Healthy Coorong, Healthy Basin

Coorong Infrastructure Investigations
Draft Feasibility Assessment Report Consultation I February 2022

Summary and Next Steps

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Australian Government

Government of South Australia

2021 Feasibility Investigations

- Hydrodynamic, biogeochemical and ecological modelling
- Ecological assessments and analyses
- Cultural heritage surveys
- Engineering technical feasibility assessments
- Concept designs
- Preliminary Socio-economic assessments
- Capital and operating and maintenance cost estimates
- Multi-criteria analysis.

Draft Feasibility Assessment Report

- **Synthesises** all feasibility investigations
- Outlines the **key findings**
- **Does not make a recommendation** on specific infrastructure option
- Will be **finalised** (with recommendation) following **community consultation**
- *Now is the time to have your say!*

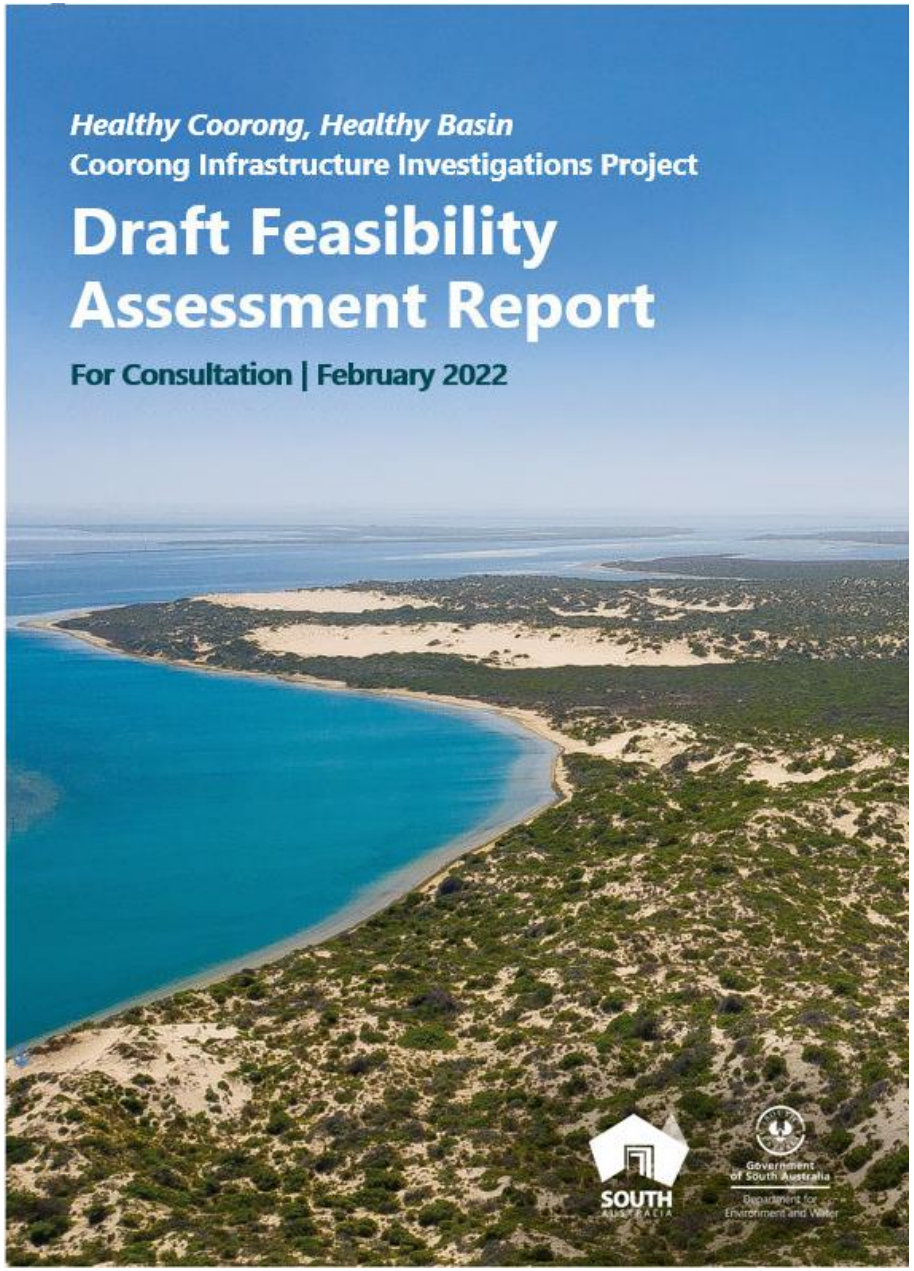

Table 2. Summary of the features of CIIP infrastructure concepts. *Denotes alternating directions of pumping.

Option		Concept #	Description	Connector details		Dredging details		Discharge structure			Pump		Proposed operation		
				Number of pipes	Diameter	Dredging - length	Dredge width	RexMat (low visual impact)	Jetty	Breakwater	Pump direction	Number of pumps	Target Flow (maximum possible)	Typical flow days (current conditions)	Typical Flow Days (climate change)
Lake Albert Connector		1A	Passive Lake Albert connector channel	1	Channel 13 m base width						Passive		1,000 ML/d	241 days	143 days
		1B	Passivwe piped Lake Albert Connector	7	2.1 m						Passive		1,000 ML/d	241 days	143 days
		2	*Dredge Parnka Point*	Dredging is not considered on its own – Dredging details are summarised for 1A+2, 1B+2, 3C, 3D										2 year operation (365 days)	
	Dredging	1A+2	Passive Lake Albert Connector channel + dredge Parnka Point	1		17.5 km	100 m – 200 m				Passive		1,000 ML/d	241 days	143 days
	Dredging	1B+2	Passive piped Lake Albert Connector + dredge Parnka Point	7	2.1 m	17.5 km	100 m – 200 m				Passive		1,000 ML/d	241 days	143 days
Coorong South Lagoon – Southern Ocean Connector		3A	Pump out (jetty discharge)	1	2.2 m				1 x 150 m		Intermittent pump	8 (Coorong)	1,000 ML/d	137 days	189 days
		3B	Pump out (low visual impact discharge)	1	2.2 m			1			Intermittent pump	6 (Coorong)	1,000 ML/d	137 days	189 days
	Dredging	3C	Pump out (jetty discharge) + Dredge Parnka Point	1	1.2 m	17.5 km	100 m – 200 m		1 x 150 m		Constant pump	3 (Coorong)	250 ML/d	365 days	365 days
	Dredging	3D	Pump out (low visual impact discharge) + Dredge Parnka Point	1	1.2 m	17.5 km	100 m – 200 m	1			Constant pump	3 (Coorong)	250 ML/d	365 days	365 days
		4A	Pump in or out (separate pumping stations)	1	1.4 m				1 x 350 m		Bidirectional pump	4 (Coorong) 4 (Ocean)	350 ML/d	365 days* (alternating direction)	365 days* (alternating direction)
		4B	Pump in or out (one common pumping station)	1	1.6 m					1 (200 x 50 m)	Bidirectional pump	4 (Young Husband Peninsula)	350 ML/d	365 days* (alternating direction)	365 days* (alternating direction)
	Dredging	5A	Circulation (pump in and out) (jetty discharge)	2	1.4 m	9 km			1 x 350 m (in) 1 x 150 m (out)		Bidirectional pump	4 (Coorong) 4 (Ocean)	350 ML/d	365 days*	365 days*
	Dredging	5B	Circulation (pump in and out) (low visual impact discharge)	2	1.4 m	9 km		1	1 x 350 m (in)		Bidirectional pump	3 (Coorong) 4 (Ocean)	350 ML/d	365 days*	365 days*
		6	Passive Southern Ocean Connector	10	2 m					1 (240 x 160 m)	Passive	N/A	Variable	365 days	365 days
Discontinued			*South East Flows Augmentation*	*This option did not progress to concept design as the option was discontinued on the basis that is did not provide sufficient benefit to the Coorong South Lagoon*											

Key Findings

All concepts explored provide an ecological improvement from the base case (or status quo). To determine a preferred concept, points of differentiation come down to the extent of improvement that each concept offers, varying constructability considerations and thus risks to environment and cultural heritage, and subsequent financial implications. Table 7 summarises the key findings for each option, with further detail explored below the table.

Table 2. Summary of key findings for each concept under feasibility investigation

Concept	Traffic light	Key finding
Passive Lake Albert connector channel	🔴	• These options provide less improvement to salinity (current conditions) and no improvement to salinity (climate change conditions) in the Coorong South Lagoon when compared with the base case. • There is no improvement to nutrient levels in the Coorong South or North lagoons compared to the base case.
Passive piped Lake Albert Connector	🔴	
Passive Lake Albert connector channel + dredge Parnka Point	🔴	
Passive piped Lake Albert Connector + dredge Parnka Point	🔴	
Pump out (jetty discharge)	🟢	• There are two discharge options for pumping out. • The low visual impact options provide the greatest benefit to visual amenity. Construction would not proceed into the surf zone as far as a jetty would.
Pump out (low visual impact discharge)	🟢	
Pump out (jetty discharge) + dredge Parnka Point	🟢	• Potential to improve nutrient levels further in the Coorong South Lagoon, when compared with pumping out without dredging. • Additional connectivity benefits for boat access.
Pump out (low visual impact discharge) + dredge Parnka Point	🟢	
Pump in or out (separate pumping stations)	🟢	• Pumping water from the Southern Ocean to the Coorong South Lagoon would provide a water source in addition to River Murray flows. This provides water managers with an additional management lever to manage the system.
Pump in or out (one common pumping station)	🔴	• Breakwaters are designed at a height where they could be overtopped by waves. • This poses significant safety risks to the public and operations and maintenance staff access.
Circulation (pump in and out) (jetty discharge)	🟡	• Two separate alignments (one for pumping in at the Coorong South Lagoon and the other pumping in North of Parnka Point) provide greater risks to impacts on the Younghusband Peninsula (vegetation impact and Cultural Heritage) during construction. • 22 hectares of vegetation clearance would be needed compared with 11 hectares for single pipe concepts.
Circulation (pump in and out) (low visual impact discharge)	🟡	
Passive Southern Ocean Connector	🔴	• Breakwaters are designed at a height where they could be overtopped by waves. • This poses significant safety risks to the public and operations and maintenance staff access.

RED Limitations to feasibility (that cannot be resolved with design improvements)

YELLOW Limitations to feasibility (that can be resolved with design improvements)

GREEN Feasible option that may improve the health of the Coorong South Lagoon

All the concepts we explored provide an overall ecological improvement from the base case (or status quo) across all indicators (water level, salinity and nutrients). In determining a preferred option, we looked at the extent of improvement that each concept can offer.

Key Finding 1: The Lake Albert Connector option (with or without dredging) does not produce ecological improvements to the health of the Coorong South Lagoon to the same extent as the Coorong South Lagoon – Southern Ocean Connector options. It was also found that the Lake Albert Connector concepts are the only concepts that fail to keep salinity under 100g/L when conditions of the Millennium Drought are simulated.

Key Finding 2: Pumping water out of the Coorong South Lagoon is the most effective way of improving and maintaining desired salinity and nutrient concentrations. Pumping out of the Coorong South Lagoon can be achieved through different discharge structure options (i.e. jetty, breakwater or low visual impact FlexMat).

Key Finding 3: Pumping into the Coorong South Lagoon from the Southern Ocean would provide a water source in addition to flows down the River Murray and provide water managers with an additional management lever with which to manage the system. This water would be in addition to water for the environment returned and delivered under the Murray-Darling Basin Plan.

Key Finding 4: Dredging on its own will not deliver sufficient ecological restoration benefits, but in conjunction with other options can improve the health of the Coorong South Lagoon. Dredging has additional ecological and social benefits by improving hydrological connectivity and boat accessibility between the Coorong North and South lagoons.

In February 2022, we will seek feedback from community stakeholders on this Draft Feasibility Report, specifically in relation to the preferred option(s), before finalising this report to submit to the Australian government for funding consideration to develop a business case.

Limitations to feasibility (that cannot be resolved)

Concept	Traffic Light	Rationale
Passive Lake Albert connector channel		Does not provide sufficient ecological improvements to the Coorong South Lagoon
Passive piped Lake Albert Connector		
Passive Lake Albert connector channel + dredge Parnka Point		
Passive piped Lake Albert Connector + dredge Parnka Point		
Pump in or out (one common pumping station)		Breakwaters pose a major safety risk (due to wave overtopping)
Passive Southern Ocean Connector		

Limitations to feasibility (that can be resolved)

Concept	Traffic Light	Rationale
Circulation (pump in and out) (jetty discharge)		Two separate alignments, thus posing greater risk to environment and cultural heritage
Circulation (pump in and out) (low visual impact discharge)		

Feasible options that may improve the health of the Coorong South Lagoon

Concept	Traffic Light	Rationale
Pump out (jetty discharge)		All provide the potential to improve the health of the Coorong South Lagoon
Pump out (low visual impact discharge)		
Pump out (jetty discharge) + dredge Parnka Point		
Pump out (low visual impact discharge) + dredge Parnka Point		
Pump in or out (separate pumping stations)		

Key Finding 1

- The **Lake Albert Connector** (with or without dredging) **does not produce ecological improvements to the health of the Coorong South Lagoon** to the same extent as the Coorong South Lagoon – Southern Ocean Connector options.

- It was also found that the Lake Albert Connector concepts are the only concepts that **fail to keep salinity under 100g/L when conditions of the Millennium Drought are simulated.**

Key Finding 2

- **Pumping water out** of the Coorong South Lagoon is the **most effective** way of improving and **maintaining desired salinity and nutrient concentrations**.

- Pumping out of the Coorong South Lagoon can be achieved through **different discharge structure options** (i.e. jetty, breakwater or low visual impact FlexMat).

Key Finding 3

- **Pumping into the Coorong** South Lagoon from the Southern Ocean would provide a **water source in addition to flows down the River Murray** and provide water managers with an **additional management lever** with which to manage the system.

- This water would be **in addition to water for the environment** returned and delivered under the **Murray-Darling Basin Plan**.

Key Finding 4

- **Dredging on its own will not deliver sufficient ecological restoration** benefits, but **in conjunction with other options can improve the health** of the Coorong South Lagoon.

- **Dredging has additional ecological and social benefits** by improving **hydrological connectivity** and boat accessibility between the Coorong North and South lagoons.

Visual interpretation

These are visual interpretations of one of several Coorong infrastructure concepts currently under feasibility investigation.

They are intended to illustrate the concept and it's potential scale within the vast Coorong landscape.

It does not represent a preference or proposal to progress the concept

Finalising the draft Feasibility Assessment Report

- Upon finalising a recommendation of the preferred infrastructure options, and subject to funding approval, we will develop a business case for the preferred option(s) for consideration by governments.
- The **recommendation will be made using community input.**

Business case development

Community Consultation

- **3 February - 3 March**

- **2x Live Information Webinars**
  - 3, 4 February
  - Will be uploaded to web
- **4x Interactive Online Open House Events**
  - 10, 11, 15, 16 February
  - Discussions with project specialists
- **Online Survey & Email Submissions**
  - Close 3 March 2022

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

Government of
South Australia