuses on passive recreation and biodiversity education.

- iii. The lakeside urban areas either side of the outlet of Ourimbah Creek have foreshore reserves that are suitable for shared paths. These reserves have significant conservation value with extensive areas of salt marsh and shallow water. As well, either side of the very eastern end of Ourimbah Creek is a conservation area. Consequently, these foreshores are best suited for walking tracks rather than shared paths. There is an opportunity to link a path in the northern side to the Tuggerah State Conservation Area. Education signs could also be installed.
- iv. A shared path commences near Chittaway Bay Lions Park, crossing over Tumbi Umbi Creek and ending at The Entrance. This path provides all the benefits referred to earlier in this report and Council should be commended.





8.1.2. Access

The existing status of access.

The need for better access to the lakes - i.e. more and better guality access points - was raised by nearly 75% of Tuggerah Lakes respondents and 86% of Lake Macquarie respondents to Council's Our Coast, Our Waterways community survey. The survey also found that 85% of users do not have direct access to the waterway/beach and providing good access is important for those many residents who do not have direct access to the lakes.

During the field trip it was noted that public access points to the lakes varied with respect to ease of access and the facilities provided – see Figures 133 to 137.

In most areas, these local access points are well spaced, providing good access to the beach for local residents. However, the lack of basic infrastructure in most cases limits the users' experience of the visit. There is value in creating a few well-placed local access nodes with some basic infrastructure. Such upgraded local access points would not only enhance users' experiences, but can act as small community hubs where socializing is facilitated.

In our Stage 1 Open Coast and Coastal Lagoons report, we made recommendations on where these upgraded local access points should be. We also recommended what the basic infrastructure at these upgraded local access points should be. These were:

- Bins;
- Shower and drinking water;
- Information signage (referring to dogs, patrolled beaches, hazard info, local information);
- Look out and/or seating;
- Some shading; and
- A small grassed area.

Additional infrastructure could be a playground and a toilet/ shower block in some circumstances.

On the following pages is a discussion of the distribution of the existing nodes for each lake and river/creek.



Figure 133: An example of a public access point with good facilities and that functions as a small node (Osbourne Park, Budgewoi Lake).



Figure 135: An example of a public access point with no facilities, good access and shared with drainage infrastructure (Diamond Head Drive, Budgewoi Lake).



Figure 136: An example of a public access point with no facilities and more difficult access to the lake (Goobarabah Point, Budgewoi Lake).





Figure 137: An example of a public access point with no facilities and very difficult access to the waterway (Panonia Road, Wyong River).

Figure 134: An example of a public access point with good access to the lake but with no facilities (Leonard Avenue, Budgewoi Lake).

Lake Macquarie

Figure 140 shows the distribution of the existing nodes for the suburbs around Lake Macquarie. As can be seen, the western side of Mannering Park, south of Vales Point (Figure 139) along Wyee Bay, has no nodes. Aside from this, most residential areas are well provided with at least one minor node, with Gwandalan and Summerland Point (Figure 138) provided with larger moderate nodes. That said, these nodes are not always evenly distributed, with gaps along Frying Pan Point and Diamond Drill Point.



Figure 138: Summerland Point Reserve.



Figure 139: Vales Point.



Figure 140: The distribution of the existing nodes for the suburbs around Lake Macquarie



Diamond Drill Point

Gwandalan **Lioness Park**



Gwandalan Lions Park



Access Node **Minor Node** Moderate Node Major Node

Lake Munmorah

Figure 143 shows the distribution of the existing nodes for the suburbs around Lake Munmorah. As can be seen, the south western side of Lake Munmorah along Halekulani has only one node (Ashley Chapman Reserve, Figure 141) for the nearly 2km of foreshore. This is in contrast to the northern shore, which has four recreational nodes in close proximity. The section of the foreshore south east of Tom Burke Reserve (Figure 142) has no nodes for the around 2km up to Elizabeth Bay Park, and is also not provided with a shared path.



Figure 141: The open space at Ashley Chapman Reserve.



Figure 142: Tom Burke Reserve.



Figure 143: The distribution of the existing nodes for the suburbs around Lake Munmorah.

Budgewoi Lake

Figure 146 shows the distribution of the existing nodes for the suburbs around Budgewoi Lake. As can be seen, the only developed recreational node along the nearly 4.5km of the western side of Budgewoi Lake is in the very south at Wallarah Point (Figure 144): each of the other four potential nodes lack formal recreational infrastructure. The southern 2km stretch east of Main Road Bridge has no nodes (aside from street access to Cross Street Jetty) west of Osbourne Park (Figure 145), and there are two gaps between nodes of around 1.7km on the north foreshore.



Figure 144: Wallarah Point Peace Park.



Figure 145: The playground at Osbourne Park.



Figure 146: The distribution of the existing nodes for the suburbs around Budgewoi Lake.

Wallarah Creek

Figure 149 shows the distribution of the existing nodes for the suburbs along Wallarah Creek. As can be seen, there is a relatively even distribution of nodes, with playgrounds found at both Bamayi and Birdwood Drive Reserve, with an undeveloped access point McKellar Boulevade. Beach access nodes lie either side of Pacific Highway, although lack formal recreational infrastructure outside of the boat ramp at Brudenell Avenue.



Figure 147: Bamayi Reserve.



Figure 148: Birdwood Drive Reserve.



Figure 149: The distribution of the existing nodes for the suburbs around Wallarah Creek and Spring Creek.

Tuggerah Lake

Figures 152 and 153 show the distribution of the existing nodes for the suburbs around Tuggerah Lake. As can be seen, the entire length of the nearly 8km of the north western section of the lake has only 4 minor nodes. Across the bridge, the 3km section of the north eastern part of the lake has no nodes until Canton Beach (Figure 150). The five nodes on the south western foreshore at over 1km apart, and there is a gap of around 1.7km between Picnic Point (Figure 151) and Long Jetty on the south eastern side of the lake south of The Entrance.



Figure 150: Canton Beach Reserve.



Figure 151: Picnic Point Reserve.



Figure 152: The distribution of the existing nodes for the suburbs around the northern part Tuggerah Lake.



Figure 153: The distribution of the existing nodes for the suburbs around the southern part Tuggerah Lake.

Wyong River

Figure 156 shows the distribution of the existing nodes for the suburbs along Wyong River. As can be seen, there are only two minor nodes, which are either side of Pacific Highway bridge in the west (Figure 155). An undeveloped reserve providing foreshore access is found at Riverview Drive, while there are additional access nodes at the two boat ramps either side of Tacoma foreshore (Figure 154).



Figure 154: South Tacoma Boat Ramp.





Figure 156: The distribution of the existing nodes for the suburbs around Wyong River.

Figure 155: Centennial Park.

Ourimbah Creek

Figure 159 shows the distribution of the existing nodes for the suburbs along Ourimbah Creek. As can be seen, there is just a single node along the creek at Sunshine Reserve (Figure 157 and 158).



Figure 157: Facilities at Sunshine Reserve.





Figure 159: The distribution of the existing nodes for the suburbs along Ourimbah Creek.

Figure 158: Looking east over Sunshine Reserve.

Major Node

8.1.3. Recommended upgraded access points

As noted above, 85% of users of the beach and lakes do not have direct access to foreshores and whilst the distribution of access points is generally good, the distribution of nodes (i.e. access points with facilities) is unevenly spread in some key locations. To better encourage quality use of the foreshore and the greater use of the foreshores by locals, the distribution of access points with facilities should be spaced so as to encourage walking access. Good walking access will also reduce the need for carparking.

The key question here is: what is the ideal distance between access points with facilities that encourages walking access, but are not so close that the use of the facilities is not optimised?

There is considerable research into how far people walk to public transport facilities. Research on the distance people walk to metro stations in China noted that the proportion of people who walked to a station was 72% for under 300 metres, but fell to 37% for those who would of walk more than 375m (He, Zhang et al. 2018). Kim (2015) found that residents in the San Francisco Bay area walk an average of 548m and up to 1,100m to access railway stations. A study of walking distance of commuters to public transport stops in Norwegian cities found that walking trip were 328-520m on average to bus stops and 528–688m to railway stations. A study of walking access to public transport stops carried out a literature review of the studies that examined the maximum walking distance for residents to local destinations, including schools and transit stops (Sypion-Dutkowska 2019). It noted that 400m was typically quoted as the maximum distance people would walk. The 400m walkability figure has been embedded in neighbourhood planning documents in Australia. The Western Australian Planning Commission has a policy document on neighbourhood design, and recommends that public open space should be no more than 300m from any residence and retail areas no more than 800m (Western Australian Planning Commission 2015).

The NSW Government Accessible Office Design Guide (Funkton 2021) recommends that walkability to public transport stops and food retail should be more than 400m. Both the NSW and Victorian Governments have endorsed the notion of a 20-minute city, which encourages walkable catchments of up to 800m in radius (a 20-minute return walk) that enable people to meet most of their daily needs locally, for example shopping and visiting parks.

Based on the above guidance, the ideal walkable catchment should be between 400-800m - i.e. the optimal spacing of nodes should have catchments of between 400-800m with minimal overlaps. This would also be consistent with Central Coast Council's own Playspace Strategy which recommends that residents should be within 400-800m of a local playspace (Central Coast Council 2020, 4) Figures 161 and 162 show the 400m catchment around nodes that would be 1km and 500m apart for the western part of Tuggerah Lake.

Clearly, the 500m distance between nodes and upgraded access points gives a more optimal outcome for providing walking access for residents if the 400m catchment is adopted, and it recommended that the distance between nodes and upgraded access points be between 500m and 800m, with an upper limit of no more than 1km. The Figures on the following pages show recommended upgraded existing nodes and new upgraded access points. The 500-800m guideline was applied where possible, but some areas were constrained due to long stretches of foreshore without a reserve - i.e. private residences back directly onto the lakes' edges. In each map, the green 'pins' are existing nodes, the yellow pins are recommended upgraded access points and the orange pins are existing nodes that should be upgrades. Purple pins are possible enhanced access points where it is unclear if there is public access or part of private property. Figure numbers are also provided where the location corresponds to images in the section that follows.

Recommendations

- 5. Council should increase the number of upgraded access points around the lakes and the three water courses covered in this study.
- 6. It is recommended that an ideal walkable catchment for these access points should be between 400-800m which also means that the optimal spacing of nodes should be 500m but no more than 800m.
- 7. The recommended upgraded access points in this report are a useful starting point for Council's consideration.

8. New infrastructure:

- i. The recommended facilities at these points should be bins, shower where swimming facilities are provided, drinking water, information signage. look out and/ or seating, some shading including for seating, and a small grassed area. Additional infrastructure in some circumstances could be a playground and a toilet/ shower block.
- ii. The flood hazard in the low-lying areas in the foreshore will likely increase in future as sea levels rise and storm intensity and frequency changes with climate change. As well, wetland vegetation will likely migrate inland. Consequently, the design and placement of any new assets or infrastructure need take this into account including the findings of Council's Wetland Refugia Study.



Figure 160: An example of a typical Local Connector access point from the street



Figure 161: Show the 400m catchment around nodes that are 1km apart for the western part of Budgewoi Lake.

Figure 162: How the 400m catchment around nodes that are 500m apart for the western part of Budgewoi Lake.



Lake Macquarie Upgrades

Figure 165 shows the distribution of existing nodes, access points and recommended upgrades for the suburbs around Lake Macquarie. Two access points along the west of Mannering Park and the north of Summerland Park are identified for upgrade, while the Diamond Drill Point access could also be expanded. Kingfisher Reserve, Sunset Parade Reserve and Gwanadalan Bowling Club are all existing small nodes with potential for additional recreational infrastructure.



Figure 163: Frying Pan Point.



Figure 164: Halcyon Street Carpark.



Figure 165: The distribution of nodes, access points and upgrades for the suburbs around Lake Macquarie.

Garema Road Boat Ramp

Diamond Drill Point

Gwandalan Lioness Park

Gwandalan Bowling Club (Fg 198)

Gwandalan Lions Park



Existing Node Upgrade Node **Upgrade Access**

Lake Munmorah Upgrades

Figure 168 shows the distribution of existing nodes, access points and recommended upgrades for the suburbs around Lake Munmorah. Kamilaroo Avenue Reserve is the only node along the west of Lake Munmorah suburb with scope for upgrade, while an upgrade of Elizabeth Bay Park and a formal access point in the vicinity of Andrew Street would better serve residents in the east. A potential upgrade of MacKenzie Reserve, along with expansion of access points along Halekulani, are identifed for the south.



Figure 166: Andrew Street access point.



Figure 167: Lukela Avenue access point.



Figure 168: The distribution of nodes, access points and upgrades for the suburbs around Lake Munmorah.

Budgewoi Lake Upgrades

Figure 171 shows the distribution of existing nodes, access points and recommended upgrades for the suburbs around Budgewoi Lake. When considering these upgrades, it is suggested that the western bank of Gorokan, Lake Haven and Charmhaven be given priority.



Figure 169: Woodland Parkway Reserve.



Figure 170: John Peter Howard Reserve.



Figure 171: The distribution of nodes, access points and upgrades for the suburbs around Budgewoi Lake.

Wallarah Creek Upgrades

Figure 174 shows the distribution of existing nodes, access points and recommended upgrades for the suburbs along Wallarah Creek. Despite its small size, Birdwood Drive Reserve has potential for greater recreational infrastructure alongside the playground, as do both access nodes either side of Pacific Highway.



Figure 172: Brudenell Avenue Boat Ramp.



Figure 173: Birdwood Drive Reserve.



Figure 174: The distribution of nodes, access points and upgrades for the suburbs around Wallarah Creek and Spring Creek.

Tuggerah Lake Upgrades

Figures 177 and 178 show the distribution of existing nodes, access points and recommended upgrades for the suburbs around Tuggerah Lake. Wyongah Boat Ramp and Main Road Reserve are the nodes most in need of upgrade along the north of the lake, as well as enhanced upgrade points particularly along Rocky Point, Tuggerawong and Canton Beach. The south of the lake is generally well provided with nodes, with focus to be given on upgrading access points.



Figure 175: Stone Street access point.



Figure 176: Ferndale Street access point.



Figure 177: The distribution of nodes, access points and upgrades for the suburbs around the northern part Tuggerah Lake.



Figure 178: The distribution of nodes, access points and upgrades for the suburbs around the southern part Tuggerah Lake.

Wyong River Upgrades

Figure 181 shows the distribution of existing nodes, access points and recommended upgrades for the suburbs along Wyong River. Greater recreational facilities could be provided at the two Tacoma Boat Ramp nodes. Two access points east of Lions Park could be expanded, while a node could be developed around the fishing platform along River Road.



Figure 179: The fishing platform along River Road.



Figure 180: Foreshore access but no infrastructure at Riverview Drive Reserve.



Figure 181: The distribution of nodes, access points and upgrades for the suburbs along Wyong River.

Ourimbah Creek Upgrades

Figure 184 shows the distribution of existing nodes, access points and recommended upgrades for the suburbs along Ourimbah Creek. Little could be added to the existing Sunshine Reserve node, however various informal access points either side of the creek could be expanded.









Figure 184: The distribution of nodes, access points and upgrades for the suburbs around Wyong River.

Figure 183: Hanalei Avenue access point.

Upgrade Access

Upgrading existing nodes

9. The quality of infrastructure at some of the access points we have classified as nodes should be improved and upgraded as noted in the relevant Figures.

Many of these are also included in the recommendations in the previous section, with the corresponding Figure numbers provided in each map. The Figure captions list the existing infrastructure and any specific recommendations for improvement.



Figure 187: Budgewoi Lake, Budgewoi Point Boat Ramp has a small boat launching ramp, jetty and bins.



Figure 190: Budgewoi Lake, end of Goobarabah Ave is a drainage reserve with no facilities other than rough grassed area.



Figure 185: Budgewoi Lake, Chelmsford Road Reserve node has a large grassed area, a couple of open picnic tables and a rough car parking area.



Figure 188: Budgewoi Lake, Bark Park has informal parking, bin, grassed area and open picnic table.



Figure 191: Budgewoi Lake, end of Inderan Ave is a drainage reserve with no facilities other than rough grassed area.



Figure 186: Budgewoi Lake, Brandon Close Reserve has a parking area, a bin and a single open picnic table.



Figure 189: Budgewoi Lake end of Coraldeen Ave is an undeveloped node that has no facilities other than a rough grassed area.



Figure 192: Budgewoi Lake, end of Wirriga Avenue is an undeveloped node with a single bench and a nice grassed area.


Figure 193: Budgewoi Lake, end of Una Ave is an undeveloped node with no facilities other than a grassed area.



Figure 194: Budgewoi Lake, Mutumba Road Reserve node: facilities there are good but jetty in need of repair.



Figure 196: Budgewoi Lake, Peel Street carpark on the West of Osbourne Park node: unshaded picnic tables.



Figure 199: Lake Munmorah, undeveloped node at end of Natuna Ave. Ad hoc parking and grassed area (also seat facing inland!).



Figure 197: Lake Macquarie, Sunset Parade Reserve: Informal and street parking, grassed area, playground, 2 seats, a track through to water's edge and seat there.



Figure 200: Lake Munmorah, micro node at end of Queens Street: street parking only, bins, grassed area and 2 seats.



Figure 195: Budgewoi Lake, The Corso Reserve: rough carpark, bin, grassed area and one old picnic table. Gate for vehicle access was close – unclear as to why.



Figure 198: Lake Macquarie, Gwandalan Bowling Club node. Up to 10 informal parking, grassed area and 2 seats. Links to bowling club foreshore.



Figure 201: Lake Munmorah, Kamilaroo Avenue Reserve: 8 parking bays, bins, rough grassed area, 2 open picnic tables partly shaded.



Figure 202: Lake Munmorah, Alister Avenue Reserve: 6 informal parking bays, bin, 3 open picnic table partly shaded, seat, bike rack, grassed area.



Figure 203: Lake Munmorah, Tom Burke Reserve: good facilities but boat launching ramp difficult to access.



Figure 205: Tuggerah Lake, Bluebell Park: two jetties, 12 informal parking bays and rough grassed area.



Figure 208: Tuggerah Lake, end of Jensen Road: 3 parking bays and bins.



Figure 206: Tuggerah Lake, corner Ferndale Street and Lucinda Avenue: street parking, bin and seat.



Figure 209: Tuggerah Lake, end of Saturday Street: 3 informal parking bays, bin and old seat.



Figure 204: Ourimbah Creek, Sunshine Reserve: good facilities but no disabled toilet or parking.



Figure 207: Tuggerah Lake, Tumbi Umbi Boat Ramp: up to 10 informal parking, picnic table, boat launching ramp, jetty and bin.



Figure 210: Tuggerah Lake, end of Thursday Street: street parking only, grassed area, seat bike rack, bins.



Figure 211: Tuggerah Lake, Main Road Bridge Reserve: degraded area, 4 carparking bays, bins, damaged jetty and damaged path under bridge.



Figure 212: Wallarah Creek, Brudenell Avenue Boat Ramp: rough informal parking, small boat launching ramp and jetty.



Figure 213: Wyong River, end of Panonia Road: no facilities, grassed area managed by neighbour.



Figure 214: Wyong River, River Road Reserve: informal parking, bins, small fishing jetty.



Figure 217: Wyong River, Tacoma Boat Ramp: rough car park with up to 6 bays, bin, boat launching ramp, jetty, grassed area with 3 open picnic tables.



Figure 215: Wyong River, Riverview Drive Reserve: 3 informal parking bays and grassed area. Only public foreshore access in the broader area.



Figure 218: Wyong River, Wolseley Avenue end of Don Small Oval node: informal and rough parking, new toilets and drinking water.



Figure 216: Wyong River, South Tacoma Boat Ramp: grassed area, boat launching ramp and jetty, street parking and 2 bays for dropping off boats.



Figure 219: Wyong River, Wyong Lions Park: toilet, rough carpark shared with bowling club, bins, 2 old picnic tables under pergolas, small boat launching ramp.

8.1.4. Disabled access

As noted in our Open Coast and Coastal Lagoons Stage 1 report, all of the surf lifesaving clubs along the Central Coast had facilities that allowed physically disabled people to access facilities. Despite having disabled parking and toilets, only a few were observed to have facilities to enable access to the beach, including beach wheel chairs and beach mats.

There are several beaches within the lakes where swimming facilities are provided, and the physical nature of the waterway makes swimming practical: notably Gwandalan Lioness Park, Sandy Beach and Vales Point at Lake Macquarie; Tom Burke Reserve at Lake Munmorah; and Canton Beach at Tuggerah Lake. None of these beaches have a facility like a surf lifesaving club that could house and administer disabled access to the beach and water.

8.2. Demarcation between private land and the foreshore reserve

There are many examples of private residents, whose properties back onto the foreshore reserve, having placed private facilities and infrastructure within the foreshore for their own private use. Some examples are shown in Figures 220 to 231.

It was noticed that this was also a problem in the open coast and lagoons, with the Stage 1 advising that providing a hard edge would help reduce this problem. Requiring fencing at the property boundary is a useful measure and makes it very clear where the boundary is between private and public use is. This appears to be less of a problem around the lakes compared to the open coast, but there are examples – two properties in the section of Budgewoi Lake do not have fences, for example.

Having a shared path through the reserve has the added advantage of bringing the public into the foreshore, which reduces the sense of private ownership and should reduce the private use of the foreshore. As well, the public will act as monitors of inappropriate private use of the foreshore.

These measures, including having a road as a hard edge, will not completely stop private intrusions into the reserve as the Figures follwing illustrate, but will significantly reduce the problem. It is recognised that taking any action to better manage the foreshore through the removal of private infrastructure will meet with resistance by some land owners. Therefore, the process of implementation will need to be managed carefully including an education program on the broader public benefits of these measures.

Recommendations

- 10. An audit should be carried out of the foreshore reserve where houses directly abut the foreshore reserve to identify cases of significant intrusion into the reserve.
- 11. To ensure an ongoing and clear demarcation between private property and the public foreshore a property boundary fencing policy should be introduced and implemented.
- 12. Council should work with residents to identify a more suitable location for this infrastructure.
- 13. The removal of these private facilities and infrastructure should also be integrated into the extension of the multi-use paths and walking tracks recommended above.



Figure 220: Lake Macquarie, Teragalin Drive, Chain Valley Bay – showing a range of privately installed facilities, including a hammock.



Figure 221: Lake Macquarie, Gamban Road, Gwandalan – showing dinghies being stored in the foreshore and a pile of mulch/wood chips that have been dumped.



Figure 222: Lake Macquarie, Kingfishers Shores – showing private picnic table and chairs at the water's edge.



Figure 223: Lake Munmorah, Terence Ave to Anita Ave and Kamilaroo Ave – private garden part of which is likely in the foreshore reserve.



Figure 226: Lake Macquarie, Summerland Point – one of the many examples of dinghies being stored in the foreshore reserve.



Figure 229: Budgewoi Lake – possibly a fence through the foreshore reserve suggesting the foreshore is not public.



Figure 224: Tuggerah Lake, Aloha and Lakedge Ave – showing a washing line in the reserve.



Figure 225: Budgewoi Lake, informal reserve – showing rubbish that has been dumped there.



Figure 227: Lake Munmorah, Sunrise Ave and Natuna Ave – showing a private driveway ending at the water's edge.



Figure 230: Drone image of the shared path along Green Point, Budgewoi Lake, with clear delineation between private property and the foreshore reserve.



Figure 228: Tuggerah Lake, Aloha to Lakedge Ave – showing off-road vehicle tracks.



Figure 231: Wyong River, South Tacoma Road – showing a range of private infrastructure and facilities within the foreshore.

8.3. Biodiversity gain

As noted in Section 3.1.1, Council has a biodiversity strategy (Central Coast Council 2020) that gives special attention to its coastal reserves and their important role in conserving and enhancing biodiversity.

The desired outcome of the strategy is to:

"protect and enhance the landscape and biodiversity values of the Central Coast, which includes maintaining functional connections between areas of habitat, maintaining core habitat as well as restoring marginal habitat, preserving threatened and iconic species and ecological communities, preserving significant Aboriginal cultural places, and protecting the scenic amenity of the region." (p25)

As noted in the preceding discussion, there are areas of the foreshore that have high environmental value, and this has been taken into account in making recommendations about provision of paths. Council has been completing a number of foreshore rehabilitation and restoration projects as part of the grant funded program "The Tuggerah Lakes Estuary and Catchment Ecological Health Project" which aim to increase the extent of salt marshes in lakes system, and this is an important conservation initiative. As sea levels rise because of climate change, it is likely that the saltmarsh communities will migrate inland which needs to be taken into account when considering the placement of hard infrastructure such as shared pathways. Works would need to take into consideration the recommendations from the Wetland Refugia Study that is currently in progress by Council.

There are also other opportunities to increase the environmental value, notably more plantings in areas of the foreshore in areas with little if any native vegetation. Figures 232 and 233 show two foreshore area with contrasting cover of native vegetation. Other ways that environmental value could be enhanced along the foreshore could include creating more natural infrastructure such as saltmarsh swales and constructed wetlands, that provide both habitat values and water quality and management improvements.

There is no doubt that tree planting in areas like Figure 232 will be contentious, and land owners will claim that their views will be impacted, which in turn will impact on perceived property values. A 'softly softly' approach will be needed.

Recommendations

- 14. An audit should be carried out of the foreshore reserve to identify areas where additional plantings of native vegetation could be carried out.
- 15. Affected residents should be surveyed to identify those who would be willing to have additional plantings in front of their property and work with these residents on species and site selection.
- 16. Council should investigate program options that would increase community awareness of the value of native vegetation, especially for lake side residents, including education programs and biodiversity and carbon credit schemes where discounts on Council services or incentives are offered in exchange for those credits.

There are specific reserves and foreshore areas that could be managed to increase their biodiversity value as well as providing passive recreation opportunities and promoting community involvement in bushland management. The following are suitable locations, but is not a comprehensive list.



Figure 232: Section of Budgewoi Lake, Green Point.

Recommendations

- 17. The following reserves are suitable for enhanced management that focuses on environmental values, which would include working with the local community to develop a suitable management plan, upgrading passive recreational facilities and conservation and interpretive material:
- a. Budgewoi Lake Ocowolrolong Point end of Tingira Street:
- b. Budgewoi Lake, The Corso Reserve at the northern end of The Corso;
- c. Budgewoi Lake, Chelmsford Road Reserve opportunity to work with students at Gorokan High school;
- d. Tuggerah Lake Craigie Park; and
- e. Lake Munmorah Reserve at the end of Andrew Street.



Figure 233: Tuggerah Lake, Aloha to Lakedge Avenue.

9. Discussion, summary of recommendations and overall conclusion

It's important to view the recommendations in this report within Council's broader strategic and policy context. These recommendations were arrived at taking into account Council's broader strategic and policy context, observations made as part of the field trips and our own expertise in the fields of coastal planning and management, open space planning and recreational planning. The Table below summarises this and draws for the discussion in Section 3.



Table 3. Summary of Report Recommendations

	Report recommendations	Relationship to Council's strategic and policy context	Comment
1.	Report recommendations Council should reconsider whether it has the correct balance with respect to providing shared path infrastructure, and whether providing infrastructure for recreational purposes, especially around the lakes (as well as the open coast) should be given a higher priority.	Relationship to Council's strategic and policy context Community Strategic Plan K1, K2 and L1 and indicators Access to transport, walking & cycling, and Participation in sport, recreation and community life. Bike plan priority 5. Disability Inclusion Access Plan – Focus area 2. Community Strategic Plan indicators for Access to transport, walking and cycling - walking and cycling, and Participation in sport, recreation and community life. NSW State Government's Central Coast Regional Plan, Goal 3 Action 18.5 Implement strategies to invest in open space, sporting and recreational infrastructure. The Tuggerah Lakes Estuary Management Plan has a Socio-economic Action Plan and a key action there is 'Provide better facilities in foreshore recreation areas'. The specific recommendations below that refer to providing walking paths rather than multi-use responds to protecting environmental sensitive areas and at the same time providing appropriate access. This is consistent with Council's Community Strategic Plan focus area F1, and one of the six primary objectives of the Tuggerah Lakes Estuary Management Plan - Ensure that human activities can take place while protecting cultural heritage and enhancing soil, water and ecosystem health. A well, one of the 9 broad objectives for the Tuggerah Lakes Estuary Coastal Management Program Scoping Study was "Support community	Comment Provision of mo foreshore reserv to walk, cycle and for physically dis It is noted that p cycling is not t objectives of th equal priority to Tuggerah Lake community surv were engaged most reported of the existing mul where one is abs "Our Coast, C recreational opp the top respons the waterways, a most popular great
		connection with and use of the estuary, in an ecologically sustainable and culturally sensitive manner".	
2.	Council should develop a 5-10 year plan to extend the existing shared paths network and walking paths within the foreshore reserve of all the lakes and subject to sepecifc recommendations below;	As above.	As above.
3.	As Council rolls out the extension of the shared and walking paths network, it should also address the problems of private intrusion and use of public foreshore, remove informal uses and look for opportunities to rehabilitate areas within the foreshore with native species so as to increase the environmental value of the foreshore.	As above. This would also address Community strategic plan Green focus area objective F1 and F3, and Council's biodiversity strategy goal 1.2.2 - Prepare a policy for natural area encroachment management, and resource and implement a program to identify and manage threats to natural areas from encroachment.	As above.

ore dual use and walking paths in the ves would likely encourage more people and run, and provide more opportunities isabled people.

providing dual use path for recreational the main priority of the bike plan, the he bike plan should be revised to give o cycling as a recreational pursuit.

kes foreshore restoration works – vey: the main land based activities that in were cycling and walking, and the comment was a desire to either extend lti purpose path or construct a new one osent.

Our Waterways" community survey: portunities and access to waterways was se to what residents valued most about and walking cycling and running was the roup of activities.

-	longet recommendations	Polationship to Councilla stratagic and policy and
4.	As Council rolls out the extension of the shared and walking paths network, it should also address the problems of private intrusion and use of public foreshore, remove informal uses and look for opportunities to rehabilitate areas within the foreshore with native species so as to increase the environmental value of the foreshore.	As above. This would also address Community strategic plan area objective F1 and F3, and Council's biodive goal 1.2.2 - Prepare a policy for natural area e management, and resource and implement a progra and manage threats to natural areas from encroach
5.	The following are specific recommendations:	As above.
a.	Lake Macquarie	
i.	Gwandalan: there are section of the foreshore that are flat and with an open understory and these would be suitable for a shared path, whereas areas like around Diamond Drill Point are more suitable to have the existing walking track upgraded in parts for easier walking;	
ii.	Summerland Point: the northern section has no opportunity for paths as there is no foreshore reserve. The remaining area to the west of Maddison Reserve is suitable for a shared path, however the existing walking track could be upgraded and extended in the short term;	
	Chain Valley Bay: the foreshore reserve of the three coastal suburbs of Chain Valley are suitable for shared paths, however are relatively short. Linking the three suburbs with a continuous path has merit. The link between the northern suburbs and the middle suburb is a well vegetated area so this path is probably best to be a low-key walking track. From this middle suburb to the western suburb, a shared path is likely to be the best option, using the existing crossing of Karignan Creek and looking at environmentally sensitive options to link the path from the bridge to foreshore reserve at the end of Lloyd Ave and extending it along the foreshore reserve;	
iv	. Kingfisher Shores: the foreshore reserve here suitable for multi-use paths, however would be relatively short.	
b.	Munmorah Lake	As above.
i.	Other than a small section in the north east corner, all of the urban areas of Munmorah Lake have a foreshore reserve with the capability to support a path;	
ii.	The northern urban area has an existing shared path for about half of the foreshore, starting at the western end and finishing at Tom Burke Reserve. The area directly to the east is suitable for a path, however there are sections that are well vegetated and the terrain is sloped, so a walking path might be more suitable in these sections;	
iii	The south west urban area has a foreshore reserve suitable for continuous shared path;	
iv	The south east urban area also has a foreshore reserve suitable for continuous shared path, with an opportunity to extend this across the existing foot bridge to Dunkey Island, and to construct a new foot bridge to the foreshore at the end of Edward Street: thus making a continuous path across the two urban areas.	

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Green focus sity strategy ncroachment am to identify ment.	
	As above.
	As above.

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	port recommendations	Relationship to Council's strategic	Comment
		and policy context	
C.	Budgewoi Lake	As above.	As above.
i.	All of the northern shore has a foreshore reserve, whereas the remaining urban areas in the southern half have extensive areas where there is no foreshore reserve, limiting opportunities here for paths;		
ii.	The entire northern shore has shared path that extends partly up Wallarah Creek to Pacific Highway. This path provides all the benefits referred to earlier in this report and Council should be commended;		
iii.	Providing paths in the southern section of the lake is more problematic, given the number of areas where there is no foreshore reserve, although a shared path has been provided in a section along the south east. By extending the path up Peel Street, Council appears to be looking at safe options to extend this path around the area with no foreshore reserve using the very busy Main Road. This strategy might be more applicable for the western section (i.e. construct a shared path in the foreshore reserve and use the distributor roads around the areas with no foreshore reserve) as the distributor roads are much less busy than Main Road;		
iv.	An alternative for the two longer sections of foreshore reserve is to build on the natural values by increasing their biodiversity values, install walking tracks and create a more substantial node that focuses on passive recreation and biodiversity education.		
d.	Tuggerah Lake	As above.	As above.
i.	Most of the residential areas around Tuggerah Lake have a foreshore reserve, the exceptions being in the north, especially to the east of Wallarah Point/ Main Road Bridge. This makes most of Tuggerah's lake foreshore suitable for shared paths;		
ii.	There is an existing shared path starting at the end of Prawn Beach Lane in the north and ending at March Street, where works are in progress to extend the path further south. The area north of Prawn Beach Lane does not have a continuous foreshore reserve and some of the terrain is steep with cliffs and well vegetated. The area either side of Craigie Park is better suited to building on the natural values by increasing their biodiversity values, install walking tracks and create a more substantial node at Craigie Park that focuses on passive recreation and biodiversity education;		
iii.	The lakeside urban areas either side of the outlet of Ourimbah Creek have foreshore reserves that are suitable for shared paths. These reserves have significant conservation value with extensive areas of salt marsh and shallow water. As well, either side of the very eastern end of Ourimbah Creek is a conservation area. Consequently, these foreshores are best suited for walking tracks rather than shared paths. There is an opportunity to link a path in the northern side to the Tuggerah State Conservation Area. Education signs could also be installed;		
iv.	A shared path commences near Chittaway Bay Lions Park, crossing over Tumbi Umbi Creek and ending at The Entrance. This path provides all the benefits referred to earlier in this report and Council should be commended.		

Report recommendations	Relationship to Council's strategic and policy context	Comment
 Council should increase the number of upgraded access points around the lakes and the three water courses covered in this study. 	Council's Strategic plan under its Liveability Theme has there following related objectives: K2 Design and deliver pathways, walking trails and other pedestrian movement infrastructure to maximise access, inclusion and mobility to meet the needs of all community members. Also K3 - Provide signage, public facilities, amenities and playgrounds to encourage usage and enjoyment of public areas." The Tuggerah Lakes Estuary Management Plan has a Socio-economic Action Plan and a key action there is 'Provide better facilities in foreshore recreation areas', which is consistent with one of the seven attribute goals as part of the vision for the lakes – "Public facilities - Excellent recreational facilities at access points."	Community survey Tuggerah Lakes restoration study – the second most important issue raised in the comments was most important issues was a request to increase access to the foreshore and lakes for residents who do not have direct access. The "Our Coast, Our Waterways" community survey found that 68% of respondents said they either strongly agree or somewhat agree that more should be done to enhance access to waterways.
 It is recommended that an ideal walkable catchment for these access points should be between 400- 800m which also means that the optimal spacing of nodes should be 500m but no more than 800m. 	As above.	As above.
7. The recommended upgraded access points in this report are a useful starting point for Council's consideration.	As above.	As above.
 8. New infrastructure: i. The recommended facilities at these points should be bins, shower where swimming facilities are provided, drinking water, information signage. look out and/or seating, some shading including for seating, and a small grassed area. Additional infrastructure in some circumstances could be a playground and a toilet/ shower block. ii. The flood hazard in the low-lying areas in the foreshore will likely increase in future as sea levels rise and storm intensity and frequency changes with climate change. As well, wetland vegetation will likely migrate inland. Consequently, the design and placement of any new assets or infrastructure need take this into account including the findings of Council's Wetland Refugia Study." 	As above.	As above.
 The quality of infrastructure at some of the access points we have classified as nodes should be improved and upgraded as noted in the relevant Figures. 	As above.	As above.
10. An audit should be carried out of the foreshore reserve where houses directly abut the foreshore reserve to identify cases of significant intrusion into the reserve.	This would also address Community strategic plan Green focus area objective F1 and F3, and Council's biodiversity strategy goal 1.2.2 - Prepare a policy for natural area encroachment management, and resource and implement a program to identify and manage threats to natural areas from encroachment	
11. To ensure an ongoing and clear demarcation between private property and the public foreshore a property boundary fencing policy should be introduced and implemented.	This is consistent with a key specific action of Council's biodiversity strategy 1.2.1 is "fencing, gates and access control to prevent dumping, damaging activities and encroachment".	

Report recommendations	Relationship to Council's strategic and policy context	Comment
12. Council should work with residents to identify a more suitable location for this infrastructure.	As above.	As above.
13. The removal of these private facilities and infrastructure should also be integrated into the extension of the multi-use paths and walking tracks recommended above.	As above.	As above.
14. An audit should be carried out of the foreshore reserve to identify areas where additional plantings of native vegetation could be carried out.	 Consistent with the Council's biodiversity strategy desired outcome "protect and enhance the landscape and biodiversity values of the Central Coast, which includes maintaining functional connections between areas of habitat, maintaining core habitat as well as restoring marginal habitat, preserving threatened and iconic species and ecological communities, preserving significant Aboriginal cultural places, and protecting the scenic amenity of the region." Council's Community Strategic Plan theme "Green" has the following focus areas objective – F1 Protect our rich environmental heritage by conserving beaches, waterways, bushland, wildlife corridors and inland areas and the diversity of local native species. 	Analysis of the comments in the 1 Community survey Tuggerah Lakes restoration study indicated that support for restoration was about 7 times higher than opposition to it.
15. Affected residents should be surveyed to identify those who would be willing to have additional plantings in front of their property and work with these residents on species and site selection.	As above.	As above.
16. Council should investigate program options that would increase community awareness of the value of native vegetation, especially for lake side residents, including education programs and biodiversity and carbon credit schemes where discounts on Council services or incentives are offered in exchange for those credits.	Council's Community Strategic Plan theme "Green" has the following focus areas objective - E1 Educate the community on the value and importance of natural areas and biodiversity and encourage community involvement in caring for our natural environment.	
17. The following reserves are suitable for enhanced management that focuses on environmental values, which would include working with the local community to develop a suitable management plan, upgrading passive recreational facilities and conservation and cultural interpretive material:	As above.	
a. Budgewoi Lake Ocowolrolong Point – end of Tingira Street;		
b. Budgewoi Lake, The Corso Reserve at the northern end of The Corso;		
c. Budgewoi Lake, Chelmsford Road Reserve – opportunity to work with students at Gorokan High school;		
d. Tuggerah Lake - Craigie Park;		
e. Lake Munmorah – Reserve at the end of Andrew Street.		

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Document Revisions

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