

Healthy Coorong, Healthy Basin

Coorong Infrastructure Investigations
Draft Feasibility Assessment Report Consultation | February 2022

Ecological Investigations

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Australian Government



Government of
South Australia

Feasibility Investigations

benefits (or impacts) informed by modelling and evidence...

✓ Ecological benefits

- Cultural Heritage features
- Socio-economic outcomes
- Engineering options
- Legal implications
- Cost Estimates

A connection between the Coorong South Lagoon and Southern Ocean

- ◆ Pump out (jetty discharge)
- ◆ Pump out (low visual impact discharge)
- ◆ Pump in or out (separate pumping stations)
- ◆ Pump in or out (one common pumping station)
- ◆ Circulation (pump in and out) (jetty discharge)
- ◆ Circulation (pump in and out) (low visual impact discharge)
- ◆ Passive Southern Ocean connector

Coorong Lagoon dredging to improve connectivity

- ◆ Pump out (jetty discharge) + dredge Parnka Point
- ◆ Pump out (low visual impact discharge) + dredge Parnka Point
- ◆ Passive Lake Albert connector channel + dredge Parnka Point
- ◆ Passive piped Lake Albert connector + dredge Parnka Point

Lake Albert to Coorong Connector

- ◆ Passive Lake Albert connector channel
- ◆ Passive piped Lake Albert connector

Ecological assessment of feasibility options

Phase 1

Assessed and compared the benefits and risks of the shortlisted CIIP options and combinations of options

Phase 2

Optimised Phase 1 recommended options evaluated against long-term performance and potential risk and any identified uncertainties

April

May

June

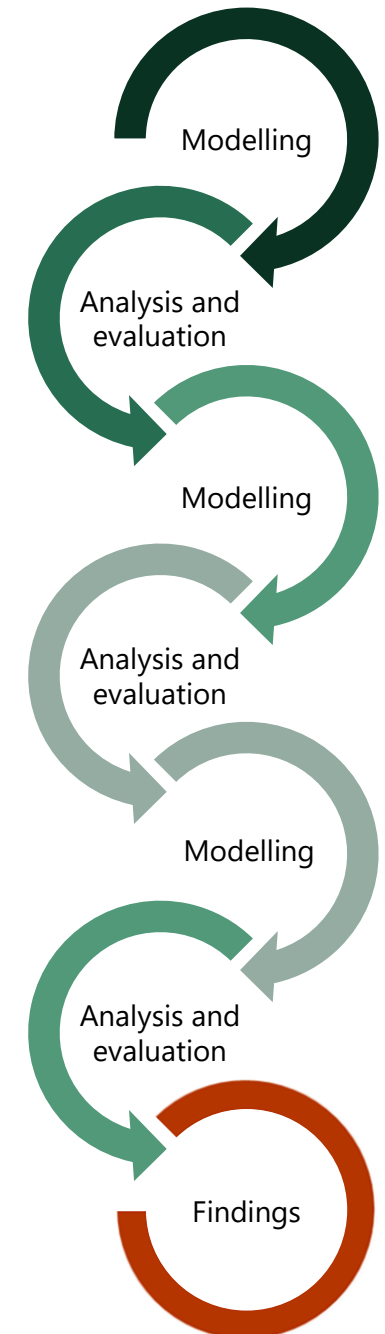
July

August

September

October

November




Desired outcomes

- Ramsar Management Plan (RMP) targets and mitigation of critical impacts (nutrients) were used to define the consequence criteria for the assessment of CIIP options
 - Long term reduction in salinities long-term reinstating seasonal variability
 - Tolerance levels informed by return of more diverse plant and animal community
 - Water levels
 - Maintenance of key seasonal water levels (late spring/early summer for Aquatic Plants (*Ruppia* community), summer for waterbird foraging areas (mudflats))
 - Nutrient loads
 - Long term achieve a reduction from current hyper-eutrophic to mesotrophic conditions


Ecological Investigations - Methodology

Informed by Hydrodynamic Modelling




Short (3 year) and long (30 year) term simulations with different baselines conditions (including climate change)

Informed by Biogeochemical Modelling




Short (3 year) and medium (6 year) term simulations with different baselines conditions

Informed by matter experts interpretation




Qualitative interpretation of expected responses of key ecosystem components.

Risk based analysis and evaluation



An Ecological Risk Assessment Framework (ERAF) was developed and used to support the analysis and evaluation of modelling outputs

Direct input into CIIP MCA process



A refined ERAF evaluation methodology was added to Phase 2 to input directly into the broader CIIP multi-criteria analysis process

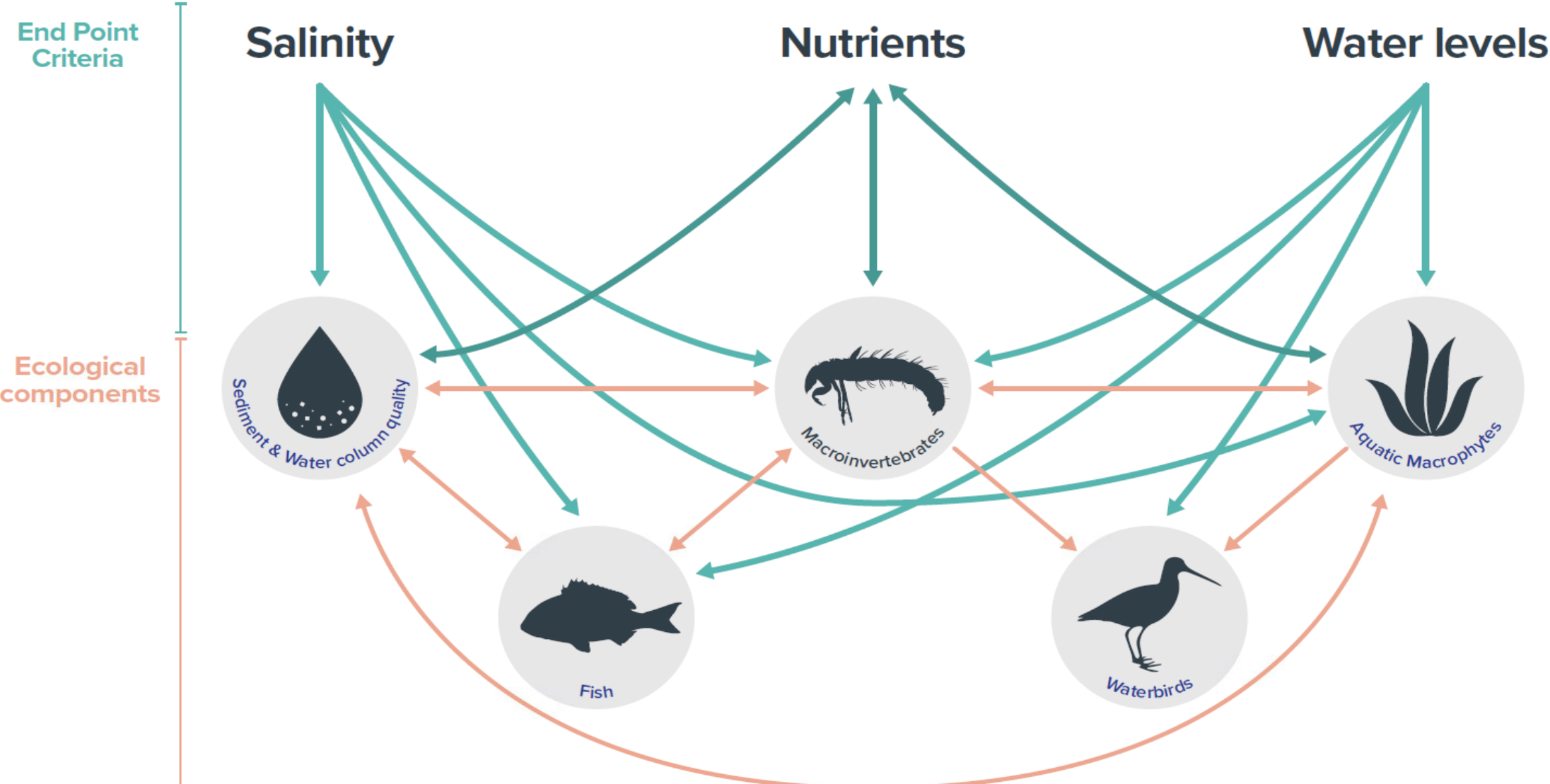


Phase 1



Phase 2

ERAF end point targets – ecological components



Dredge to improve connectivity

Standalone solution

- dredging provides no benefit
- can create have some negative outcomes
- Priority dredging through region centred around Parnka Pt

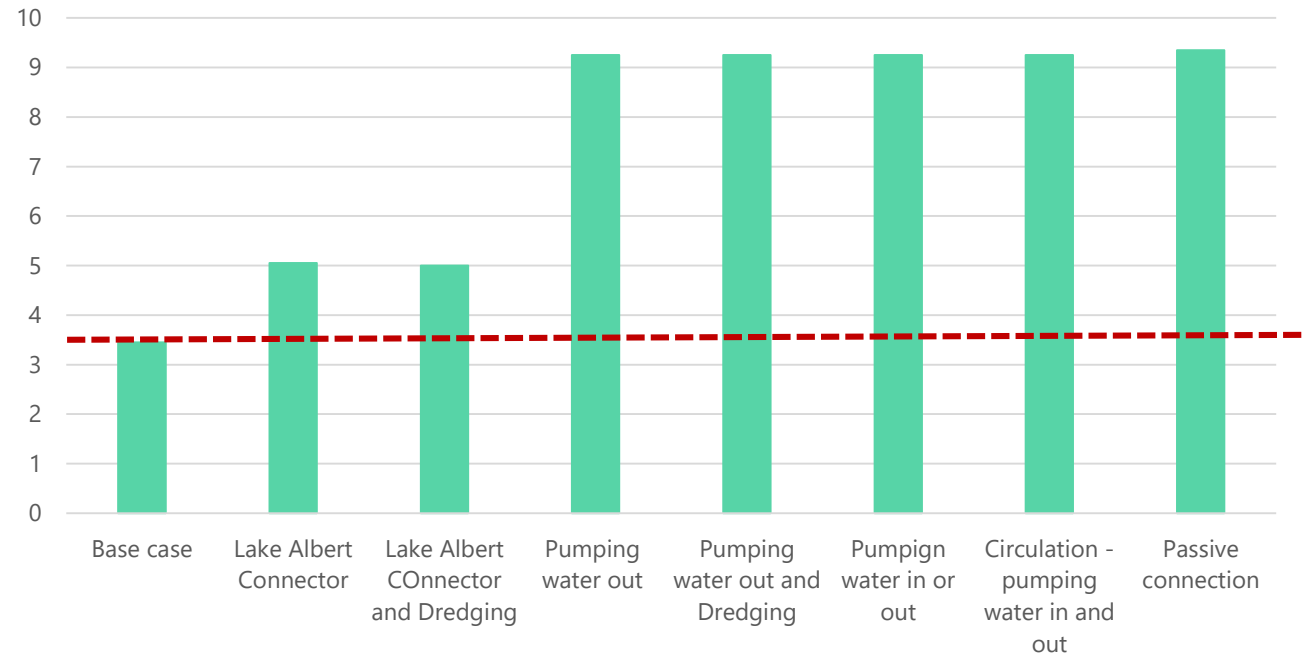
In combination with other CIIP options could benefit the system



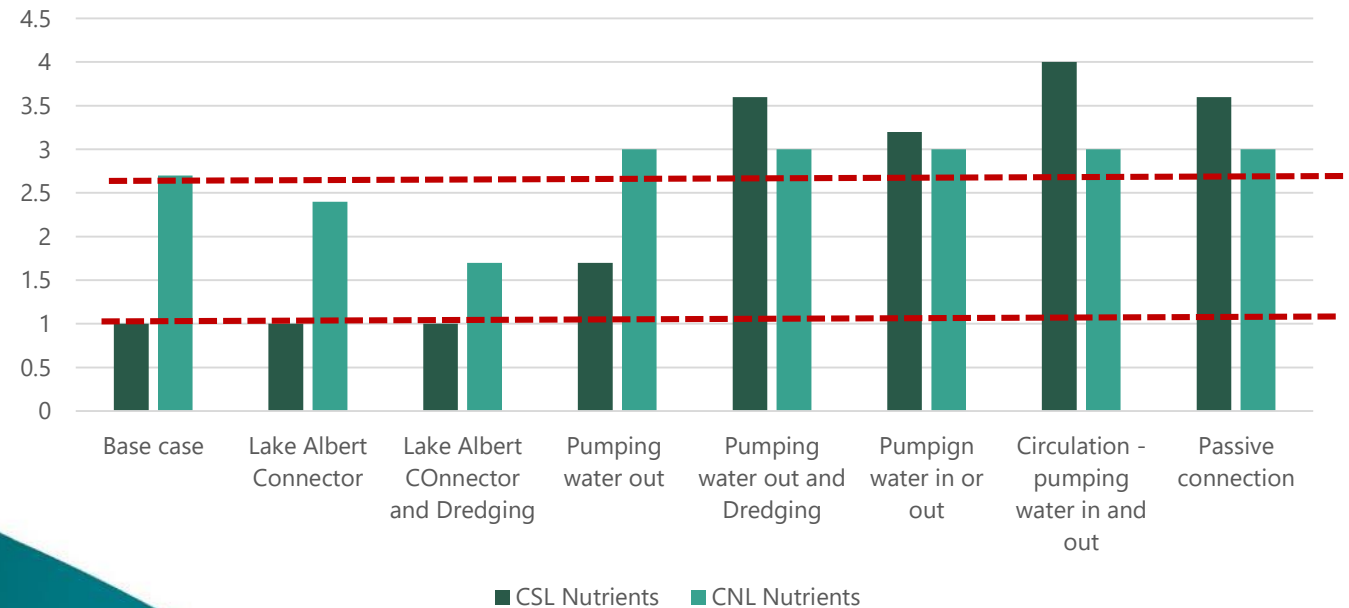
Lake Albert Connector

- This options does not deliver the desired salinity reductions under climate change conditions
- neither provides benefits at reducing nutrients in the system.

Expected value - CSL Salinity

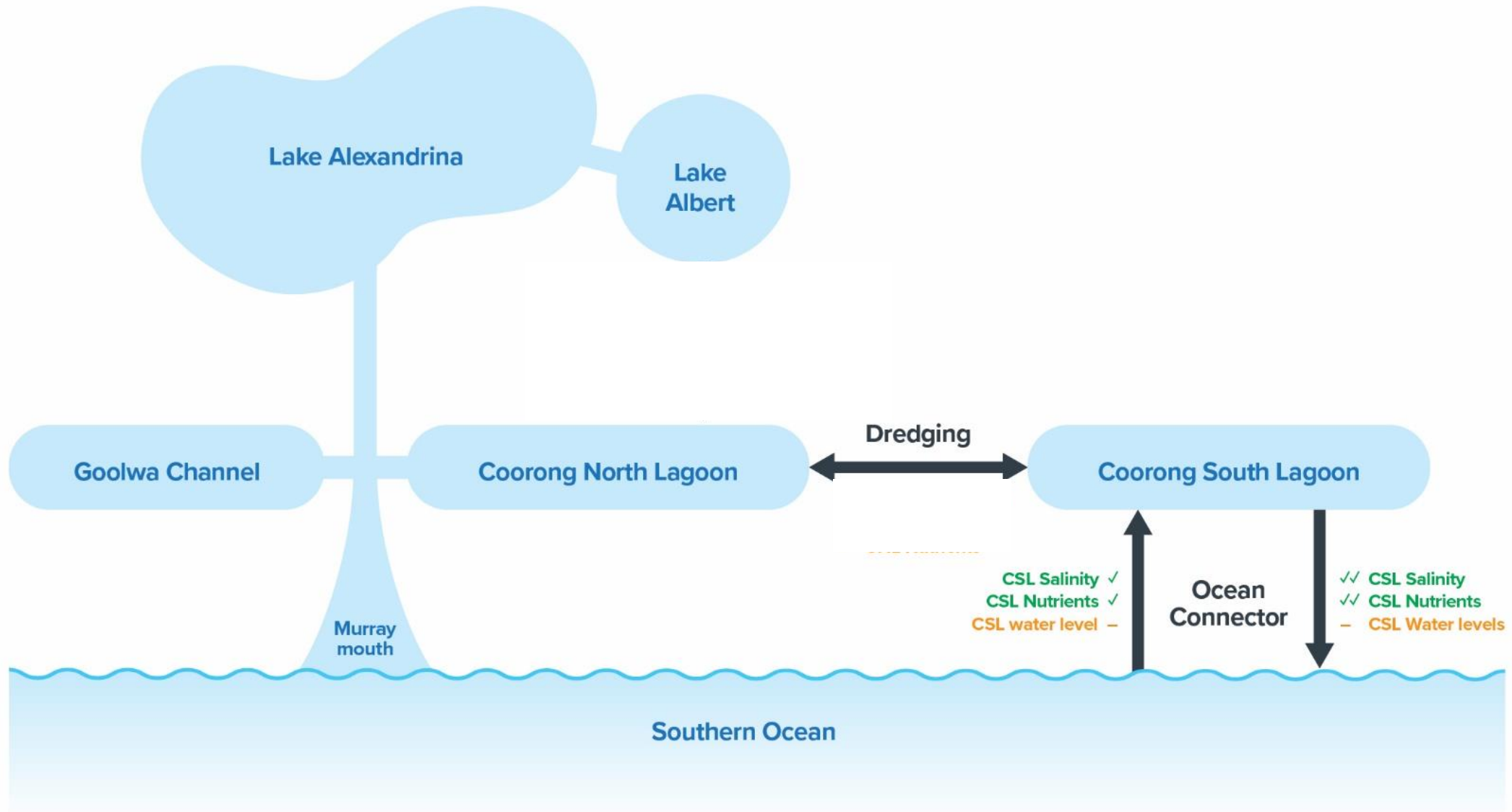


Expected Value - Nutrients

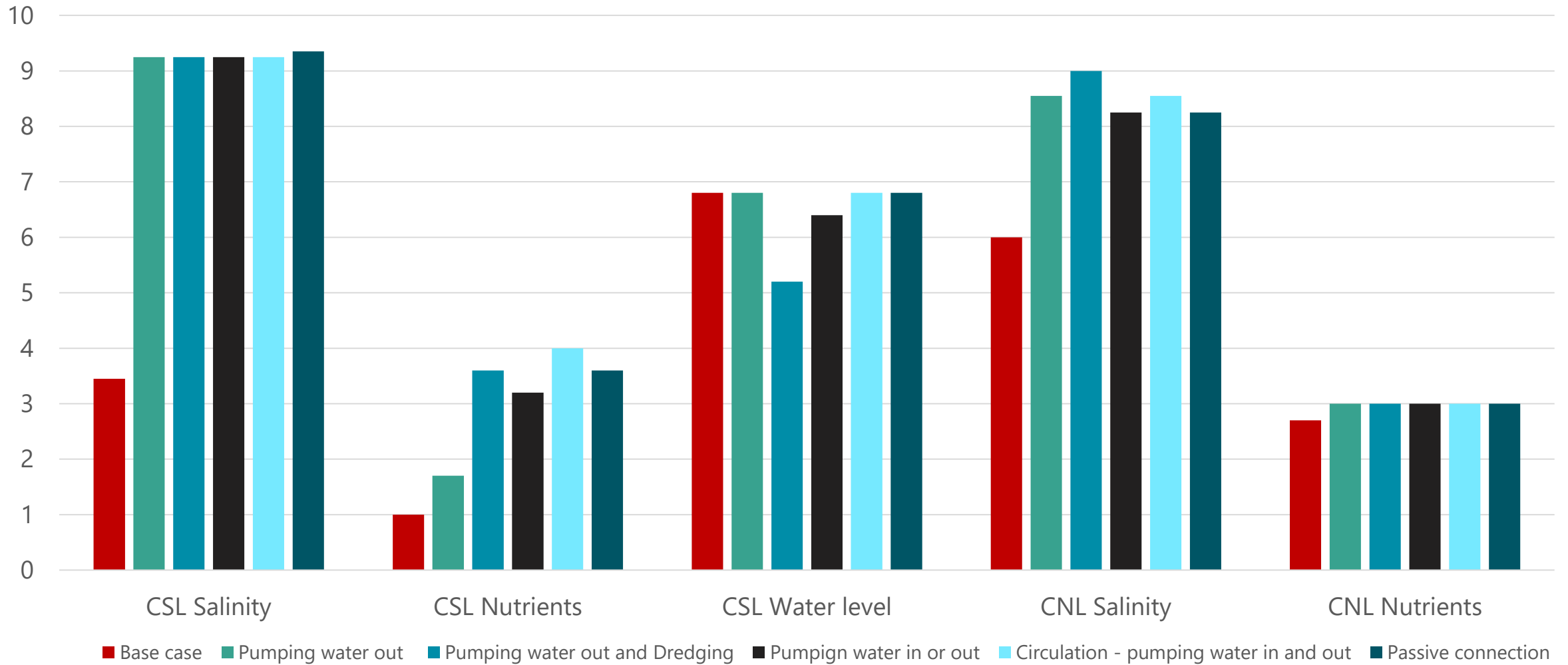


Ocean connector

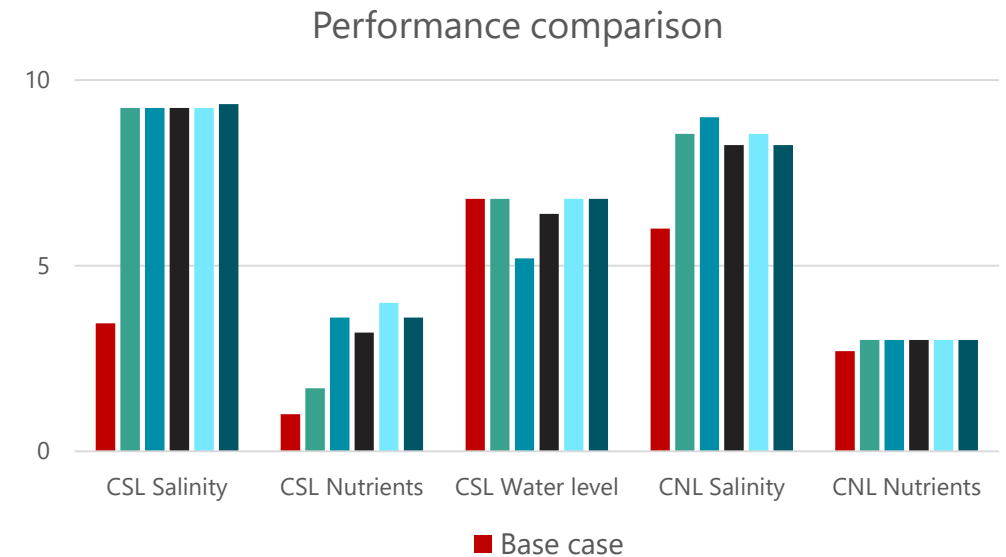
- The ocean connector option delivers the best improvements to the system
- This option can be delivered through a series of configurations:
 1. Pumping water into the CSL
 2. Pumping water out of the CSL
 3. Pumping water out of the CSL and dredging at Parnka Point
 4. Pumping water in or out of the CSL.
 5. Circulation - pumping water in and out of the CSL
 6. Passive movement of water in and out of the CSL.
- Pumping water into the CSL as a standalone solution provides limited benefits to the system.
- All the rest of the ocean connector configurations can be optimised to deliver desired salinity and nutrient reductions. The most complex options (passive and circulation connection) perform slightly better.
- An operation strategy for pumping will need to be developed and tested to avoid or minimise trade-offs; particularly on water levels



Relative Ecological Performance – comparison



- All the ocean connector configurations can be optimised to deliver positive salinity and nutrient reductions.
- The most complex options (passive and circulation connection) perform slightly better.
- An operation strategy for pumping will need to be developed and tested to avoid or minimise trade-offs; particularly for water levels being maintained at critical times of the year.
- Staging of reductions in salinity will need to be optimised to reduce secondary impacts.



The South Australian Government's
Healthy Coorong, Healthy Basin Program
is jointly funded by the Australian and
South Australian governments.



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