

1st AGM, 03/08/23

Presentation slides in pdf.  
Copyright of speakers.



**Speakers, in order:** Yianni Mentis, Executive Manager Environment & Climate Change, NBC / Jason Ruszczyk, Senior Environment Officer in the Coast & Catchments, NBC / Alice Harrison, Senior Engineer, WRL / Murray Fraser, Ambassador Manly-Freshwater WSR / Tom Hazell, Water-bird Survey leader and local lagoon advocate





northern  
beaches  
council

Yianni Mentis – Executive Manager  
Environment & Climate Change (ECC)





# What does ECC do?

- Subset of Environment and Sustainability Division under Todd (other bit is Waste/Cleansing)
- 6 key areas (all do CRMs especially first 4)
  - **Bushland and Biodiversity** (Bush regeneration; biodiversity offsetting; weed/pest management; wildlife protection including WPAs; bushfire risk management – preparing HR burn areas, APZs, Fire trails)
  - **Stormwater and Floodplain Engineering** (stormwater renewals and new, design and/or construct management of large projects; floodplain management/policy; lagoon entrance management)
  - **Coast and Catchments** (coastal issues including erosion and project management of seawall installation; geotechnical issues such as landslips and rockslides; riparian lands management; catchment scale planning support; responding to pollution incidents affecting waterways; contaminated sites in public lands)
  - **Development Engineering** (referred DA's; CDCs; driveway approvals, bonds; hoarding assessments and approvals)
  - **Environmental Resilience and Climate Change** (council's sustainability – water energy waste GHG; environmental and climate change policy and strategy; enviro reporting and benchmarking; monthly reporting)
  - **Greener Communities** (Environment Centres; environmental education mainly schools and community; bushcare volunteers and nurseries; community sustainability programs)



























# Friends of Manly Lagoon

## AGM

### 3<sup>rd</sup> August, 2023





# Lagoons of the Northern Beaches

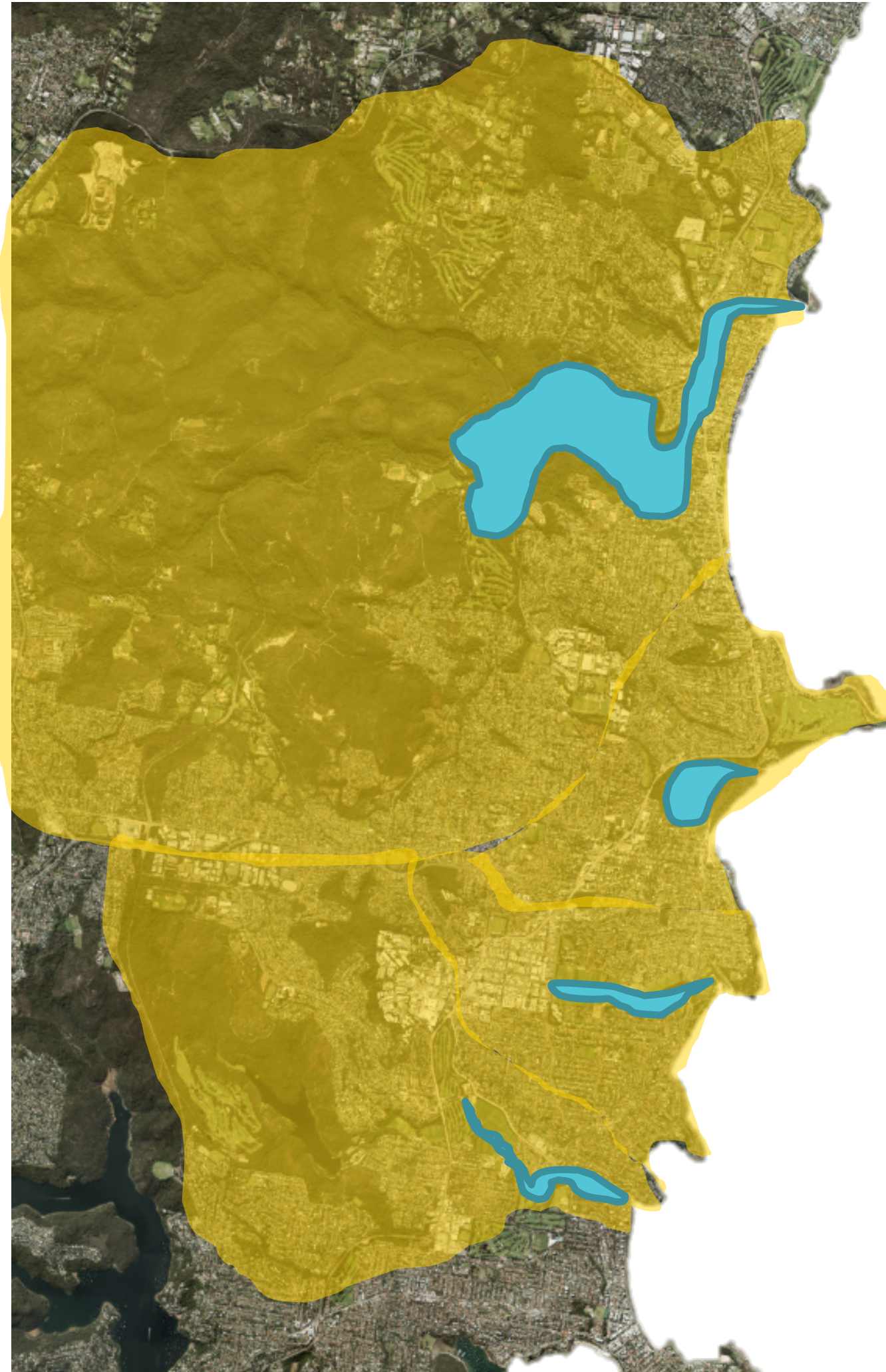
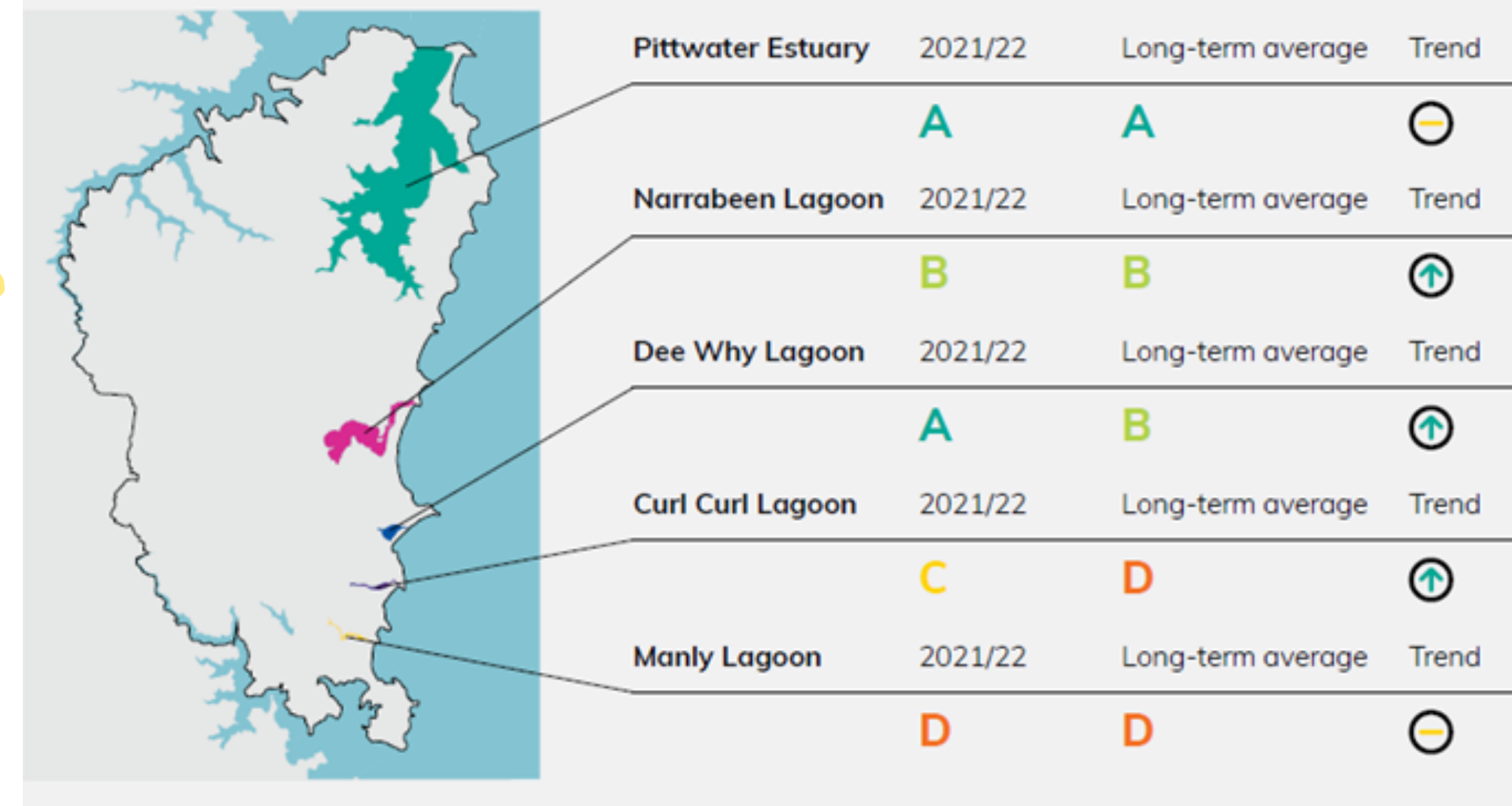
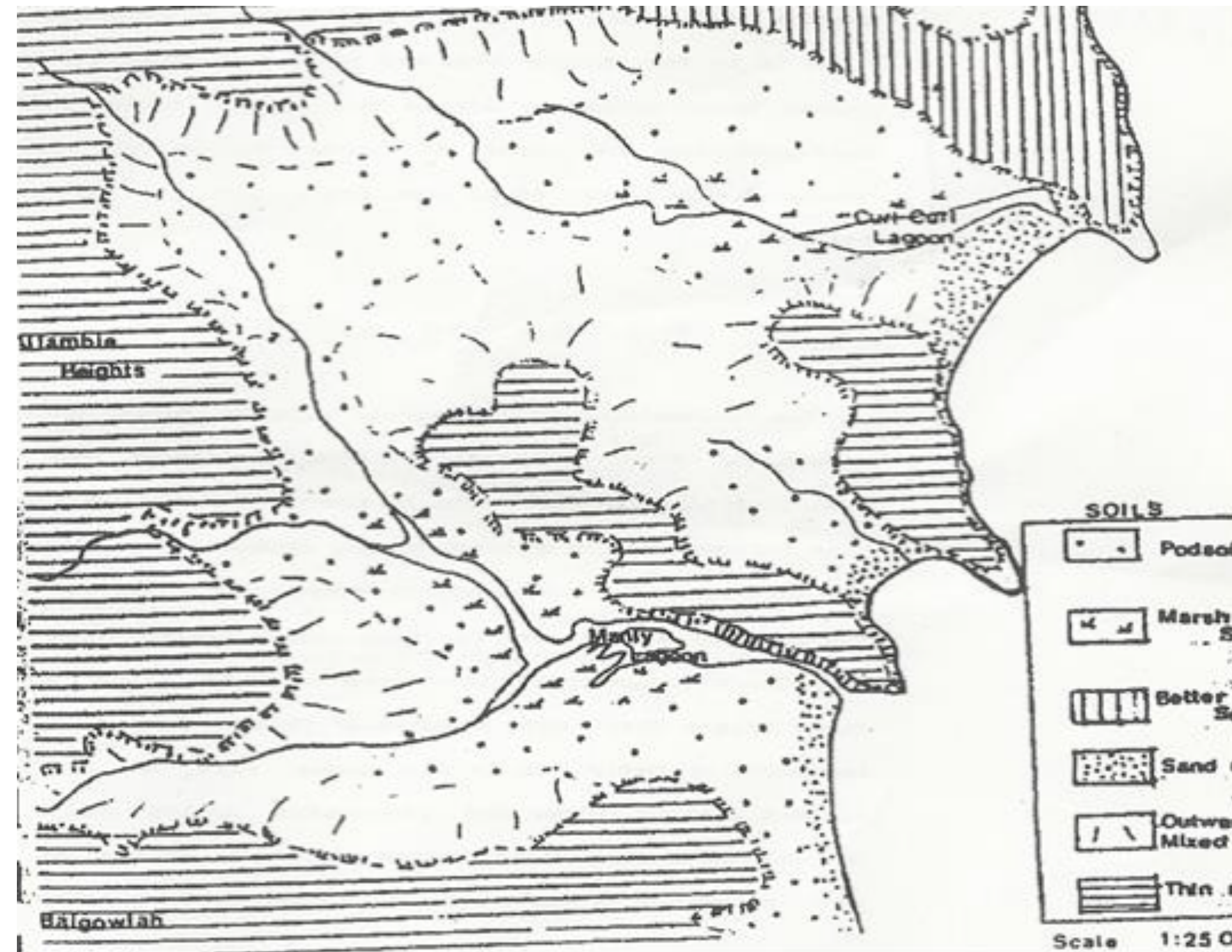


Figure 1: Summary of lagoon health since 2011/12 (including the 2021/22 grade, long-term average and trend since 2011/12)





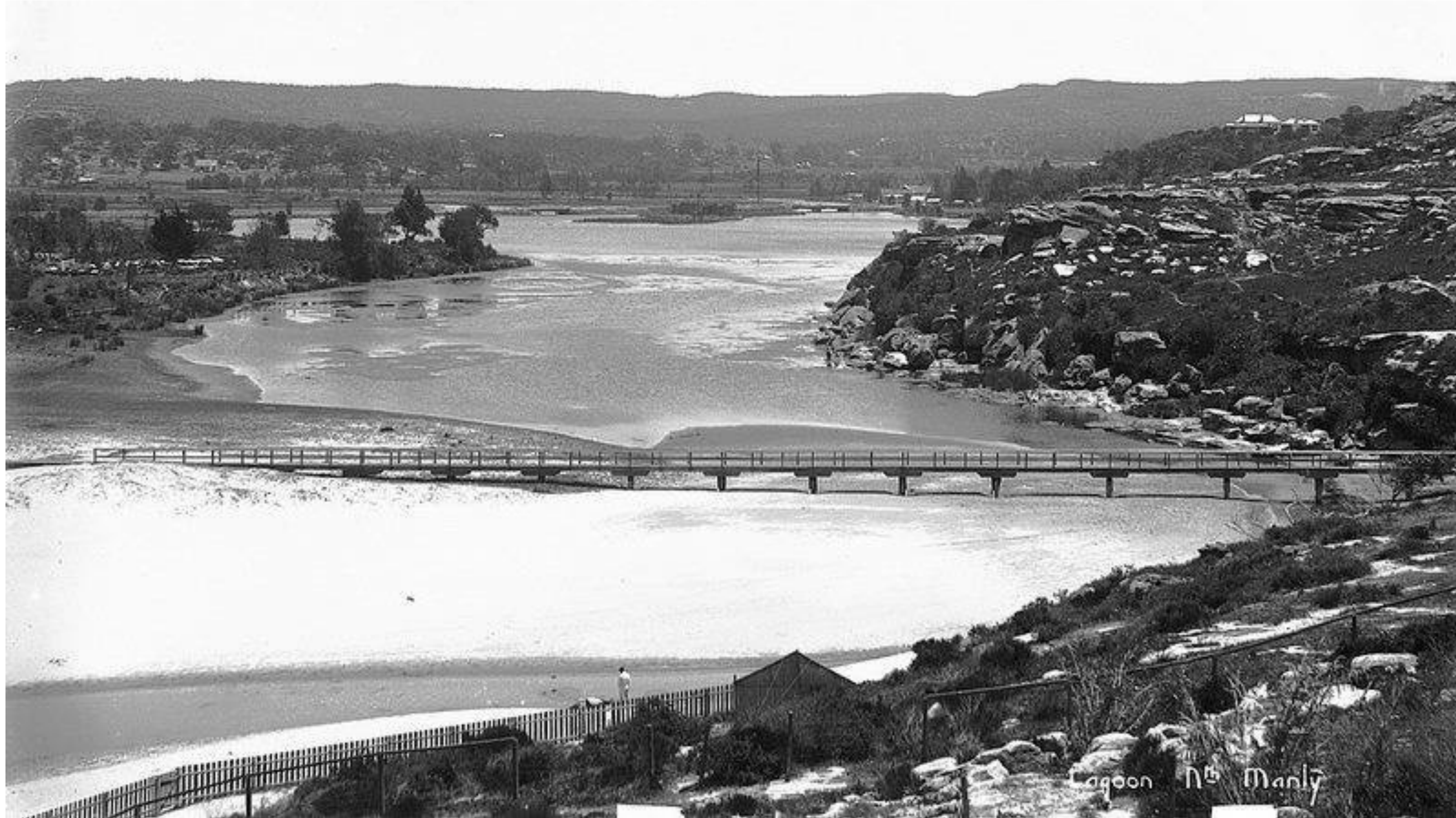
# Manly Lagoon



**Figure 1.2: An early sketch of Manly Lagoon indicating the extent of saltmarsh (labelled as “Marsh” in the figure legend) around the lagoon around the time it was first settled by Europeans (Source: McInnes, 1985)**

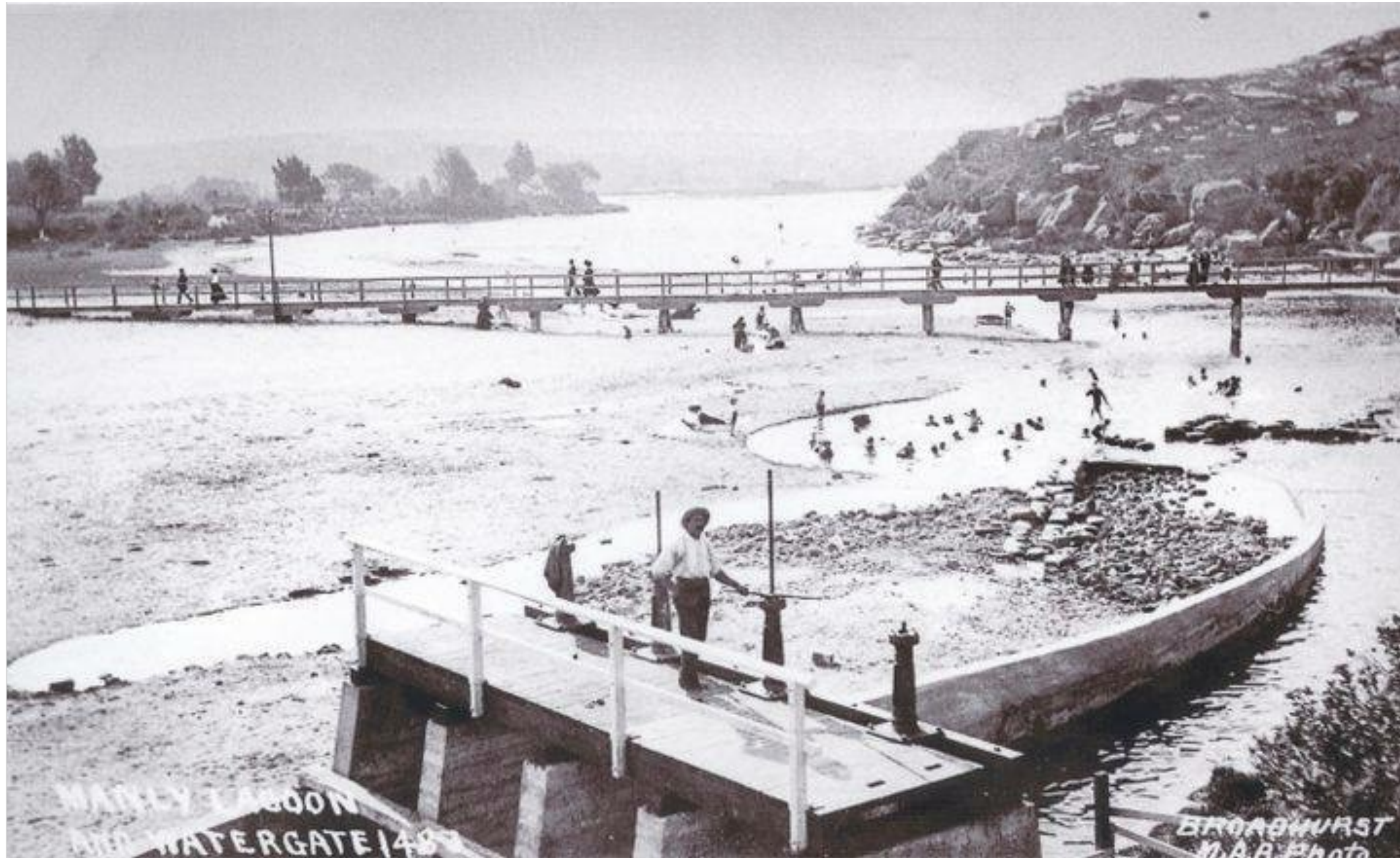


# Manly Lagoon Circa 1910





# Manly Lagoon circa 1910







Circa 1947





Trend in water quality in Manly Lagoon  
is stable

Catchment Area - 17.2km<sup>2</sup>

Estuary Area - 0.1km<sup>2</sup>

Major Creeks

- Burnt Bridge Creek
- Brookvale Creek
- Manly Creek (including Manly Dam)





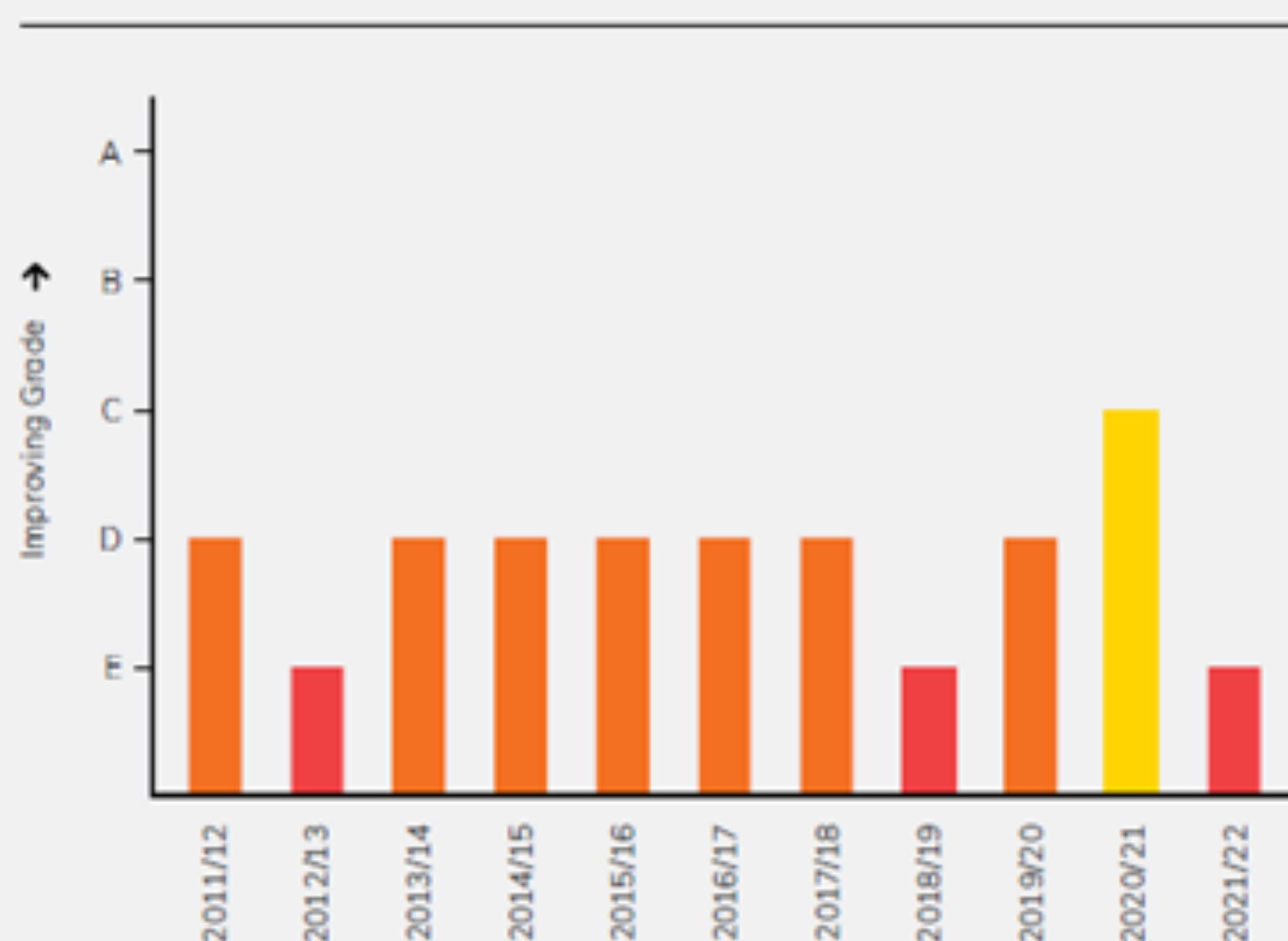
Algae concentrations in Manly Lagoon are stable long-term

# Algae

Algae levels in Manly Lagoon are consistently higher than expected in an ICOLL of its type (3.3  $\mu\text{g/L}$ ), with

The source of high nutrients that feed algae growth suggested that nutrient rich groundwater inflows and catchment runoff contribute significantly.

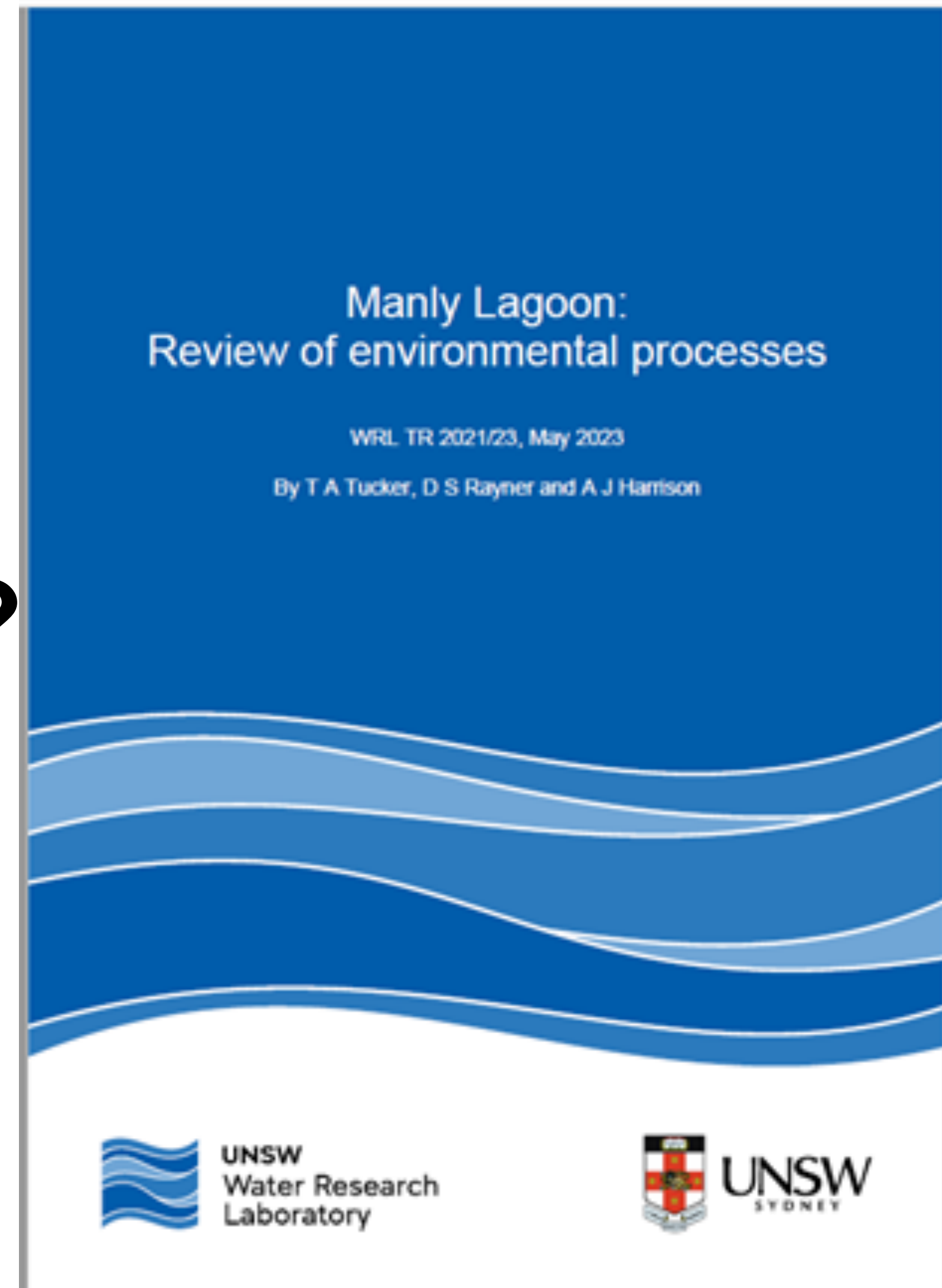
Figure 4  
Annual grades for algae concentrations in Manly Lagoon since 2011/12





# Manly Lagoon

## What's the state of play ?







Coastal  
engineering  
and  
management



Hydrology  
and water  
resources



Eco  
engineering,  
environmental  
studies and  
climate change  
adaptation



Groundwater



Hydraulic  
engineering  
and  
environmental  
fluid  
mechanics



Offshore  
renewable  
energy



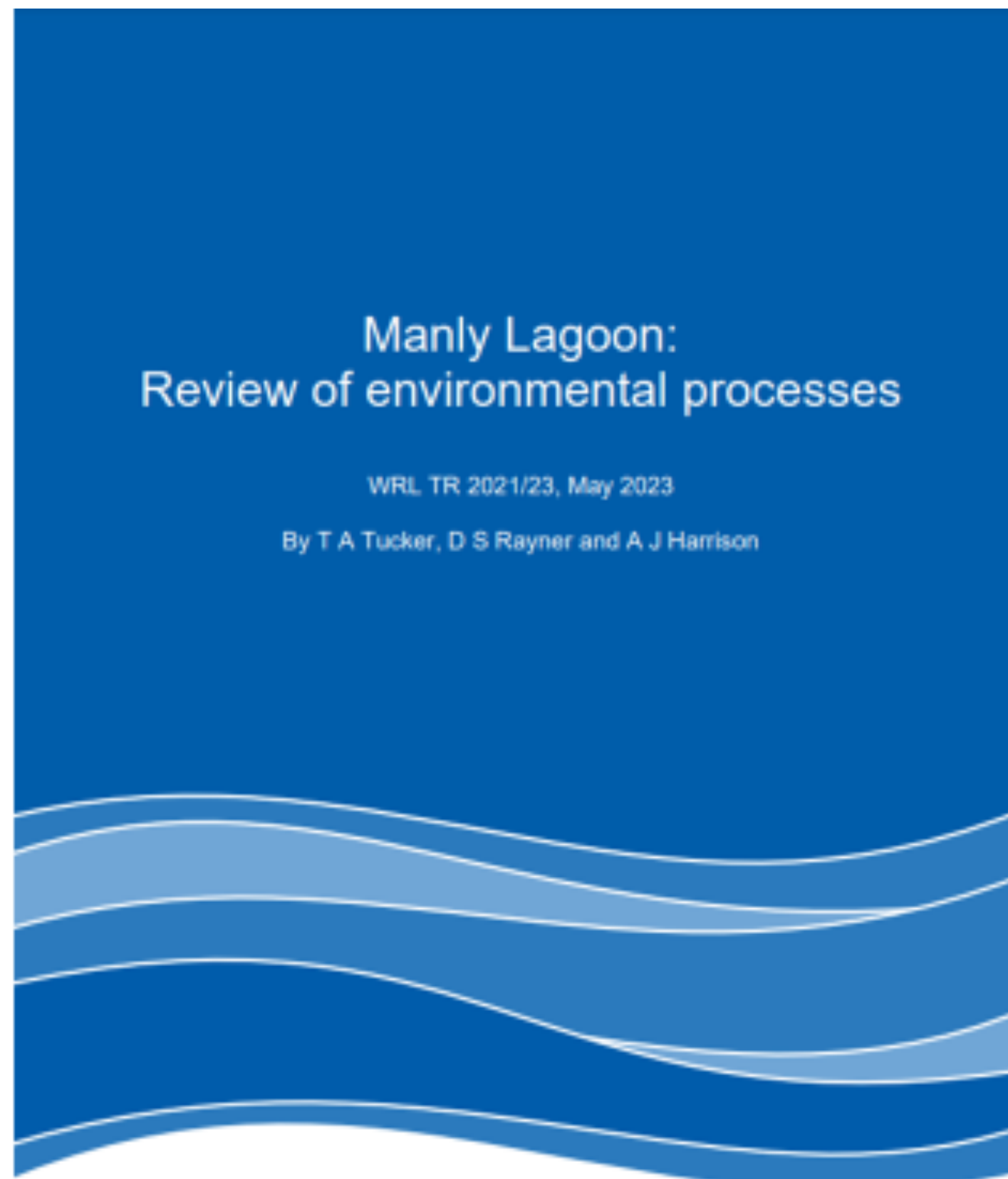
**UNSW**  
Water Research  
Laboratory

Want to check it out?

We are having an Open Day! 16<sup>th</sup>  
September, Family Friendly event!





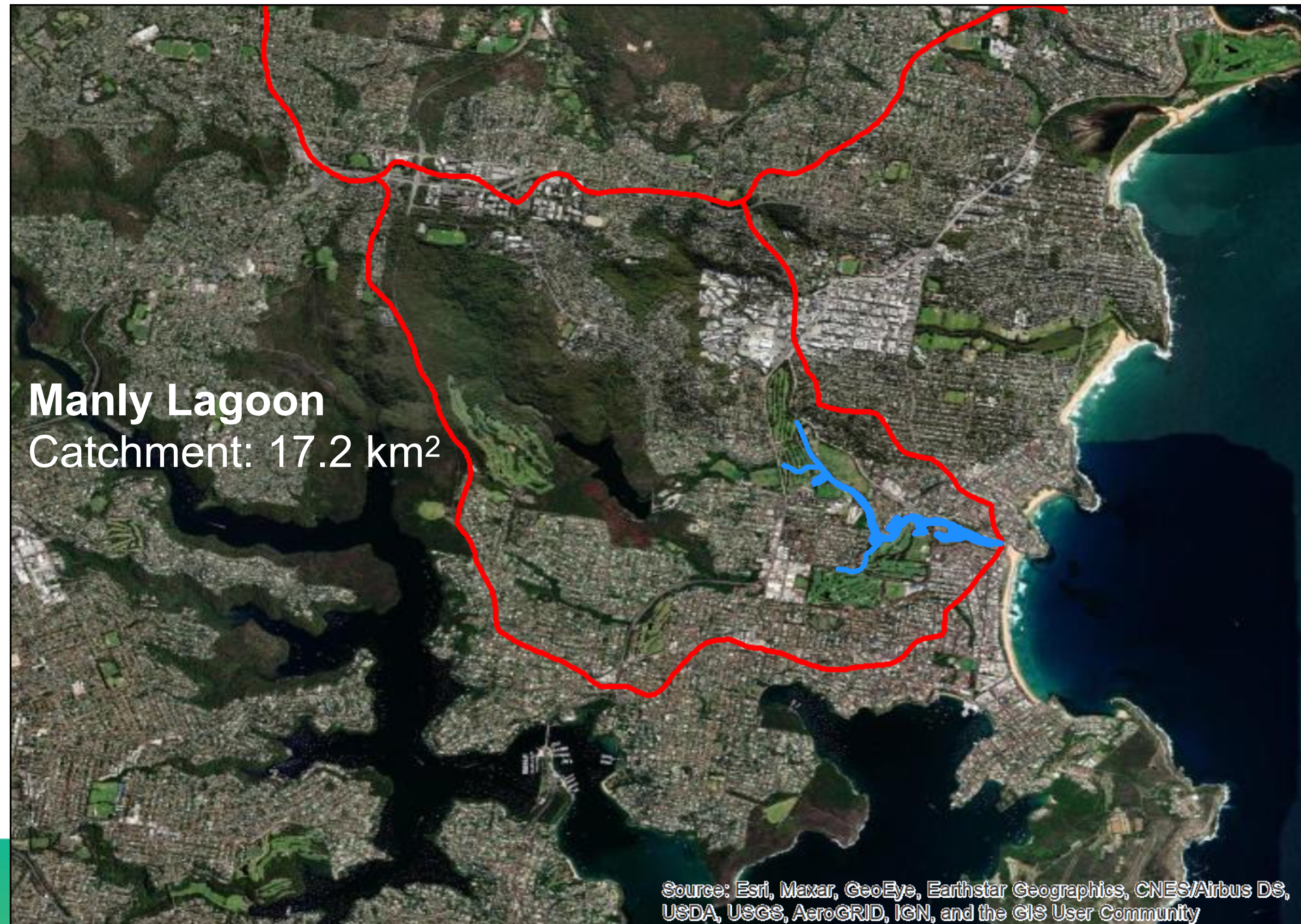


Purpose of the report: review our understanding of the processes driving water quality in Manly Lagoon

- **Conceptual understanding**
- **Values assessment** – what is important about Manly Lagoon?
- **Threats assessment** – what is (or will be in the future) threatening the health of the lagoon
- **Options assessment** – what can be done about it (first-pass)

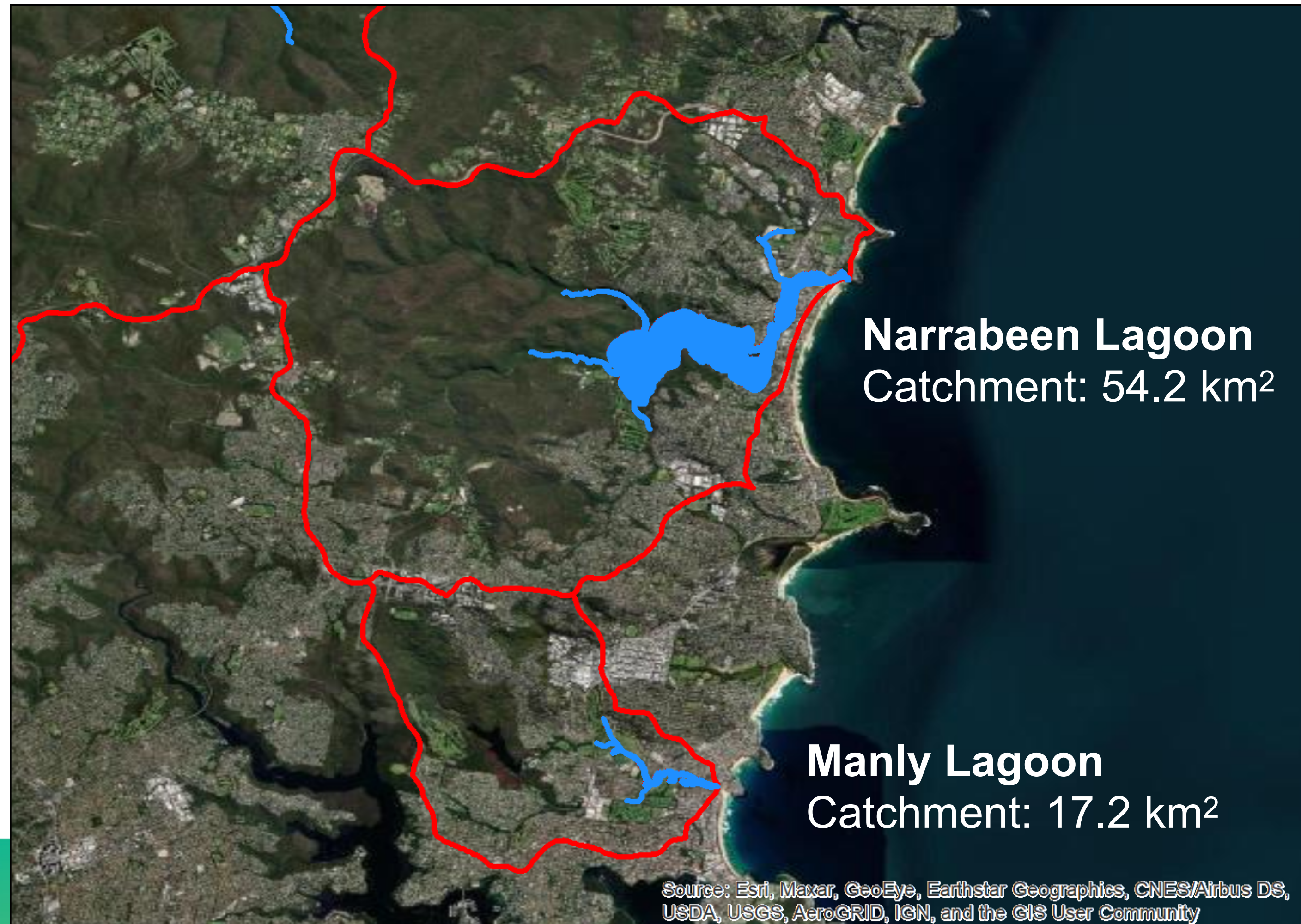


# Not all estuaries are the same



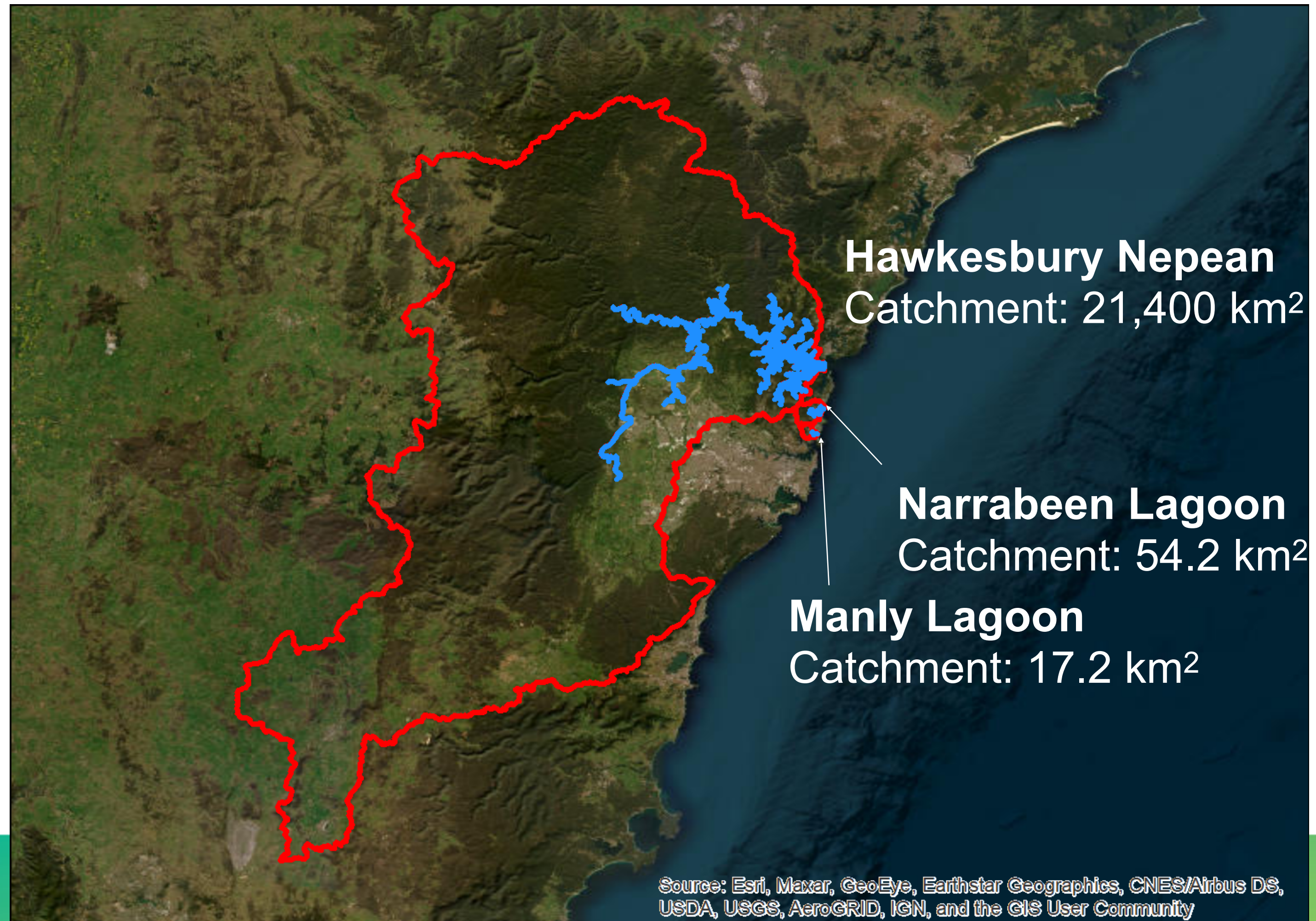


# Not all estuaries are the same



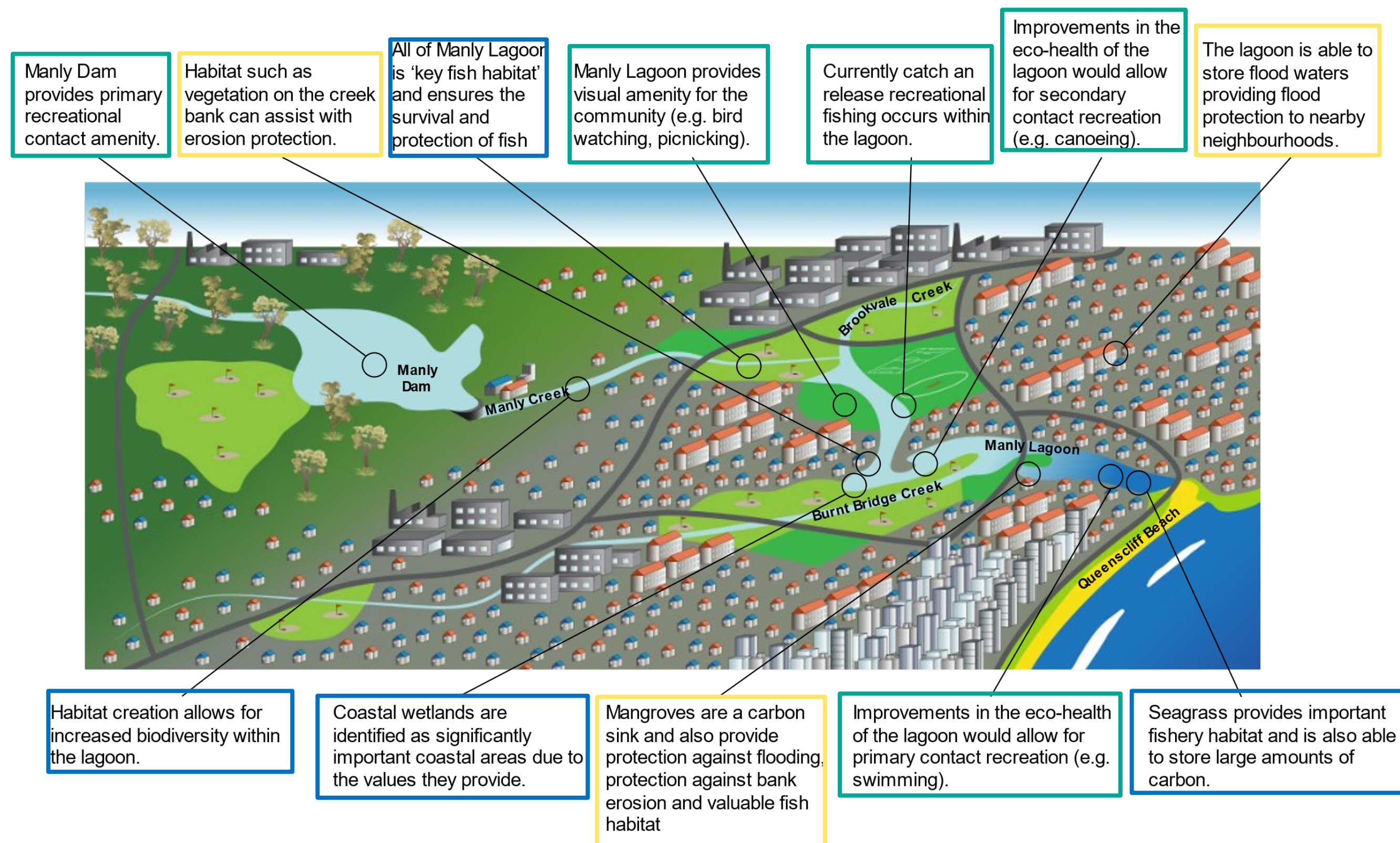


# Not all estuaries are the same





# Values Assessment



Recreation and community value

Habitat and biodiversity

Storm and erosion regulation



# Threats Assessment

**Changes to rainfall patterns may exacerbate flooding**

Urban and industrial runoff – high nutrient and sediment loads

Efficient, urban channels transport runoff to the lagoon rapidly

**Sediments with high oxygen demand limits biodiversity and reduces water quality**

**Climate change**

Urban and industrial nutrient inputs

**Sediment and groundwater inputs**

**Management objectives**

**Flooding**



**Lack of clear and appropriate water quality objectives impedes effective management**

**Sea level rise may change entrance dynamics and increase tidal inundation and urban flooding**

Increasing development will put further stress on the catchment

**Bank erosion destroys habitat and cause poor water quality**



Threat/pressure	Consequence	Likelihood	Risk	Notes
Climate change	Major	Almost certain	Extreme	IPCC (2021) have noted that the effects of climate change have already impacted sea level rise and extreme events.
Bank stability	Minor	Likely	Medium	Ongoing bank management is reversing this threat and it can continue to be managed into the future.
Poor water quality	Major	Almost certain	Extreme	Poor water quality has potential for severe implications on environmental health and is likely to be ongoing in the highly developed catchment.
Weeds and exotic vegetation	Minor	Likely	Medium	High levels of nutrients will mean weeds and the impacts of exotic species persist, however, the impacts are reversible with regular management.
Urban development	Moderate	Likely	High	Irregular urban developments have potential to cause significant environmental impacts. The consequence of this could increase into the future if not managed correctly.
Entrance management	Moderate	Possible	High	Irregular entrance management works have some potential to impact water quality, however, the primary driver of water quality is catchment events.
Catchment inflow management	Minor	Unlikely	Low	Unless catchment inflow management practices are altered there is unlikely to be a large impact on the environment.
Flooding	Moderate	Possible	High	Irregular events can cause significant impacts to the water quality within Manly Lagoon.
Data gaps	Moderate	Possible	High	Data to identify impacts to the eco-health of Manly Lagoon is important in identifying issues and assessing the success of management works.



# Options assessment

- Coastal vulnerability adaptation
- Adaptive water quality monitoring program
- Entrance management
- **Catchment management**
- Dredging lagoon sediments
- Bank remediation
- Re-oxygenation
- Increase connectivity within the lagoon
- **Creation of wetlands**
- Removal of weeds



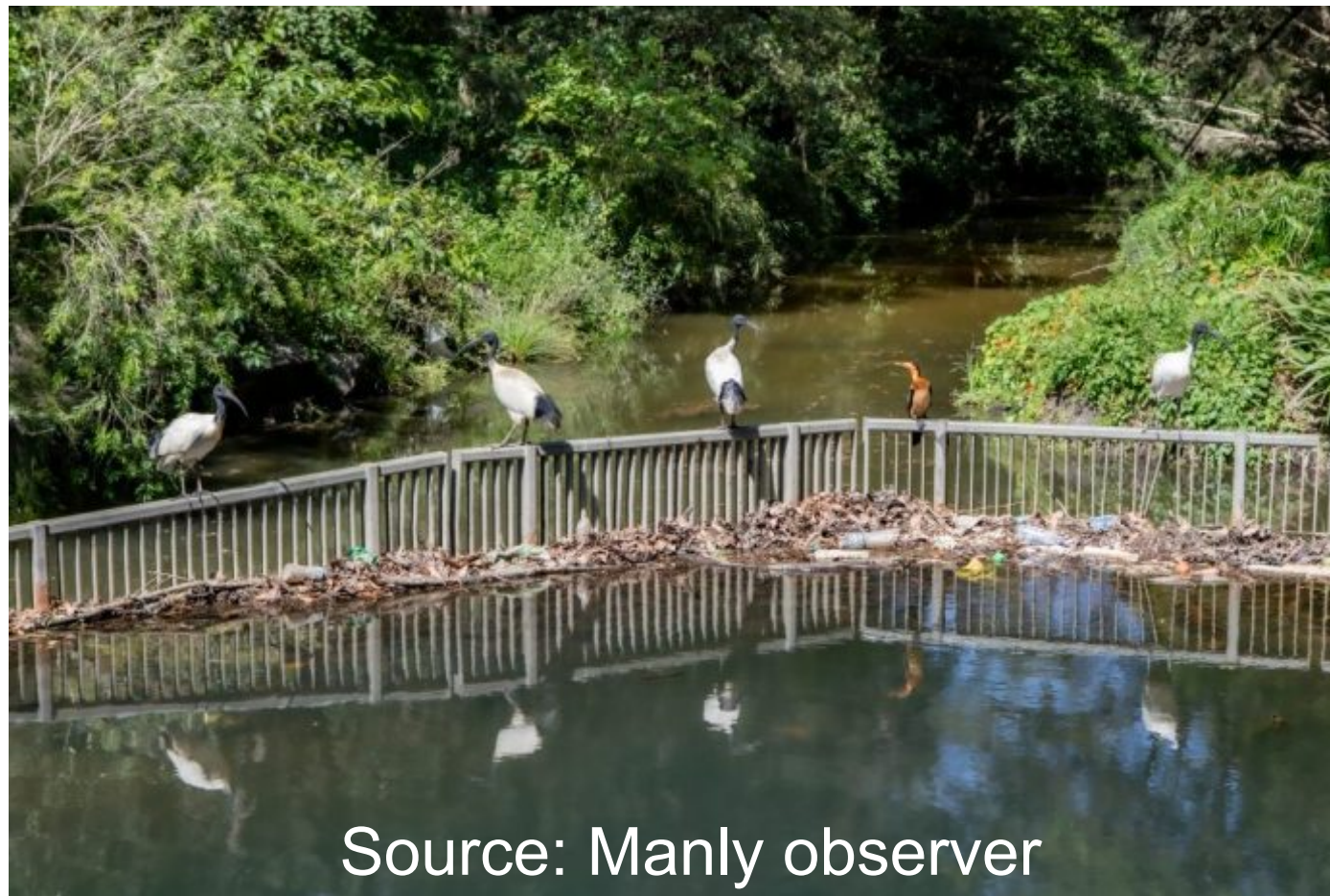
# Options assessment

## Catchment Management

### Urban inflow management

- Installation of additional GPTs
- Community engagement of management of GPTs

Staging transport into waterways



Source: Manly observer

	Processes		Qualitative improvement					
			Insufficient data	Large degradation	Degradation	No change	Improvement	Large improvement
Urban runoff inflow management	Climate change (tidal inundation)							
	Climate change (reduced drainage)							
	Climate change (habitat squeeze)							
	Climate change (catchment inflows)							
	Bank stability							
	Water quality (nutrients)							Improvement
	Water quality (industrial discharge)							
	Water quality (sewage overflows)							
	Water quality (urban runoff)							Improvement
	Weeds/exotic vegetation							Improvement
	Environmental flows							
	Flooding (tidal)							
	Flooding (catchment)							



# Options assessment


## Creation of wetlands

Re-establishment of fringing coastal vegetation

Novel use of floating wetlands



Source: Curl Curl Lagoon Friends

	Processes 	Qualitative improvement					
		Insufficient data	Large degradation	Degradation	No change	Improvement	Large improvement
Creating wetlands	Climate change (tidal inundation)					Improvement	
	Climate change (reduced drainage)				No change		
	Climate change (habitat squeeze)					Improvement	
	Climate change (catchment inflows)				No change		
	Bank stability					Improvement	
	Water quality (nutrients)					Improvement	
	Water quality (industrial discharge)					Improvement	
	Water quality (sewage overflows)					Improvement	
	Water quality (urban runoff)					Improvement	
	Weeds/exotic vegetation					Improvement	
	Environmental flows				No change		
	Flooding (tidal)					Improvement	
	Flooding (catchment)					Improvement	



# Recommendations for next steps

- WRL report: Preliminary options
- Multicriteria analysis to review options
  - Urgency
  - Community values
  - Cost feasibility
- Prioritise options moving forward to support eco health of the lagoon

**MULTI CRITERIA DECISION ANALYSIS**

Ratings: 5 — 4 — 3 — 2 — 1

Criteria	Weight	Current Solution		Alternative 1		Alternative 2	
		Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score
	5	1	5	5	25	4	20
	2	3	6	3	6	5	10
<b>Total Score</b>			<b>11</b>		<b>31</b>		<b>30</b>



# Thanks

# Any questions ?







---

# **Manly – Freshwater World Surf Reserve**



# Why Surfing?





# What is a World Surf Reserve?

- Initiative of Save The Waves Coalition
- Protect Surf Ecosystems across the globe
- Protect. Steward. Defend
- Waves. Environment. Community
- 12 World Surf Reserves Globally
- 3 in Australia



SAVE  
THE  
WAVES  
COALITION





# Manly Freshwater World Surfing Reserve

- Became 3<sup>rd</sup> World Surfing Reserve 10 March 2012
- Prior to that was dedicated as a National Surf Reserve in 2010









# Why Manly & Freshwater?

- First legal surf bathing (1902)
- Duke Kahanamoku's Surfing Exhibition (1914)
- First World Surfing Titles (1964)
- Numerous World Titles & Champions
- Ongoing connection & celebration of surfing culture
- High value in protecting the Surf Ecosystem







# Finding our feet again...

- Manly Freshwater World Surf Reserve committee has been reactivated in 2023
- Local Ambassadors & Members
- Production of booklet
- Identification of Opportunities & threats

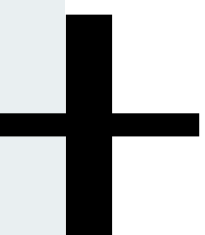




# Friends of Manly Lagoon



- One of the largest threats to Manly Freshwater WSR identified as Water Pollution and Stormwater Runoff
- Bacteria levels commonly classified as “bad” following rainfall events
- A healthy lagoon system means a healthier ocean
- Aligned goals





# Water Bird Surveys Manly Lagoon







Royal Spoonbill – MLF's mascot & regular visitor



**Water bird population is an indication of lagoon health :**

Water quality

Riparian Zone integrity

**Active Wildlife Corridor :**

Coastline.

Lagoon and Golf Clubs

Manly Creek

Manly Dam

Middle Harbour





# 2019 - 2023

Monthly Surveys – from 7.30am

Zone A & B - from the water  
(Queenscliff to Riverview Pde)

Zone C - from the bank  
(Nolan and Pasmore Reserves)





Numbers of birds sighted per survey

Range 56 to 176

av per survey

2019.	118
2020.	110
2021.	100
2022.	84
2023. ytd	98

33 Species recorded

Pacific Black Duck & Buff Banded Rail





Buff Banded Rail (m)





Buff banded Rail (f)





Darters

Little Pied Cormorants

Little Black Cormorants

Great Black Cormorants

( roosting in Causurinas op Lakeside Cres)





# Nesting around Lagoon

Darter (f) with 4 juveniles





Darter (m) with Chick





Little Pied Cormorants with  
chicks





Moor Hen on Nest





Moor Hen Juveniles on nest





Nesting in Trees ???

Chestnut Teals with ducklings





# Nesting in Norfolk Pines at Lagoon Park

White faced Heron





Regular visitor, often confused with  
Black Bitten.

Striated Heron





Majestic regular.

Great Egret





Hard to see summer visitor.

Nankeen Night Heron





Moved into lagoon 8 years ago.

Eurasian Coot





New resident this year.

Australasian Grebe





# Nesting Nolan Reserve

active each year since around 2015

Osprey - bathing







2021 first neighbours flotilla, getting to know the water birds up close.



January 2023  
Manly Lagoon Friends

Photo display,  
On water tour – 15 craft  
Walk & talk along the Lagoon

Supported by :

Minister for Environment, James Griffin  
Northern Beaches Council





Some of the good looking Manly Lagoon Friends – January 2023

