ITEM 2 LAKE ILLAWARRA ENTRANCE OPTIONS STUDY (NEXT STEPS)

The Lake Illawarra Entrance Options Study investigated long-term options to manage negative impacts that have been occurring around the lake and the lake entrance channel since it was permanently opened by the Lake Illawarra Authority in 2007. The Options Study was funded by NSW Government, Wollongong and Shellharbour City Councils. Based on the findings of the *Lake Illawarra Entrance Channel: Management Options Assessment* report, community feedback and agency feedback, proposed next steps were developed to progress the implementation of a long-term entrance management option.

This report seeks endorsement of these steps to progress the implementation of a long-term entrance management option.

RECOMMENDATION

Council endorses the following recommendations -

1 Wollongong City Council continues to partner with Shellharbour City Council to -

   a Write to the NSW Government requesting that it resource and undertake a Strategic Business Case to deliver a long-term management solution for the Lake Illawarra entrance (action EC1), with participation from both Wollongong and Shellharbour City Councils. The Strategic Business Case is to consider Option 4 and Option 5 or variations thereof from the *Lake Illawarra Entrance Channel: Management Options Assessment* report against a 'Leave as is' base case.

   b Continue to collaborate with the NSW Government to prioritise the delivery of key informing studies under the Lake Illawarra Coastal Management Program (CMP) and the Floodplain Management Program, to inform the Strategic Business Case. These studies include Cultural Values and Threats (action CH1), Floodplain Risk Management Study and Plan, and further documentation on the 'Leave as is' scenario, including confirmation of asset management and maintenance responsibilities for infrastructure (actions RA1, PM4).

   c Further engage with the community to keep them informed of progress, and that future options consider community knowledge and feedback.

2 Continue investigations into short and medium-term foreshore protection works along the Windang foreshore to assess technical viability and assurance that impacts will not be exacerbated, overall cost-effectiveness, approval pathways, alignment with CMP objectives and delivery responsibilities.

REPORT AUTHORISATIONS

Report of: Nathan McBriarty, Manager Infrastructure Strategy + Planning
Authorised by: Joanne Page, Director Infrastructure + Works and Linda Davis, Director Planning + Environment - Future City + Neighbourhoods

ATTACHMENTS

1 Lake Illawarra Aerial Photo Montage
2 Community Engagement Report: Options for the Lake Illawarra Entrance May 2025

ACRONYMS USED IN REPORT

Abbreviation	Meaning
action xx	Action from the Lake Illawarra Coastal Management Program
AHIP	Aboriginal Heritage Impact Permit
CMP	Lake Illawarra Coastal Management Program 2020 to 2030
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCP	Development Control Plan

Abbreviation	Meaning
DPHI / Crown Lands	Department Planning, Housing and Infrastructure
DPIRD / Fisheries	Department of Primary Industries and Regional Development
ILALC	Illawarra Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LIA	Lake Illawarra Authority
TfNSW	Transport for NSW

BACKGROUND

In 2007, the former Lake Illawarra Authority (LIA), permanently opened Lake Illawarra by constructing twin breakwalls where the channel meets the sea. This was done to address issues of poor water quality, odour, and algal blooms in the lake. This change created an unstable equilibrium in the lake's system that has resulted in stronger tidal patterns, higher velocity flows and escalating erosion in the entrance channel, predominantly on the Wollongong LGA side of the foreshore.

Aerial photography of the Lake Illawarra entrance demonstrates the significant changes that have occurred in the 18 years since the entrance was opened (Attachment 1). Between 2008–2022, approximately 900,000m^3 of sediment has scoured from inside the channel. A stability assessment of the channel has shown that over the next 100 years, the channel will continue to widen and deepen until the cross-sectional area reaches approximately 7.5 times what it is today.

Without a long-term management solution, increasing tidal velocities in the entrance will impact the safety of in-water recreational activity and cause irreversible changes to the lake's environment. Higher water levels will cause more frequent flooding of foreshores which will impact the community's access and use of open spaces and supporting infrastructure. Storm surges and extreme weather events will accelerate erosion in the entrance causing further loss of foreshore land, infrastructure, cultural and natural assets around the lake.

Changes in Governance, Legislation and Management of Lake Illawarra since the entrance opening

In the time since the entrance works were completed, the legislative governance and financial framework for estuary management in NSW has changed considerably, as well as land tenure and ownership around the lake. The Lake Illawarra Authority (LIA) was disbanded and defunded in 2013, and in 2014, the *Lake Illawarra Authority Act 1987* was repealed. Responsibility for the management of Lake Illawarra, including land and assets owned by the LIA, was transferred to various NSW Government agencies along with Wollongong and Shellharbour City Councils.

Lake Illawarra is now jointly managed by Wollongong City Council and Shellharbour City Councils under a certified Coastal Management Program (CMP) prepared in accordance with the requirements of the *Coastal Management Act 2016* and the NSW Coastal Management Framework. The adopted and gazetted CMP incorporates a program of actions to strategically address coastal hazards and climate change impacts to the lake until 2030. The program has a wholistic role in building the adaptive ecological resilience of the lake's environment, supporting ongoing social and economic benefits to the community, and protecting Aboriginal cultural heritage and values.

Importantly, the registered Native Title Claim (NC2017/003 South Coast People) now covers the entire CMP study area. No determinations regarding the Claim have been made to date. Each council, as well as each State Government agency has responsibilities in relation to native title, Aboriginal Land Claims and the management of Crown Lands under the following pieces of legislation: *Native Title Act 1993* (Cth), *Native Title (NSW) Act 1994*, *Crown Land Management Act 2016* and *Aboriginal Land Rights Act 1983*.

Table 1 includes actions identified in the adopted CMP to address coastal hazards and coastal vulnerability.

Table 1: CMP Actions to address Coastal Hazards and Coastal Vulnerability

Action ID	Action Label / Descriptor	Coastal Hazard(s) Addressed
PM1	Commence integration of key objectives and strategies from the CMP into relevant planning and policy documents of both Councils. This action provides for updates to LEPs, DCPs to manage various coastal hazards.	Foreshore Erosion Coastal Inundation Tidal Inundation
PM4	Establish a Lake Illawarra Asset Management Working Group, which will include: providing a forum for exchange of information relating to inundation risk, particularly for forward planning of asset replacement and renewal in areas at risk of tidal or storm event inundation.	Coastal Inundation Tidal Inundation
EC1	Investigate and Finalise Options to Manage Erosion and Accretion Changes in the Entrance Channel	Foreshore Erosion: Entrance Channel
EC2	Undertake small scale works (e.g. beach scraping, re-shaping etc) to maintain swimming areas.	Foreshore Erosion: Entrance Channel
EC3	Undertake emergency works or small scale no-regrets actions as required to mitigate known risks to property and public safety	Foreshore Erosion: Entrance Channel
EC4	Monitor changes to the entrance channel.	Foreshore Erosion: Entrance Channel
EC5	Monitor and maintain existing entrance channel infrastructure, with any works to be informed by EC1-EC2 and EC4.	Foreshore Erosion: Entrance Channel
EV1	Rehabilitate vegetation and manage public access along foreshores and banks of the Lake, its tidal tributaries, islands and broader low-lying areas.	Foreshore / bank erosion
EV2	Undertake targeted action to control damage to foreshore vegetation, including seagrasses	Foreshore / bank erosion
FB1	Undertake a bank condition assessment and determine and implement erosion control measures	Foreshore / bank erosion
FB2	Implement Environmentally Friendly Seawall Guidelines or similar for new and upgraded foreshore protection works	Foreshore / bank erosion
IR1	Update Asset Management Plans for all publicly owned and managed assets to clearly identify asset at risk from inundation over future timeframes, including tidal inundation	Coastal Inundation Tidal Inundation
IR2	Prepare a whole of Lake Foreshore Adaptation Plan for public (community and environmental) lands	Coastal Inundation Tidal Inundation
IR3	Incorporate tidal inundation mapping into strategic land use planning documents	Tidal Inundation
IR4	Undertake water level and condition monitoring for all lake inundation events	Coastal Inundation Tidal Inundation
IR5	Investigate novel solutions to manage inundation risks to assets such as stormwater, sewer, and water; cycleways, roads and bridges, etc	Coastal Inundation Tidal Inundation

Through the CMP, Wollongong and Shellharbour City Councils worked with the NSW Government to consider options to manage tidal changes and erosion in the Lake Illawarra entrance channel and surrounds (action EC1).

The Entrance Options Study

In November 2024, the University of NSW Water Research Laboratory (WRL) delivered the *Lake Illawarra Entrance Channel: Management Options Assessment* report. The study reported on five shortlisted options (from a previously investigated list of 50 options), their costs and expected trade-offs in implementation against a 'Leave as is' base case. This two-volume study is available for public viewing on both the Wollongong City Council and Shellharbour City Council websites.

The development and review of the final assessment was supported by a working group involving expert staff from the following agencies -

- Department of Housing, Planning and Infrastructure (Crown Lands)
- Department of Climate Change, Energy, the Environment and Water (DCCEEW)
- Transport for NSW
- Illawarra Local Aboriginal Land Council
- Department of Primary Industries and Regional Development (Fisheries)

All stakeholders and the wider community were invited to provide feedback on the options via a survey during an engagement period between Monday 18 November to Friday 20 December 2024. Respondents were asked to -

- Select the two entrance management options they most preferred.
- Rank the criteria that they valued most in considering an entrance management option.
- Comment on the five management options, considering their impacts on social, environmental and economic values like recreational safety, fish passage, flooding, boating access and cultural heritage.

The engagement identified the most significant values to the community provided by Lake Illawarra, options preferred by the community, why these options were preferred and alternative solutions for consideration. These alternative solutions had largely been considered during the life of the project and as part of the initial assessment of 50 options and had been discounted due to either technical efficacy and/or cost.

Windang Foreshore (Wollongong Council Only)

Since the permanent entrance opening, erosion along the Windang foreshore has occurred at an increasing rate in the entrance channel. In 2011, the LIA reported that the central channel had migrated 80 metres northward, resulting in deepening and scouring of the northern banks and threatening a range of assets. In 2012, a groyne field was constructed by the LIA to deflect tidal flows, and additional bank protection measures were constructed shortly after. Following the disbandment of the LIA in 2013, Crown Lands were made the managing authority for the entrance breakwalls and foreshore protection structures (LIA review 2013). Transport for NSW (TfNSW) is now the asset manager for the entrance breakwalls across NSW, however Crown Lands remains the asset manager for the foreshore protection structures, including the groynes.

Between 2008 and 2022, ongoing channel deepening has occurred along the northern channel foreshore at a rate of 0.35 metres/year, which has resulted in the collapse of jetty structures, a boardwalk, retaining walls and the Windang Foreshore playground.

Based on the findings of the *Lake Illawarra Entrance Channel: Management Options Assessment* report, community feedback and agency feedback, the following recommendations have been made.

- **Development of a Strategic Business Case** – it is proposed that both Councils write to the NSW Government requesting that the NSW Government resource and undertake a Strategic Business Case to deliver a long-term management solution for the Lake Illawarra entrance, with participation from both Wollongong and Shellharbour City Councils. The strategic business case is to consider Option 4 and Option 5, or variations thereof, against a 'Leave as is' base case scenario, in which no long-term entrance management option is implemented, and agencies continue to implement localised protection works to manage erosion on an as-needs basis. This approach has been proposed based on the following considerations -
    - Though Option 4 was preferred by the community, it has the most significant associated capital and ongoing costs, and no commitment of funding, ownership and maintenance responsibility provided by any State agency. There is risk that the option would not be deemed financially, legally (noting the governance and legislation changes highlighted in the previous section) or environmentally feasible in a Strategic Business Case, therefore a second option, Option 5, has been included, noting that this was the second most preferred option by the community.
    - It is acknowledged though that the capital and ongoing costs associated with Option 4 and 5 would need to consider infrastructure upgrades, management approaches and/or new technology to support water quality.

- **Delivery of Informing Studies** – Council has identified that further studies investigating flooding implications, ecological impacts, Aboriginal perspectives and cultural heritage are needed to support decision-making and approval pathways to progress implementation of any preferred option. Several investigations are already underway and funded through the Lake Illawarra CMP. The Lake Illawarra Floodplain Risk Management Study and Plan is also underway in accordance with State guidelines. The outcomes of these investigations would be provided to inform the Strategic Business Case and assessment of Option 4 and Option 5 against the 'Leave as is' scenario. Additional assessments are recommended to explore staged approaches for the two preferred options, as well as modelling of their impacts on water quality, however, it is proposed that these are progressed through the Strategic Business Case process.
- **Further Engagement with Communities** – during the engagement period, some respondents highlighted their desire for more thorough community consultation, more explanation of impacts of some of the options, and regular updates and opportunities for further feedback to maintain transparency around decision making. Both Councils propose to keep the community informed of progress and to ensure they have further opportunity to engage and provide feedback.
- **Windang Foreshore (Wollongong City Council Only)** – NSW Crown Lands had prepared a report investigating engineering options to stabilise the Windang Foreshore to hold its position over the next 20 years. A total of eight (8) potential bank stabilisation options were identified, noting that even with protective works the high tidal velocities and channel deepening will persist, impacting recreational safety, eventual undermining of the structure, and impacting both significant cultural sites and infrastructure assets. NSW Crown Lands has provided this report to Wollongong City Council, as the Crown Reserve Manager. Council will continue its independent feasibility of short-term and medium term works on the Windang foreshore, incorporating the information from the NSW Crown Lands report. The investigation will assess their technical viability, overall cost-effectiveness, required approvals, alignment with CMP objectives and delivery responsibilities (action EC3). The project is currently included in the draft Infrastructure Delivery Program and may include approaching the NSW Government seeking an expedited approval pathway for the implementation and funding of identified short and/or medium-term foreshore protection works.

CONSULTATION AND COMMUNICATION

Consultation has occurred with community members and stakeholders from Wollongong and Shellharbour Local Government Areas, representatives from Energy Australia who operate the Tallawarra Power Station, and agency representatives from TfNSW, DPIRD Fisheries, DCCEEW, DHPI Crown Lands and the Illawarra Local Aboriginal Lands Council (ILALC).

Community engagement on the study received a total of 367 submissions to an online survey of the options (Wollongong: 298, Shellharbour: 71) and 21 free-form submissions from a range of government organisations, businesses and individual community members (residents, visitors, lake users and other stakeholders). A detailed community engagement report has been included as an attachment to this report (Attachment 2).

The top priorities of respondents were -

- Maintaining water quality.
- Preventing erosion and shoreline damage.
- Supporting ecological health and fish migration.
- Ensuring recreational safety and access.

The two preferred management options were -

- Option 4: rock groynes with armoured bed – favoured for balancing erosion control, ecological health and water quality.
- Option 5: removing training walls with sand nourishment – supported for restoring natural tidal processes and promoting biodiversity.

Feedback from agency partners and the community expressed strong concerns around the associated costs, visual and environmental impact of weir options (options 1, 2 and 3), noting their potential impact to fish passage and fishing. Given this feedback, it is proposed that the next phase of investigations does not include further investigation of weir options (options 1, 2 and 3).

Many of the participants were interested in remaining updated, requesting more in-person sessions and regular updates regarding progress in implementing a long-term management option.

Aboriginal cultural values and feedback

Lake Illawarra is recognised as a highly significant cultural landscape, encompassing a wide range of overlapping cultural values. It has been a focal point of Aboriginal occupation, resource gathering, land use, and cultural practice for many thousands of years. The lake's water, flora and fauna, and both tangible and intangible cultural heritage are all interconnected elements of its cultural value. These connections reflect ongoing relationships with Country, identity, law, and cultural practice, and must be understood holistically.

Engagement with the Aboriginal community began in late 2023 and included individuals and organisations from both Wollongong City and Shellharbour City Council areas. Community members were informed of the project and the need to explore future management options for the lake entrance. Communication occurred through email, phone calls, face-to-face presentations, and meetings. Engagement continued through to the broader community phase, which commenced in November 2024.

A summary of key points raised throughout engagement includes the following:

- Lake Illawarra is a living cultural landscape – its significance extends beyond physical sites to include waters, species, and ongoing cultural responsibilities.
- All five entrance management options were considered to have varying degrees of positive and negative impact on the cultural values of the lake, requiring comprehensive assessment.
- Foreshore erosion, particularly along the culturally sensitive northern bank and the islands, is a priority concern. Immediate and long-term mitigation strategies will be required to prevent further damage to midden sites and other places of heritage significance.
- Any future works involving impacts to Aboriginal values will require an Aboriginal Cultural Heritage Assessment and an AHIP, should those impacts not be avoidable. This is applicable to direct and indirect impacts resulting from management activities. Aboriginal community have expressed that impacts to tangible Aboriginal cultural heritage should be minimised as much as possible.
- Option 5 was preferred by many in the community, due to its alignment with cultural values of restoration, healing Country, and re-establishing natural balance, and encouraging the return of species such as prawns and fish by restoring natural cycles.
- Ongoing consultation is essential. Management of Lake Illawarra's entrance is an issue of strong cultural interest to the local Aboriginal community, and continued dialogue will be necessary as the project progresses.

Recreational and community use of the entrance channel

Boating, fishing, swimming, kayaking and water sports are viewed as important community activities. Many community respondents expressed concerns about options that could limit boat access or disrupt recreational use of the channel. While options to maintain contemporary boating access to the ocean through the entrance were investigated, all were found to have significant safety risks, along with the 'Leave as is' scenario where increasing tidal velocities will create unsafe conditions over time. All management options will maintain and improve recreational amenity, access and boating safety in the western section of the channel and upstream, however navigation of the entrance by seacraft is a recent utility and cannot be prioritised over other management objectives.

The *Lake Illawarra Entrance Channel: Management Options Assessment* report findings, community and agency feedback and proposed next steps were discussed with Wollongong City Council Councillors on 31 March 2025 and their feedback has informed the recommendations of this report.

PLANNING AND POLICY IMPACT

This report contributes to the delivery of Our Wollongong Our Future 2032 Community Strategic Plan Objective 1 – "We value and protect our environment". It specifically delivers on the following -

Community Strategic Plan 2032	Delivery Program 2022-2026
Strategy	**Service**
1.2 Manage and effectively improve the cleanliness, health, biodiversity of land and water including creeks, lakes, waterways and oceans.	Environmental Services

FINANCIAL IMPLICATIONS

Both the Long- and Short-Term Entrance Management Options will have financial implications for Council and / or the State Government.

Long-Term Entrance Management Option – It is proposed that the NSW Government lead and fully-fund the delivery of the Strategic Business Case for the long-term entrance management option. This would also include both Wollongong and Shellharbour City Councils being funded for staff time that is allocated towards supporting delivery of this business case and any required supporting studies.

Short-Medium Term Options (**Wollongong City Council Only**) – Wollongong City Council has allocated a budget in the draft Infrastructure Delivery Program to continue its independent feasibility of short-term and medium term works on the Windang foreshore to assess their technical viability, overall cost-effectiveness, approval pathways, alignment with CMP objectives and delivery responsibilities.

CONCLUSION

This report identifies a proposed pathway to progress a long-term entrance management option for Lake Illawarra and Council's commitment to further investigations and development of short-medium term options for the Windang foreshore.

ECM Record Number: Document Set ID 26306526

ATTACHMENT 1 – PHOTO MONTAGE: ENTRANCE CHANNEL CHANGES 2004 – 2024

2004

2006

2008

2009

2010

2011

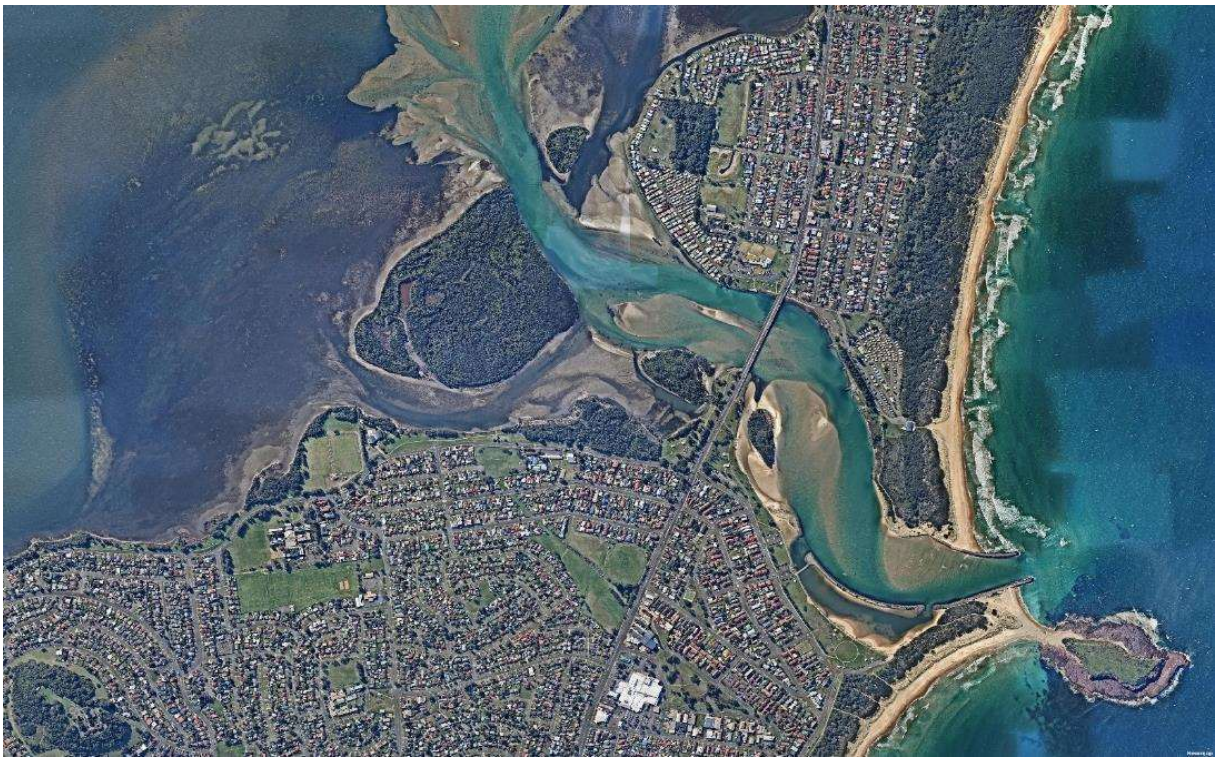
2012

2013

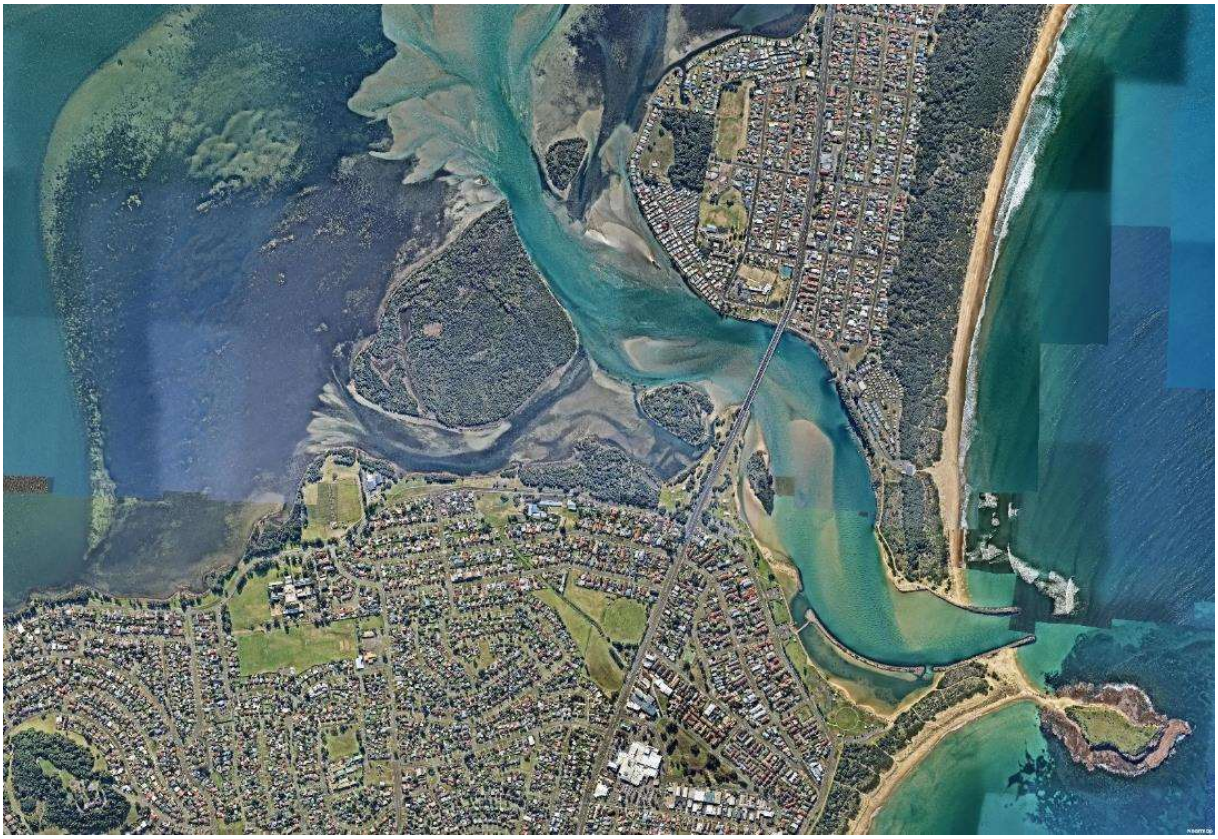
2014

2015

2016

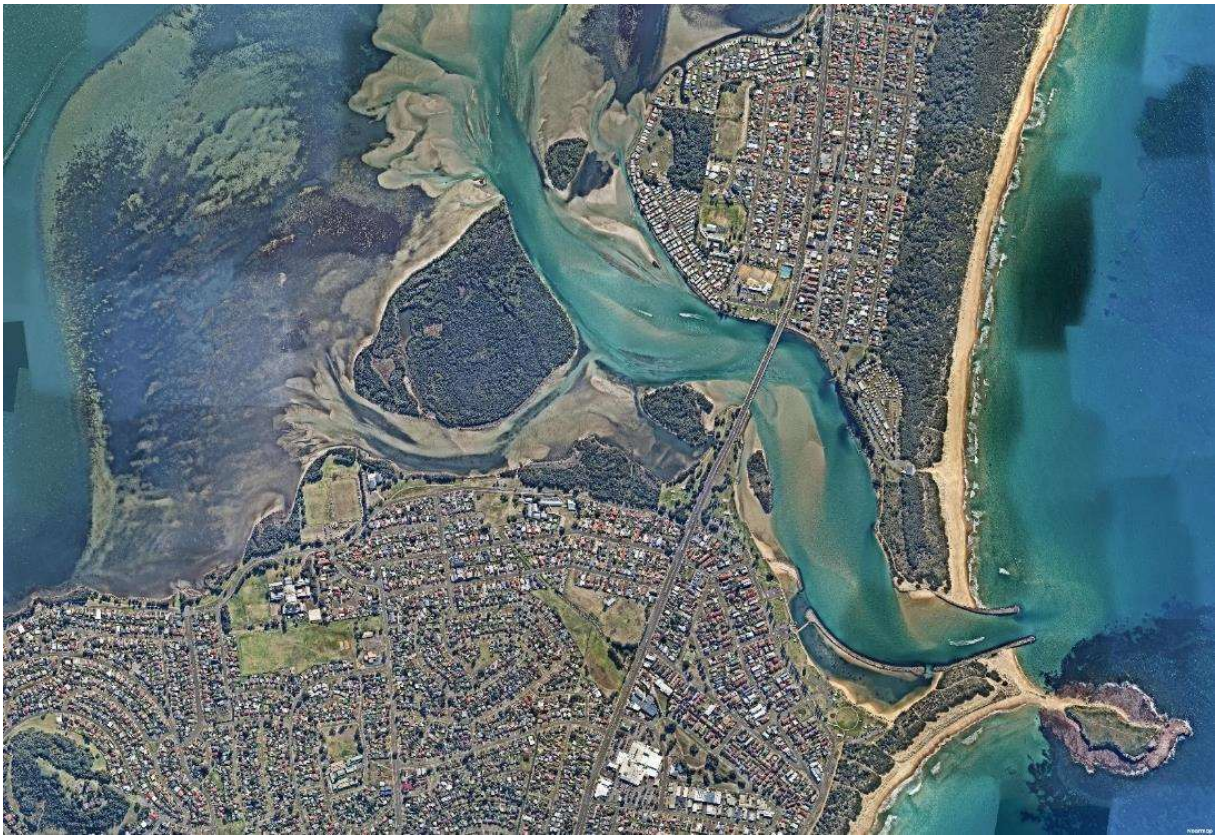


2017

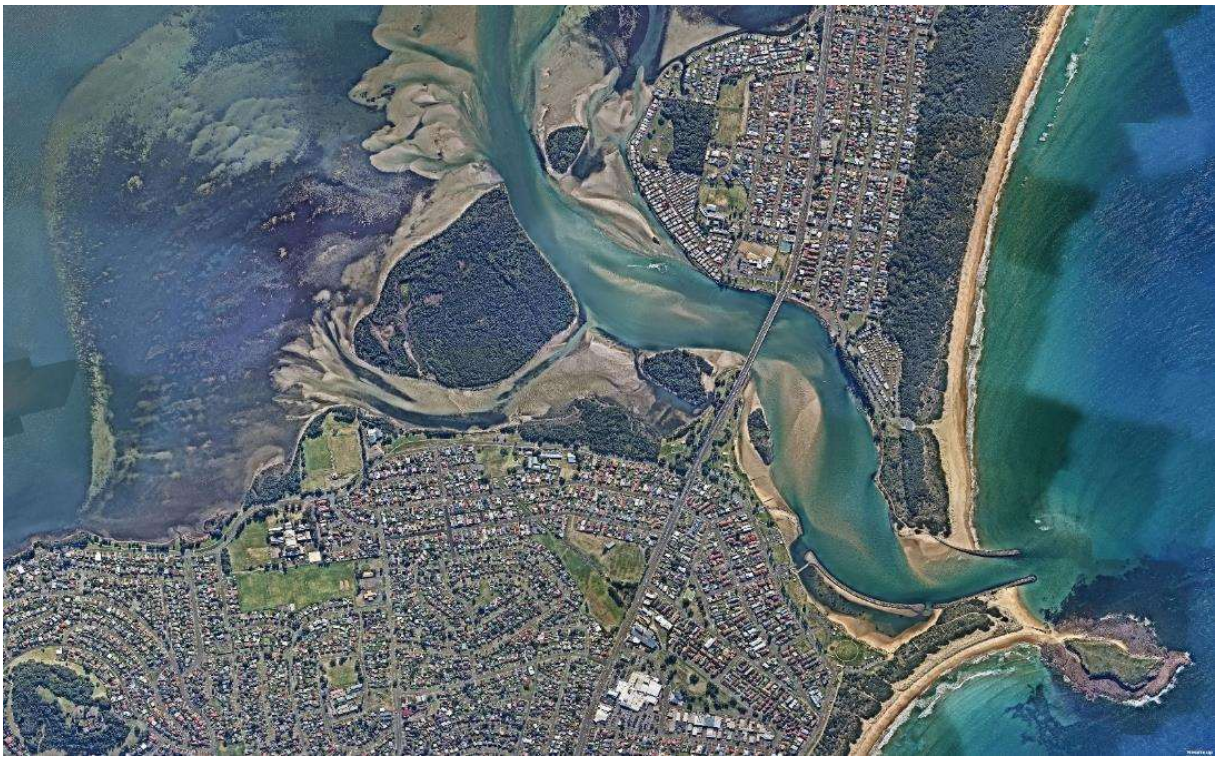


2018

2019

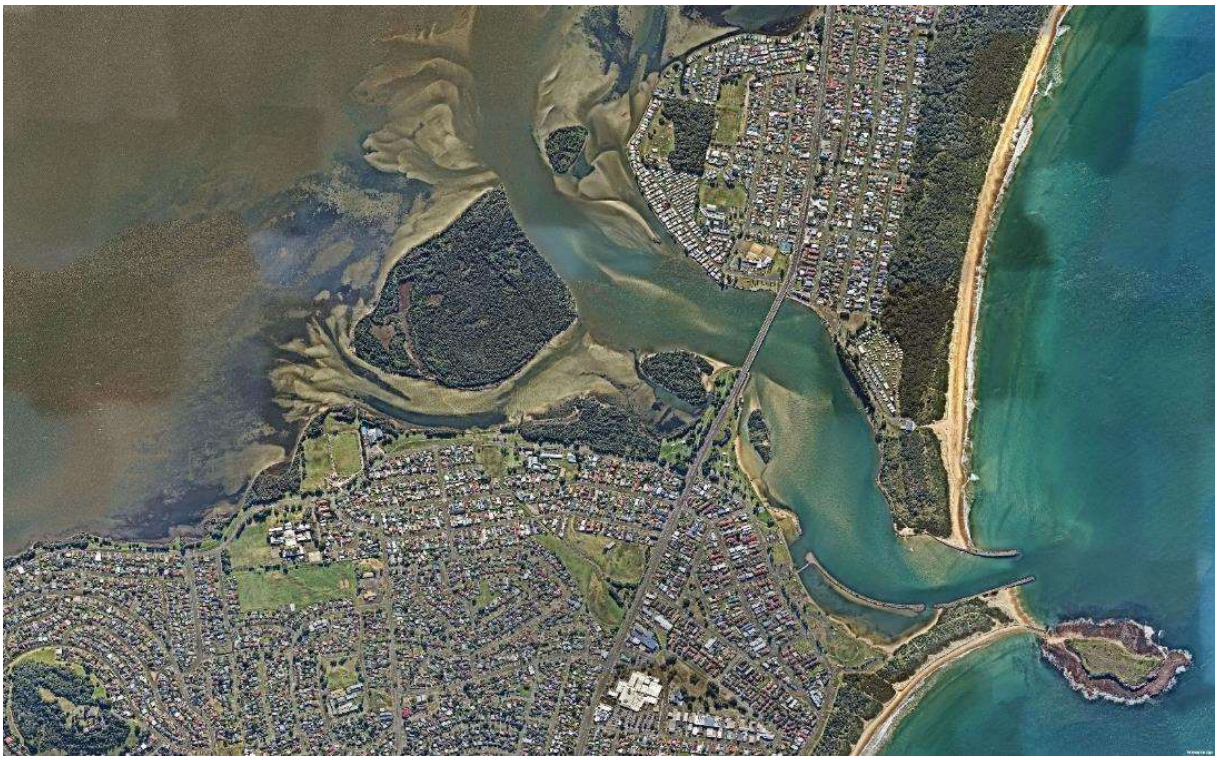


2020



2021

2022



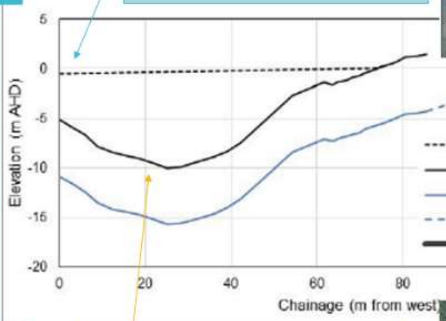
2023

2024

Above: Changes along the Windang foreshore observed in Nearmap Imagery from 2010 to 2023 (from Tucker, T A, Coghlan, I R and Carley, J T 2023, *Assessment of geomorphic changes, hydraulics and potential foreshore stabilisation options at Windang, Lake Illawarra*, WRL Technical Report 2023/08, UNSW Water Research Laboratory)

A report recently completed by NSW Crown Lands found that erosion along the Windang foreshore is occurring at the fastest rate of the entrance channel-erosion is driven by the main channel getting deeper and closer to the foreshore and with strong currents

Where mud flats once where near to the Windang foreshore playground



We now have a 10 m deep raging channel

Shellharbour CITY COUNCIL

wollongong city of innovation

Engagement Report

Options for the Lake Illawarra Entrance

May 2025

Table of Contents

The information in this report is based on data collected from community members who chose to be involved in engagement activities and therefore should not be considered representative.

This report is intended to provide a high-level analysis of the most prominent themes and issues. While it's not possible to include all the details of feedback we received, feedback that was relevant to the project has been provided to technical experts for review and consideration.

The analysis of engagement results was assisted by the use of AI technology using de-identified data. All data had been reviewed and de-identified by staff before being input into AI.

Executive Summary

About the project

Wollongong and Shellharbour City Councils sought to gather feedback from the community from 18 November to 20 December 2024 regarding options for managing Lake Illawarra's entrance. The engagement aimed to hear from a wide range of residents, visitors, lake users and stakeholders to find an option that best balances the uses and values of Lake Illawarra.

Engagement Overview

Participation:

- Online surveys: 367 responses (Wollongong: 298, Shellharbour: 71).
- Community drop-in sessions: ~160 attendees (80 per session).
- 21 formal submissions via email from both community members and agencies.

Key findings

Top priorities:

- Maintaining water quality
- Preventing erosion and shoreline damage
- Supporting ecological health and fish migration
- Ensuring recreational safety and access.

Preferred management options:

- Option 4: rock groynes with armoured bed – favoured for balancing erosion control, ecological health and water quality.
- Option 5: removing training walls with sand nourishment – supported for restoring natural tidal processes and promoting biodiversity.

Common concerns:

- Restricted tidal flow leading to stagnant water and flooding risks.
- Potential ecological disruption and habitat loss from structural interventions.
- Costs and maintenance challenges of mechanical solutions like adjustable gates.

Themes and suggestions:

- Environmental concerns: strong preference for solutions that preserve biodiversity, support fish migration and enhance water quality.
- Recreational use: maintaining access for boating, fishing and other activities is crucial.
- Community sentiment: requests for transparent decision-making and improved communication
- Areas of interest: suggestions included dredging and focus on reinforcing erosion-prone areas

Next Steps

Feedback heard from the community will now be considered by the project teams from both Wollongong City Council and Shellharbour City Council. All the responses will be reviewed in detail so that recommendations can be made for managing Lake Illawarra's entrance in the future.

Background

In 2007, Lake Illawarra was permanently opened by building training walls where the lake meets the ocean (the entrance) by the former Lake Illawarra Authority. This was done to address several issues including water quality, odour and algal blooms. The permanent opening of the channel has led to some improvement in water quality but has created significant and unintended changes to the lake and its entrance channel.

In 2020, Shellharbour and Wollongong Council created a Coastal Management Program (CMP) for Lake Illawarra to coordinate its management among stakeholders. Through strategic direction and actions, the CMP aims to address threats to the lake's value and sustainability. The Lake Illawarra Entrance Options Study is an action under the 'Manage the Entrance Channel (EC) ' strategy, one of nine management strategies identified.

The Lake Illawarra Entrance Options Study is looking at options for managing the lake entrance and parts of the foreshore within the entrance channel that are actively eroding. The study is considering a range of environmental, social, economic and cultural perspectives. The UNSW Water Research Laboratory (WRL) are the expert consultants doing the study.

The engagement between the 18 November to 20 December 2024 aimed to hear from a wide range of residents, visitors, lake users and stakeholders to find an option that best balances uses and values of Lake Illawarra. It was a joint engagement project between Wollongong City Council and Shellharbour City Council. The community was provided the opportunity to share what is important to them about the lake and leave feedback about the specific management options.

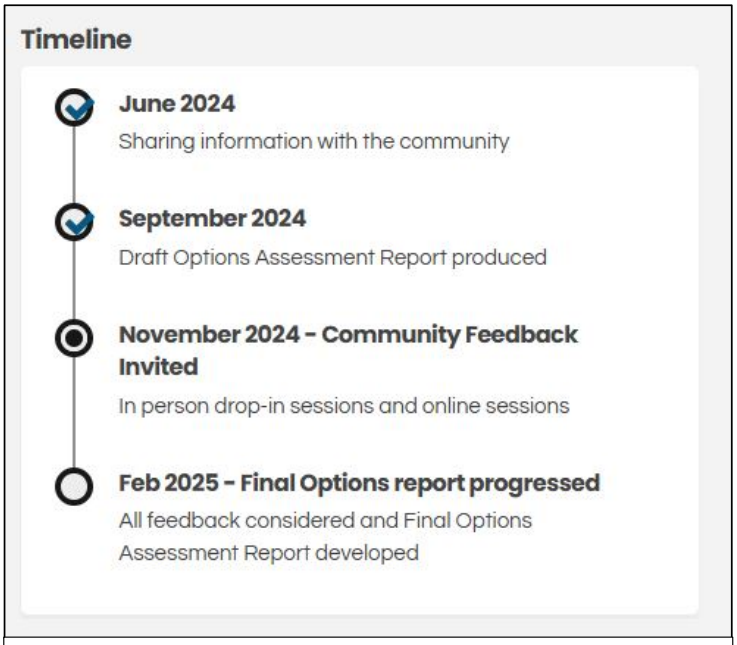
Stakeholders

Stakeholders identified prior to the start of the engagement period included:

- The general community of both Wollongong and Shellharbour Councils.
- Community members with a registered interest in managing Lake Illawarra’s entrance.
- Businesses and organisations operating nearby Lake Illawarra.
- Community action groups and Neighbourhood Forums.
- Aboriginal Community and Organisations.
- NSW State Government and other relevant Government organisations.

Communication Methods

The communities in both Wollongong and Shellharbour Councils were notified about the Lake Illawarra Entrance Options Study in June 2024. Information went live on both the Our Wollongong and Let's Chat Shellharbour websites that gave information about the study, the estimated timeframe for community engagement, and offered an opportunity for people to sign up for updates.



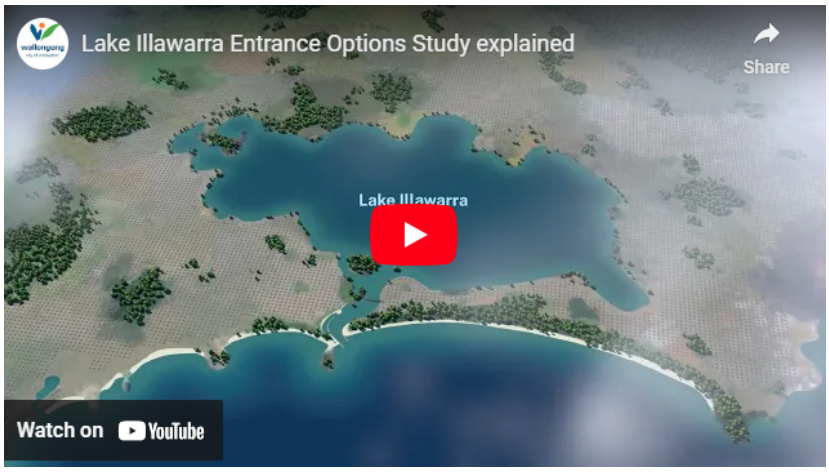
Timeframe displayed on the Our Wollongong website for the announcement to the Lake Illawarra Entrance Options Study project in

From this announcement in June, the communication materials were created and adjusted based on some of the questions asked by the community. There were social posts, face-to-face events, and customer enquiries that were all analysed by the project owner to understand what questions the community had. These questions formed the basis of communication material that was made available for the community during the engagement period in November 2024.

From the live date of the 18 November, the project was communicated in the following ways:

- Emails to key stakeholders
- E-newsletters
- On-site signage
- Media releases
- Social media
- External news articles
- Radio announcements
- Newspaper
- Local television channels

The YouTube video that was created to inform the community of the project and outline the five proposed options has had over 1.8k views as of January 2025. There are currently 8 comments on the video.



Some indications of the project reach included:

	Wollongong City Council	Shellharbour City Council
Engagement website visits	4.5k	1.5k
Facebook – 18 November	4, 340 reached	9,425 reached
LinkedIn – 18 November	1, 438 impressions	No posts
Instagram	3, 914 reached	1,124 reached

Adjustments to the communication material continued throughout the engagement period of November – December. This included online posts and resources. For example, common questions were recorded at the face-to-face sessions at both Wollongong and Shellharbour. From there, the project leads created additional ‘Frequently Asked Questions’ to further aid our community’s understanding of the project.

Communication Pieces on Lake Illawarra Entrance Options Study Engagement Project

Shellharbour City Council
19 November 2024 ·

Lake Illawarra is an incredibly important natural asset that means a lot to our local community and visitors alike.

The manual opening of the Lake in 2007, by the former Lake Illawarra Authority improved the water quality, but it has also caused erosion issues around the lake entrance and foreshore. We've been working with City of Wollongong and NSW Government on the Lake Illawarra Entrance Options Study, looking at ways to manage these impacts.

Unfortunately, there are no quick fixes to manage the erosion, but there are five options being considered and now is the time for you to learn more and get involved in the decision-making process.

To learn more, visit our website, or attend a drop-in session and chat to the project team at:
🔷 Friday 29 November (1 - 3pm) at Warilla Barrack Heights Surf Club
🔷 Saturday 30 November (10.30am - 12.30pm) at Windang Senior Citizens Centre
🔷 Wednesday 4 December (1 & 5pm) online.

More information 👉 http://www.letschatshellharbour.com/lake-illawarra...

Water you waiting for? Have your say on Lake Illawarra entrance options

Thursday 12 December 2024

It's been three weeks since we invited the community to review and provide

Five ways Wollongong, Shellharbour councils could fix Lake Illawarra's erosion problem

By Glen Humphries
Updated November 18 2024 - 1:20pm, first published 10:35am

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Wollongong Lord Mayor Tania Brown and Shellharbour Mayor Chris Homer at Lake Illawarra for the launch of community feedback on five options to deal with the lake opening. Picture by Robert Peet

City of Wollongong
18 November 2024 ·

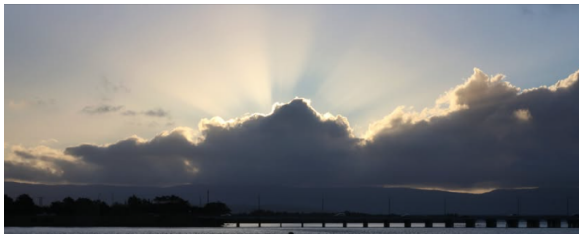
We love Lake Illawarra. The lake means many things to many people, from fishing and recreation to a place that holds great cultural significance.

At the same time, the legacy of the then Lake Illawarra Authority's decision to manually open the lake in 2007 has caused significant erosion issues. We've been working with Shellharbour City Council and the NSW Government on a project called the Lake Illawarra Entrance Options Study. Its purpose is to look at options to manage erosion caused by the lake's manual opening.

We're now asking our community to give feedback on five options that will reduce the impact of erosion. It's important to understand that there are no simple solutions. The management of the lake is complex and any major work to manage erosion at the entrance will have an impact on either the community, the environment, tourism or recreation. It's a matter of trade-off and one we're not undertaking lightly.

This is the time to learn more about the five options being considered and get involved in the decision-making process. To learn more, visit our website, or attend a drop-in session and chat to the project team at:
➡ Friday 29 November (1-3pm) at Warilla Barrack Heights Surf Club
➡ Saturday 30 November (10.30am-12.30pm) at Windang Senior Citizens Centre
➡ Wednesday 4 December (1 and 5pm) online.

More information: https://our.wollongong.nsw.gov.au/lake-illawarra-entrance...



Engagement Methods

Each Council recorded feedback from the community and State Agencies in the following ways:

- Survey on the Our Wollongong website for Wollongong City Council residents.
- Survey on the Let's Chat website for Shellharbour City Council residents.
- Hard copy surveys collected from libraries in Wollongong and Shellharbour.
- Hard-copy surveys and additional notes collected at the community drop-in sessions on 29 November and 30 November 2024.
- Face-to-face conversations.
- Submissions from both community members and State Agencies via email.

Engagement Participation

Engagement activity	Participation
Survey participation	
• Wollongong City Council	298
• Shellharbour City Council	71
Submissions from community members / groups	17
Submissions from Government agencies / organisations	4
Community drop-in sessions attendance	
• Wollongong City Council	~80
• Shellharbour City Council	~80
Online information session (both 1pm and 5pm)	~15

Results

Feedback from the Survey

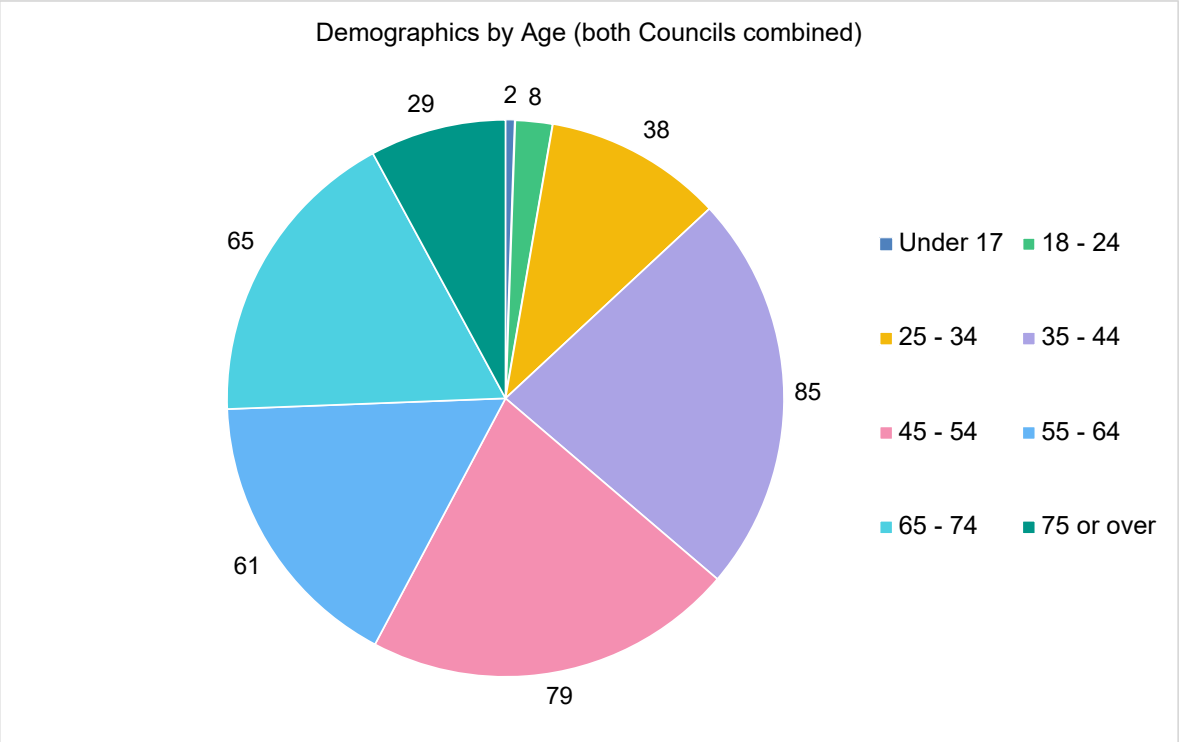
All stakeholders and the wider community were invited to provide feedback via a survey on the Lake Illawarra Entrance Options Study project during the engagement period between Monday 18 November to Friday 20 December 2024. The survey was hosted on:

- Our Wollongong – our.wollongong.nsw.gov.au
- Let's Chat Shellharbour - letschatshellharbour.com

Participation in the survey

Wollongong	Shellharbour
298	71

Survey Demographics



Postcode data

Response Number	Postcode	Suburbs
3	2533	Bombo, Curramore, Jamberoo, Jerrara, Kiama, Kiama Downs, Kiama Heights, Minnamurra, Saddleback Mountain
45	2530	Avondale, Brownsville, Cleveland, Dapto, Dombarton, Haywards Bay, Horesley, Huntley, Kanahooka, Koonawarra, Marshall Mount, Wongawilli, Yallah
74	2529	Blackbutt, Dunmore, Flinders, Oak Flats, Shell Cove, Shellharbour, Shellharbour City Centre.
159	2528	Barrack Heights, Barrack Point, Lake Illawarra, Mount Warrigal, Warilla, Windang
19	2527	Albion Park, Albion Park Rail, Calderwood, Croom, Tongarra, Tullimbar, Yellow Rock Ridge
17	2526	Cordeaux, Cordeaux Heights, Farmborough Heights, Kembla Grange, Kembla Heights, Mount Kembla, Unanderra, Stream Hill
2	2525	Figtree
6	2519	Balgownie, Fairy Meadow, Fernhill, Mount Ousley, Mount Pleasant
6	2518	Bellambi, Corrimal, Corrimal East, East Corrimal, Tarrawanna, Towradgi
3	2517	Russel Vale, Woonona, Woonona East
3	2515	Austinmer, Clifton, Coledale, Scarborough, Thirroul, Wombarra
3	2508	Coalcliff, Darkes Forest, Helensburgh, Lilyvale, Maddens Plains, Otford, Stanwell Park, Stanwell Tops, Woronora Dam
6	2506	Berkley
4	2505	Port Kembla
32	2502	Cringila, Lake Heights, Primbee, Warrawong
14	2500	Coniston, Gwynneville, Keiraville, Mangerton, Mount Keira, Mount Saint Thomas, North Wollongong, Spring Hill, West Wollongong, Wollongong, Wollongong DC, Wollongong West
1	2262	Blue Haven, Budgewoi, Buff Point, Colongra, Doyalson, Halekulani, San Remo
1	2190	Chullora, Greenacre, Mount Lewis
1	2105	Church Point, Elvina Bay, Lovett Bay, McCarrs Creek, Morning Bay, Scotland Island

Survey Responses

Question 1: Please rank the criteria from 1-8 in terms of what is most valuable to you about the lake (1 being the most valuable and 8 being the least valuable)

Response numbers were:

- Wollongong – 289

Most valued ↑ / Least Valued ↓	Criteria	Wollongong City Council
	Water quality	2.45
	Lake tidal range and foreshore erosion	3.98
	Fish passage	4.1
	Flora and fauna	4.66
	Recreational safety	5.17
	Flooding from catchment / rainfall	5.27
	Flooding from coastal storms	5.45
	Boating access	5.88
	Cultural values and heritage	6.52

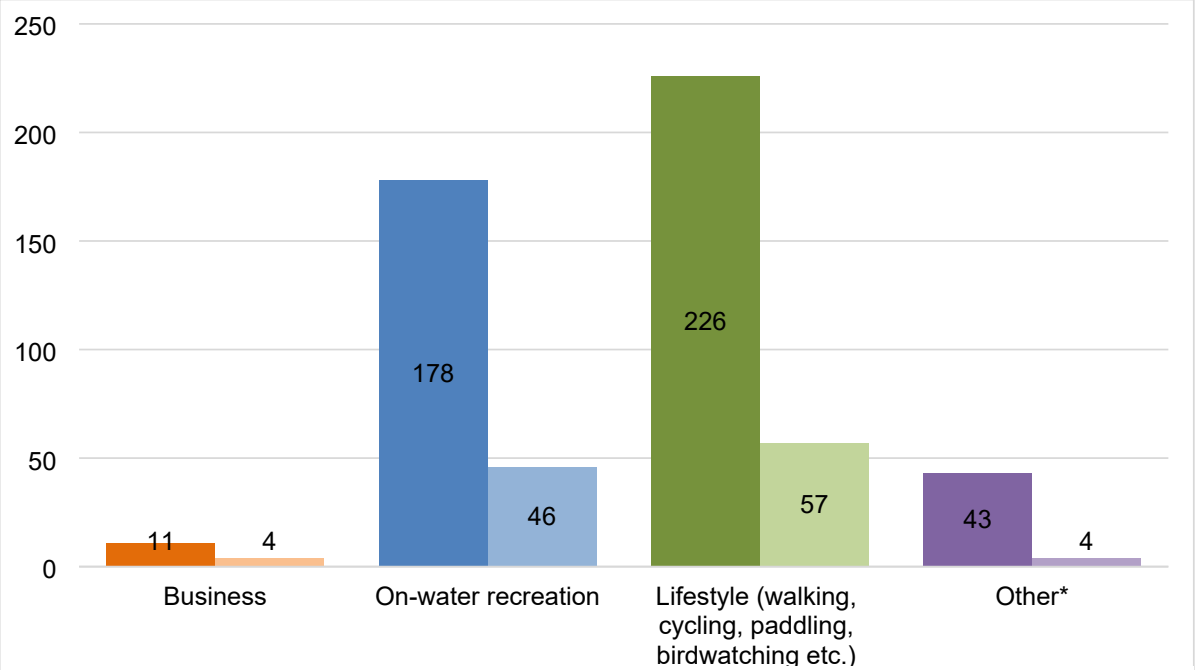
There were 9 people from Wollongong City Council didn't respond to this question.

- Shellharbour – 67

Most valued ↑ / Least Valued ↓	Criteria	Shellharbour City Council
	Water quality	2.21
	Fish passage	4.08
	Lake tidal range and foreshore erosion	4.1
	Flora and fauna	4.77
	Recreational safety	4.81
	Flooding from catchment / rainfall	4.91
	Flooding from coastal storms	5.47
	Boating access	6.13
	Cultural values and heritage	6.87

There was 4 people from Shellharbour City Council didn't respond to this question.

Question 2: How do you currently use the lake? (Select all that apply)

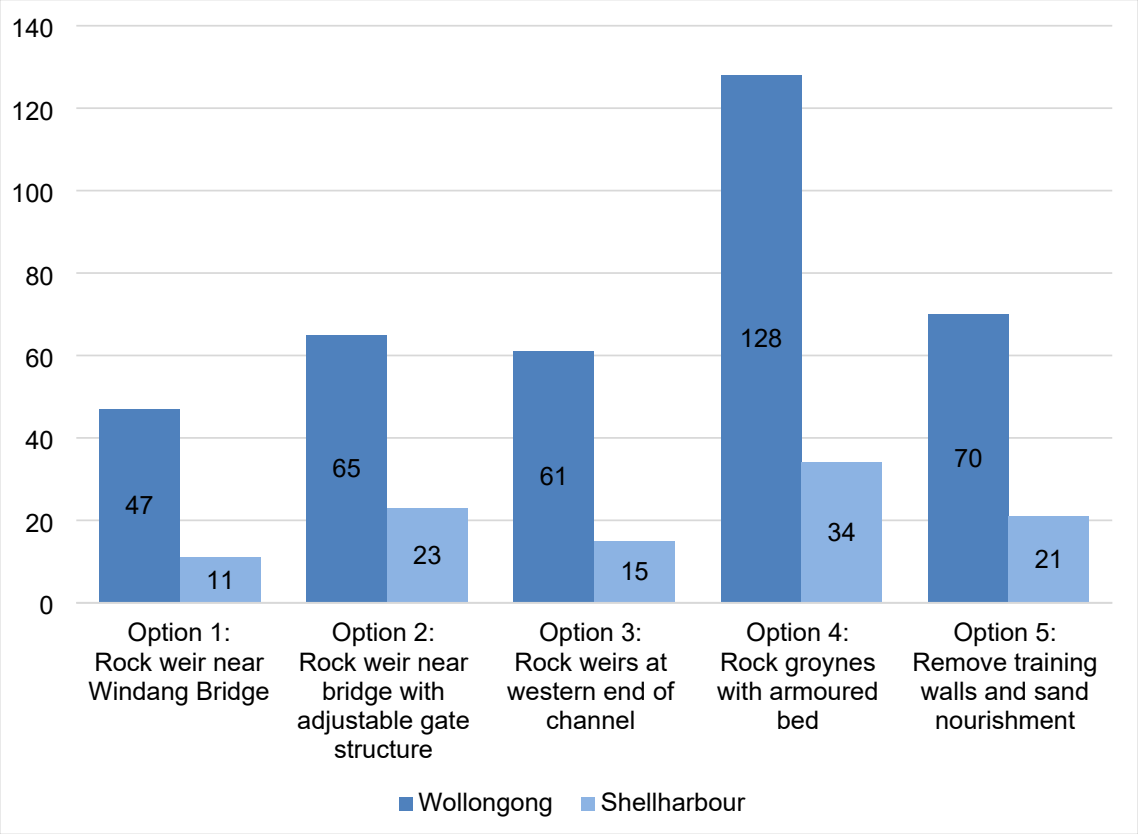


Key: Wollongong data is in the left bar and Shellharbour data is in the right bar for each option

Other* responses:

- Fishing and prawning, land-based fishing and sports fishing.
- Water recreation like boating, kayaking, stand-up paddleboarding, jet skiing, snorkelling and swimming.
- Family activities, taking kids to the beach, picnics and playgrounds.
- Nature appreciation, photography, walking, exercising and enjoying the lake's scenic beauty.
- Cultural and environmental value, recognition of the lake as a significant natural and cultural ecosystem, with bush regeneration and restoration activities.
- Living near the lake, properties backing onto or near the lake provide daily engagement with its beauty and environmental concerns.
- Mental and physical health, people value the lake for relaxation, exercise and connection to nature, with some emphasising its importance for well-being.
- Community and cultural connection, engagement in Bushcare and recognition of the lake's Aboriginal significance.

Question 3: Select the 2 entrance management options which you most prefer



Non-responses

The maximum number of responses to this survey between both Councils was 369. It is important to note that just over 20 percent of people chose to not respond to this question. The number of people who skipped the question of selecting 2 entrance management options prefered for managing Lake Illawarra's Entrance was:

- 60 respondents from Wollongong City Council
- 18 respondents from Shellharbour City Council

This can provide additional context for some of the responses summarised in Question 5 when respondents were asked 'If none of these options are preferred, can you tell us why?'

Question 4: Why did you select these as your preferred options?

Respondents of the survey were given the opportunity to explain why they had selected their preferred options for managing Lake Illawarra's entrance. From the max total of 369 total survey responses, 290 people chose to respond to this question.

It was found that:

- Option 4: rock groynes with armoured bed – most popular choice due to its balance between environmental protection and recreational use.
- Option 5: remove training walls and sand nourishment – strongly supported for restoring natural conditions.
- Option 2: rock weir near bridge with adjustable gate structure – valued for its flexibility in water flow control.
- Option 3: rock weirs at western end of channel – chosen for balancing access and environmental impact.
- Option 1: rock weir near Windang bridge – less commonly selected but appreciated for minimising drastic changes.

From Wollongong, 233 people gave feedback to this question however 23 of those explained they did not like any of the options proposed. Similarly, from Shellharbour, 57 people gave feedback to this question however 9 of those explained they did not like any of the proposed 5 options. Majority of these people then gave additional questions to the next question.

Key themes

When asked to give reasons why they made these 2 selections, some key themes emerged across all the feedback. These include:

- **Water quality and tidal flow:** the community stress the importance of maintaining water quality. There are concerns about stagnation, odour and ecological degradation if tidal flow is restricted. This is a dominant theme, especially for favouring Option 4 and opposing Option 5.
- **Flood management:** people's preference for solutions are commonly around preventing flooding in surrounding areas. This is a common concern for all options, especially discussing Option 2.
- **Environmental sustainability:** desire for natural or minimally intrusive solutions supporting fish migration, prawns and other marine life is strong. This is frequently cited, particularly when elaborating on responses related to Options 4 and 5.
- **Recreational and community use:** emphasis is made for maintaining safe access for boating, fishing and swimming. This is common across responses, especially for Options 3 and 4.
- **Erosion control:** concerns about shoreline protection and infrastructure integrity, including Windang Bridge is widespread.
- **Cost and maintenance:** there is interest in cost-effective and low-maintenance solutions to avoid ongoing financial burdens.
- **Preference for natural processes:** support is clear for restoring the lake to its natural state, aligning with environmental and cultural values. This is strongly associated with Option 5.

Commentary on each option

It is important to note that whilst some people chose their option because they are supportive of what was proposed, others selected their option because they strongly oppose some of the other options. Therefore, this section of the report has described the justification for people's choice of each option in two parts:

1. Reason for being the preferred option.
2. Concerns.

This is so the concerns expressed about an option not preferred is captured in the feedback from the survey. Justification for each specific option is outlined beneath the five options. They have been ordered in their popularity.

Option 4: Rock groynes with armoured bed

Reason for being the preferred option:

- Highly favoured for slowing down strong tidal flows, reducing erosion and improving safety for water activities.
- Allows for fish migration, positive ecological health and good water quality while stabilising water flow.
- Recognised for its ability to protect shorelines and infrastructure from erosion.
- Maintains boating and fishing access while slowing currents.
- Considered a cost-effective, long-term solution.

Concerns:

- Some viewed the structure as potentially unattractive or intrusive, being an "eyesore" for the lake.
- A few respondents mentioned the need for maintenance due to potential undercutting and erosion of the groynes.

Option 5: Remove training wall and sand nourishment

Reason for being the preferred option:

- Strong support for returning the lake to its natural state, aligning with ecological and cultural values.
- Believed to encourage the return of species such as prawns and fish by restoring natural cycles.
- Seen as the most ecologically sensitive and sustainable option, promoting biodiversity and restoring natural tidal processes.
- Avoids the costs and risks associated with ongoing engineered solutions.
- Recognised as culturally sensitive and environmentally responsible.

Concerns:

- Worries about increased flooding, poor water quality and odour if the lake periodically closes.
- Concerns that natural processes alone may not adequately manage erosion or water quality without occasional human intervention.
- Fear of reverting to historical issues such as poor water quality, algal blooms and unpleasant odours.

Option 2: Rock weir near bridge with adjustable gate

Reason for being the preferred option:

- The adjustable gate allows control over water levels, aiding in flood prevention and water quality management.
- Tidal flushing can be managed to prevent stagnation and reduce odour.
- Offers controlled water movement, reducing erosion and supporting fish migration.
- Ability to release water during emergencies like heavy rainfall or flooding.

Concerns:

- Concerns about ongoing maintenance, operational complexity and potential mechanical failures.
- Some noted possible liability and operational risks tied to managing the gate system.

Option 3: Rock weirs at western end of channel

Reason for being the preferred option:

- Seen as minimally disruptive to public spaces while still allowing for some water movement.
- Allows natural overflow during high tides, potentially reducing flood risk.
- Aims to maintain acceptable water quality through controlled tidal exchange.
- Permits boat access to the ocean, supporting local recreational activities.

Concerns:

- Unclear how effective this option would be in managing swimming areas and overall water quality.
- Risk of erosion if the weirs do not adequately control water flow.

Option 1: Rock weir near Windang Bridge

Reason for being the preferred option:

- Seen as a lower-cost option for construction and ongoing maintenance.
- Preferred for its discreet placement near or under the bridge, reducing visual disruption.
- Selected for its ability to maintain some tidal exchange, which helps prevent water stagnation and odour issues.
- Viewed as capable of reducing flood risks by allowing controlled water overflow during heavy rainfall.
- Favoured for having minimal impact on boating and fishing activities.

Concerns:

- Some felt this option offered less control over tidal movements compared to other options.
- There were worries about erosion if water flow isn't adequately managed.

Question 5: If none of these options are preferred, can you tell us why?

There was a total of 161 people that responded to this question. 122 respondents were from Wollongong City Council and 39 respondents were from Shellharbour City Council. This can provide additional context for some of the responses summarised in this question.

Despite 78 people choosing not to respond to the survey with their two prefered entrance management options in Question 3, there was 161 people that responded to this question. This can allude to the fact that although people were willing to choose options, it did not necessarily mean they were were completely satisfied with the proposed options. This is important to consider that whilst people chose options, they did continue to raise concerns about the situation. Their feedback has been summarised below.

Water quality concerns

- Many respondents are fearful that restricting tidal flow will lead to stagnant water, algal blooms and unpleasant odours, similar to conditions before the lake was permanently opened.
- Reduced tidal flushing is seen as harmful to fish migration, seagrass beds and overall biodiversity. Concerns are raised that options involving weirs or barriers could damage the lake's delicate ecological balance.
- Respondents believe water quality should be the top priority, outweighing erosion concerns at the lake entrance.

Increased flooding risk

- Many are apprehensive that limiting water flow will lead to more frequent and severe flooding, particularly during heavy rainfall. Historical flooding before the lake's permanent opening is cited as evidence.
- There are frustrations over the lack of clear flood modelling in the proposals, with respondents demanding more detailed analysis of how each option would manage floodwaters.
- Some residents threaten legal action if future flooding damaged properties due to poor management decisions.

Impact on recreation and community use

- All options are criticised for limiting or blocking boat access between the lake and the ocean, harming recreational boating, fishing and water sports.
- Reduced water quality and restricted access are seen as detrimental to tourism and local businesses that rely on the lake for economic activity.
- Options 1 – 4 would create substantial safety risk within the entrance through increased turbulence and velocities within a heavily utilised recreational area.
- Community was not supportive of disconnecting the two sides of the entrance channel.

Ecological and legislative concerns

- Several respondents highlight that the options may breach the Fisheries Management Act, particularly regarding the need to maintain ecosystem function and fish migration pathways.
- Barriers are viewed as obstructing the migration of fish and crustaceans, potentially leading to population declines of species like prawns, bream and mullet.

Preference for natural and minimal intervention approaches

- Many advocate for minimal intervention, preferring to let natural tidal processes manage erosion and water quality.
- Respondents are sceptical of mechanical solutions like adjustable gates and weirs, viewing them as expensive, high maintenance and prone to failure.
- The prospect of hard infrastructure like a weir was unfavoured due to is separation of the channel and barrier it would create in the lake.
- Alternative solutions suggested:
  - Reinforcing erosion-prone areas with rock walls or sheet piling.
  - Dredging the lake to improve depth and tidal flow.
  - Creating a second entrance to balance water flow, particularly near Warrawong/Primbee.
  - Extending the existing training walls to better manage tidal velocity.

Cost, maintenance, and practicality concerns

- Many saw the proposed options as expensive short-term fixes that fail to address long-term issues.
- Mechanical and structural solutions are viewed as costly to maintain and potentially unreliable.
- Some felt the options were chosen because they are cheaper, rather than because they are effective or sustainable.

Distrust in consultation and decision-making

- Respondents criticise the consultation process, saying there was not enough information about environmental impacts, costs and flood management.
- There are requests for more thorough community consultation, including input from local experts, commercial fishers and long-term residents.
- Previous infrastructure choices, such as the Windang Bridge design, are blamed for current erosion, leading to distrust in the proposed solutions.

Erosion management concerns

- Many support addressing erosion directly with targeted solutions, such as rock armouring around the bridge and vulnerable banks.
- Broad interventions like weirs and groynes are viewed as excessive and potentially harmful, while failing to effectively address local erosion.
- Suggestions include adopting successful strategies from places like Shell Cove, Ulladulla and Batemans Bay.

Summary of community preferences

- Most respondents reject solutions that reduce tidal exchange due to concerns about water quality, flooding and ecological health.
- Localised solutions such as reinforcing the foreshore and bridge structures are favoured over large-scale interventions.
- Mechanical gates and complex structures are broadly criticised for being expensive, unreliable and their high maintenance requirements.
- Many advocate for working with natural processes, improving stormwater management and exploring softer, more adaptable solutions.

Question 6: If you have any further comments, please provide them here.

Approximately half of respondents chose to leave further comments. Some people chose to elaborate on their responses from previous questions whilst others offered suggestions for Council to consider or investigate.

Water quality and ecological health

- Many community members highlight the significant improvement in water quality since the lake's permanent opening. There are widespread concerns that reducing tidal flow would lead to stagnant water, algal blooms, foul odours and decreased salinity.
- Protecting fish and crustacean migration is reported as a priority. Respondents stress the importance of preserving seagrass, marine habitats and biodiversity, with strong opposition to barriers that would restrict natural water movement.
- Options involving weirs are largely opposed due to their potential to disrupt tidal flushing, harm marine ecosystems and worsen water quality.

Flood risk and tidal flow management

- Reducing tidal flow raises fears of increased flooding, particularly during heavy rainfall. Many cite past flooding events before the lake entrance was permanently opened as evidence of this risk.
- Some respondents see value in adjustable solutions (like Option 2) to manage water levels during floods but express doubts about their effectiveness and high maintenance costs.
- Suggestions include widening the existing entrance, reopening a second entrance at Primbee/Warrawong and strategic dredging to manage tidal flow and reduce erosion without significantly altering water movement.

Erosion and infrastructure protection

- Erosion around Windang Bridge and the foreshore is a common concern. Suggestions to mitigate this include armouring bridge pylons, reinforcing banks with rock walls, or using sheet piling to prevent further damage.
- The narrowing of water flow due to the Windang Bridge construction and backfill of channels is seen as a major contributor to current erosion. Many urge addressing these past mistakes rather than introducing new barriers.
- Targeted erosion control measures are favoured over large-scale interventions that could negatively impact the entire lake system.

Recreational use and community impact

- Boating, fishing, swimming, kayaking and water sports are vital community activities. Many oppose options that could limit boat access, introduce safety risks, or disrupt recreational use.
- The lake is seen as a major asset for local businesses and tourism. There is widespread fear that changes reducing access or degrading water quality would harm the local economy and community wellbeing.
- While fast tidal flows pose safety risks for watercraft, respondents prefer managing this through better infrastructure rather than restricting access.

Cost, maintenance and practicality

- Mechanical solutions like adjustable gates are criticised for their high construction and ongoing maintenance costs, as well as the potential for failure over time.
- Simpler, lower-cost solutions—such as reinforcing erosion-prone areas, dredging, or using natural processes are generally preferred for their long-term affordability.
- Many questioned whether the proposed options are realistic or sufficiently researched, expressing distrust in expensive engineering solutions with uncertain outcomes.

Preference for natural processes

- A significant portion of respondents support allowing the lake to function naturally, with minimal human intervention. Some back Option 5 (removing the training walls) to restore the lake's natural state but acknowledge the need for careful management.
- Many view large-scale, engineered interventions as unnatural and unsustainable. There is a clear preference for working with natural processes rather than against them.

Suggestions for alternative solutions

- A popular suggestion is reopening or creating a second entrance (eg at Primbee/Warrawong) to better distribute tidal flow and ease erosion.
- Regular dredging is frequently proposed to manage silt build-up and improve water flow.
- Respondents request redesigning or replacing the Windang Bridge to allow better water movement and reduce erosion, with some suggesting the removal of pylons.
- Suggestions include reinforcing vulnerable areas with rock walls or protective structures, similar to those used in Shell Cove and other coastal regions.

Distrust in consultation and decision-making

- Some respondents feel the consultation process is biased or incomplete, with insufficient information on flood risks, costs and environmental impacts.
- There are calls for more detailed explanations about how each option would affect water quality, flooding and recreational access.
- Previous decisions, such as bridge construction and land reclamation are criticised for contributing to current problems. This has led to scepticism about the proposed solutions.

Summary of community preferences

- Most respondents oppose options that would significantly restrict water movement, citing concerns about water quality, flood risk and ecological health.
- Reinforcing erosion-prone areas is widely supported over large-scale interventions that could harm the lake's natural processes.
- While some support removing the training walls to restore natural tidal flow, others fear this would increase flooding and degrade water quality.
- Adjustable gates and extensive rock structures are generally viewed as costly, high-risk, and unsustainable.

Feedback from the submissions

Between Wollongong City Council and Shellharbour City Council, there was 17 submissions received. These were all received via email.

The submissions that were received were from a range of businesses and individual community members. All submissions were sent to the project teams from both Wollongong City Council and Shellharbour City Council for their consideration.

What was heard across the submissions have been summarised as:

Erosion and water flow management

Many submissions emphasise significant erosion at the lake entrance, foreshore areas and around islands like Windang and Bevans Island. There are concerns raised about the impact of erosion on infrastructure, habitats, and recreational areas.

This is a widely discussed theme, appearing in at least half of the submissions.

Suggestions:

- Reinforcing eroded areas with large boulders, particularly to stabilise vulnerable locations.
- Introducing staggered groynes or a series of strategically placed barriers to slow water flow and reduce erosion.
- Investigating an alternative channel.

Environmental and ecological concerns

Environmental concerns are among the most commonly raised themes, appearing in almost all submissions. This shows strong community support for prioritising ecological sustainability.

Key issues raised:

- Water quality: most submissions prioritise maintaining or improving water quality, particularly salinity levels, to prevent algal blooms and protect aquatic life. Contributors note that water quality has improved significantly since the permanent opening of the lake and express fears about reversing this progress with certain interventions, like weirs.
- Habitat loss: habitat for birds, fish and crustaceans is a central concern, with many submissions pointing out the loss of Bird Island and the impact on migratory species such as the Little Tern and Red-necked Stint.
- Biodiversity: submissions frequently reference data from studies (eg. Birdlife Australia's surveys) and emphasise the need to preserve ecosystems while managing the lake entrance.

Suggestions:

- Rebuilding or relocating bird habitats, such as re-establishing Bird Island or creating similar protected areas, particularly near Windang Island.

- Limiting human disturbance in sensitive areas, with recommendations for signage, wildlife corridors and protected zones for bird breeding.
- Integrating mangrove and foreshore restoration efforts to counter habitat loss.

Weir and structural options

Mentioned in approximately one-third of submissions, this is a significant but polarising topic, with varying levels of support depending on the proposed weir design.

Opinions were divided on weir options:

- Some support weirs (especially those with openings) to manage tidal flow, improve water quality, and mitigate erosion.
- Others oppose weirs, citing potential ecological disruptions, such as restricting fish and prawn migration and reducing natural flushing.
- Criticism about the lack of detailed environmental assessments for structural options is also raised.

Alternative suggestions:

- Flood overflow weirs on southern and northern groynes to balance water control and ecological impact.
- Natural flushing channels to replace or supplement engineered structures.
- Staggered groyne fields to stabilise water flow without completely blocking migration pathways.

Recreational and community use

Maintaining recreational access for activities like boating, fishing, and prawning is a recurring priority across many of the submissions, particularly by those directly involved in recreation or local tourism.

Concerns raised that technical interventions, such as weirs, could limit boating access or reduce aesthetic appeal, potentially affecting tourism.

Suggestions:

- Ensure all options maintain access for recreational boating and fishing in the lake and the western end of the channel.
- Provide information to the community showing the reasons why navigability and access to the ocean may be unsafe under future conditions and why, as a contemporary utility, this cannot be prioritised over other management criteria

Improve facilities for tourism, such as bird hides or signage for visitors, to attract eco-tourism and support local businesses.

Consultation and community engagement

Many submissions express frustration with the complexity of reports, highlighting the need for simpler explanations of options and their impacts.

Some contributors feel that the comparison criteria (eg. tidal ranges) are too technical for the community to evaluate effectively.

Social media platforms are suggested as additional venues for gathering community feedback.

Suggestions:

- Simplify language and comparisons in reports and presentations to make them more accessible.
- Include clear explanations of the outcomes of inaction versus intervention to help the public understand the urgency of the issue.
- Provide regular updates and opportunities for further feedback to maintain transparency and engagement.

Historical and cultural value

Some submissions reference the recent historical significance of maintaining the lake's open status, which has become an integral part of the local identity.

Personal experiences, such as past flooding when the lake was closed, are used to underline the importance of maintaining an open entrance.

Suggestions:

- Highlight the lake's recent history as well as its long-term cultural value as an intermittently open and closed lake (ICOLL) that extends for centuries into the past.
- Highlight to community the importance of considering both of these perspectives alongside one another when considering an entrance management option.
- Maintain public access to the lake for cultural and community events.

Feedback from Government Agencies

There was feedback received from four government agencies and organisations.

Transport for New South Wales

Feedback was received from Transport for NSW who raised the following key points:

- Option 1, 2, 3 and 4 would create a substantial safety risk within the Lake Illawarra entrance, through increased turbulence and velocities within a very heavily utilised recreational area.
- None of the options would maintain the current recreational and boating access between Lake Illawarra and the ocean.
- It is recommended further investigation work be undertaken on the groin option (Option 4) to make it safer for passive recreation and boating access.
- Option 1 and 2 both impact on the asset maintenance of the existing Windang Bridge, such that the current Windang Bridge piles would not be able to be inspected without deconstructing the weir and is not supported by Transport for NSW.
- Option 1 and 2 could be considered if they were located adjacent to the bridge ensuring that this doesn't hamper any future provision of a new bridge.
- Should a rock weir be the preferred option then a better location for it would be the eastern end of the entrance channel.

Department of Climate Change, Energy, the Environment and Water

Feedback was received from the Department of Climate Change, Energy, the Environment and Water who raised the following points:

- The 5 options outlined in the 'Lake Illawarra entrance channel: management options assessment' report have significant cost implications and potential environmental impacts.
- Department of Climate Change, Energy, the Environment and Water – Conservation Programs Heritage and Regulation (DCCEEW-CPHR) supports further option development and assessment consistent with the certified Lake Illawarra Coastal Management Program (CMP) and the NSW Coastal Management Framework.
- Options 1-3 (weirs) are unlikely to be viable without modification to allow a deeper channel for both boating navigation and fish passage.
- Option 4 (rock groynes with armoured bed) has significant boating and water use safety considerations as well as high capital and ongoing costs.
- Option 5 (remove both training walls and substantial nourishment) as currently proposed has many unknown impacts and uncertainty associated with viability of mass sand nourishment. A variation of this option to progressively peal back the length of the breakwaters (variations of both and just the northern breakwater) could be considered as an adaptive (staged) approach.
- As a next step, modification and refinement of key design components of all options is required, to be progressed through additional modelling and assessment of costs and environmental impacts. Combinations of options and staging of approaches could also be considered.
- The NSW Government's Coastal and Estuary Grants Program remains a potential funding source for progression of actions in the CMP.

Energy Australia

Feedback from Energy Australia, who operate the Tallawarra Power Station left the following feedback:

- Energy Australia would like to be kept up to date with the progress and development of the Lake Illawarra Entrance Options Study moving forward.
- The operation of the Tallawarra power station relies on drawing water from the lake in its cooling process. Energy Australia are interested in understanding the potential impact of the options, particularly entrance closure, on water levels in the lake and any resulting impacts on water temperature
- Energy Australia are more concerned with options that result in water levels being lower (i.e. the existing tidal conditions that will eventually result in low tides becoming lower) than higher.
- Energy Australia are concerned as to whether any remedial work would cause the lake temperature specifically to be higher, especially in the summer months, than the current base lines.

Illawarra Local Aboriginal Lands Council

A submission from the Illawarra Local Aboriginal Lands Council is waiting to be received and will be reviewed by the project team. Feedback from other members of the Aboriginal community can be found on page 28.

Feedback from the Aboriginal Community

Aboriginal Cultural Values and Community Feedback

Lake Illawarra is recognised as a highly significant cultural landscape, encompassing a wide range of overlapping cultural values. It has been a focal point of Aboriginal occupation, resource gathering, land use, and cultural practice for many thousands of years. The lake's water, flora and fauna, and both tangible and intangible cultural heritage are all interconnected elements of its cultural value. These connections reflect ongoing relationships with Country, identity, law, and cultural practice, and must be understood holistically.

When assessing the proposed management options for the lake entrance, the Aboriginal community emphasised the complexity of the decision-making process. Each option presents a mix of potential benefits and risks to the cultural landscape and associated values. A fundamental aspiration consistently voiced during consultation was the importance of Restoring Country—returning the lake as closely as possible to its condition prior to artificial modification. In this context, Option 5 was expressed as the preferred option by many community members, as it reflects cultural principles of balance and restoration and may encourage the return of important species such as prawns and fish through the reestablishment of natural cycles.

However, community members also raised significant concerns about the potential consequences of removing the training walls and fully reopening the lake entrance. In particular, the potential for increased erosion—especially along the northern bank of the lake entrance—was identified as a major issue. This area holds immense cultural significance and contains several recorded Aboriginal midden sites. Any further disturbance or loss of these sites would be deeply damaging to the cultural values of the area and to the broader process of healing Country.

To mitigate this risk, the Aboriginal community strongly recommended that site-specific protection measures be implemented regardless of which management option is selected. If erosion is anticipated as a consequence of lake entrance modification, then engineered responses such as rock armouring, seawalls, or other hard management strategies may be necessary to safeguard these cultural assets during the period in which the lake re-establishes ecological equilibrium.

Summary of Community Engagement

Engagement with the Aboriginal community began in late 2023 and included individuals and organisations from both Shellharbour City and Wollongong City Council areas. Community members were informed of the project and the need to explore future management options for the lake entrance. Communication occurred through email, phone calls, face-to-face presentations, and meetings. Engagement continued through to the broader community phase, which commenced in November 2024.

Key points raised throughout engagement include the following:

- Lake Illawarra is a living cultural landscape—its significance extends beyond physical sites to include waters, species, and ongoing cultural responsibilities.
- All five entrance management options were considered to have varying degrees of positive and negative impact on the cultural values of the lake, requiring comprehensive assessment.

- Foreshore erosion, particularly along the culturally sensitive northern bank and the islands, is a priority concern. Immediate and long-term mitigation strategies will be required to prevent further damage to midden sites and other heritage places.
- Any future works involving impacts to Aboriginal impacts will require an Aboriginal Cultural Heritage Assessment and an AHIP - should impacts not be avoidable. This is applicable to direct and indirect impacts resulting from and management activities. Aboriginal community have expressed that impacts to tangible Aboriginal cultural heritage should be minimised as much as possible.
- Option 5 was preferred by many in the community, due to its alignment with cultural values of restoration, healing Country, and re-establishing natural balance, and encouraging the return of species such as prawns and fish by restoring natural cycles.
- Ongoing consultation is essential. Management of Lake Illawarra's entrance is an issue of strong cultural interest to the local Aboriginal community, and continued dialogue will be necessary as the project progresses.

Feedback from the Community Drop-in Session

On Friday 29 and Saturday 30 November 2024, both Wollongong City Council and Shellharbour City Council hosted community drop-in sessions regarding this project. The locations were:

- Warilla Barrack Point Surf Life Saving Club.
- Windang Senior Citizens Hall.

Community members attending the drop-in session at Windang Senior Citizens Centre on 30 November 2024

Feedback from the session

The session was an opportunity for the community to ask questions of both Council staff and UNSW Water Research Laboratory staff.

There were approximately 80 attendees at each event. It was found that attendees were well-informed and highly engaged on the project. People joined in actively to conversations and were open to thinking about the options and to learning more information about what had guided the development of the information and decisions made so far.

Many had been online and checked out the website and watched the YouTube video.

Participants were interested to remain updated, with many requesting more in-person sessions to provide updates about the engagement and the next steps.

Dotmocracy results

A dotmocracy was set up to capture information on what attendees of the drop-in session valued most about the lake.

A dotmocracy is a quick engagement method that captures feedback in a voting system. Participants were asked to choose the two values they deemed most important to them. This activity was optional, therefore the numbers of who participated were not recorded.

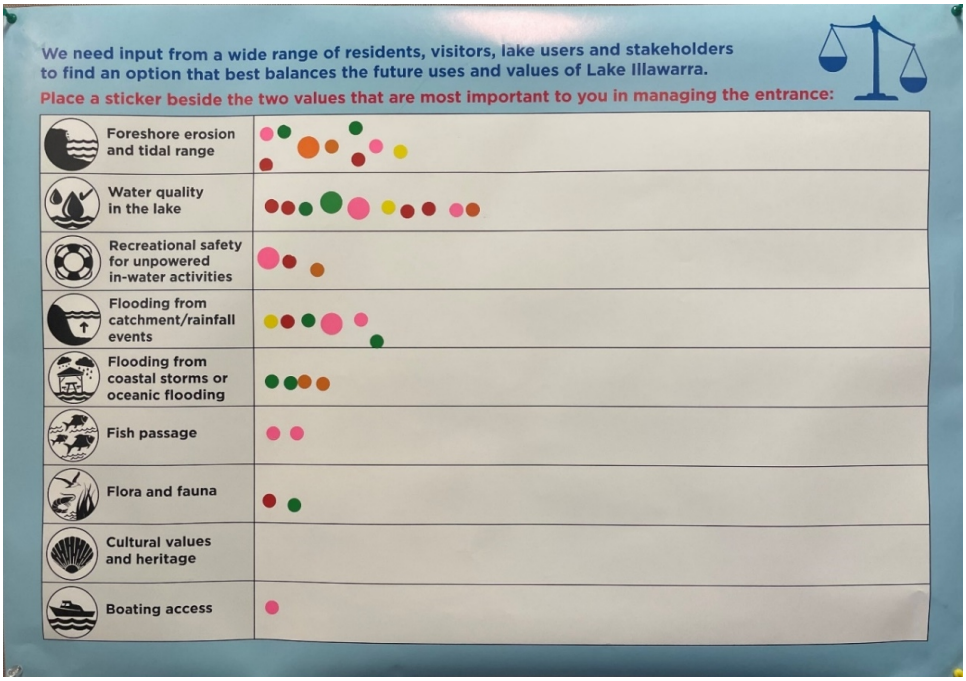
Value	Warilla Session	Windang Session
Foreshore erosion and tidal range	13	9
Water quality in the lake	19	10
Recreational safety for unpowered in-water activities	8	3
Flooding from catchment/rainfall events	6	6
Flooding from coast storms or oceanic flooding	2	4
Fish passage	10	2
Flora and fauna	8	2
Cultural values and heritage	2	0
Boating access	4	1

At the Warilla session, water quality was the most favoured value with 19 votes. It was followed by foreshore erosion and tidal range as the second most favoured value with 13 votes.

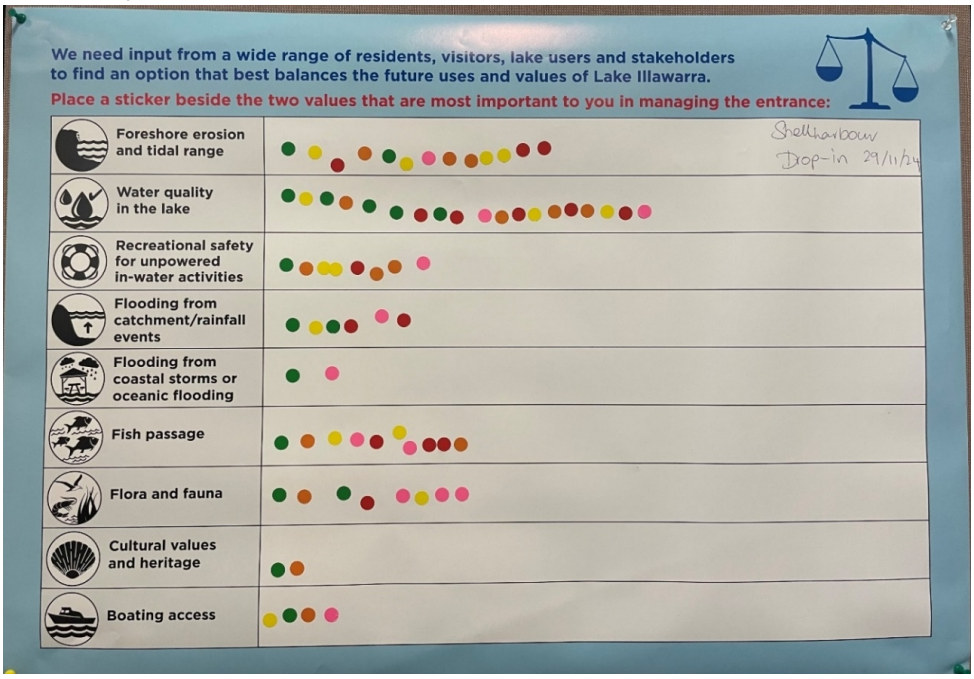
At the Windang session, the same results appeared as Warilla with water quality being the most favoured value with 10 votes. It was followed by foreshore erosion and tidal range as the second most favoured value with 9 votes.

Images of the dotmocracy activities

Windang drop-in session results:



Warilla drop-in session results:



Feedback from the Online Information Session

On Wednesday 4 December 2024, two sessions were held via Teams to present to the community with background on the Lake Illawarra Entrance Options Study, give information about the five proposed options, and answer any questions the attendees may have had about the project.

There were approximately 15 attendees across both the sessions. Several questions were asked by attendees. Some of them included:

- Management of the shorelines and current erosion issues
- Prospect of a second entrance
- Tidal flow and maintaining water quality
- How the five options were prioritised
- Future flooding impacts.

Next Steps

Feedback heard from the community will now be considered by the project teams from both Wollongong City Council and Shellharbour City Council. All the responses from the survey, submission and face to face events will be reviewed in detail so that a recommendation can be made for managing Lake Illawarra's entrance in the future.

All feedback is important and is one factor in the decision-making process for Council. The graphic below shows some of the factors we consider in our decision making:

All identified stakeholders, participants and the broader community will be updated on this project as it progresses. Updates will be made available via the Our Wollongong and Let's Chat Shellharbour websites.