

# **Adelaide Beach Management Review**

WACRA, 21 September 2023

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# Review Goals

1. How to manage sand on Adelaide's beaches to achieve the following goals:
  - Minimise disruption for all communities
  - Avoid environmental harm
  - Maximise sand staying on beaches



# Review Process (Steps 1-5)



# Review Process (Steps 6-9)

**Opportunity for  
people to speak to  
their submissions  
(IAP)**  
Oct 2023

**Finalise assessment  
of shortlisted  
management  
approaches  
(Bluecoast)**  
Oct-Nov 2023

**Finalise advice to  
government  
(IAP)**  
Nov-Dec 2023

**Community and  
stakeholders  
informed of the  
outcomes of the  
review and next steps**  
Early 2024

# Stage 1 Engagement

- What outcomes and values are important about how sand on beaches could be managed?
- How do these relate to the goals of the review?
- Are there any sand management approaches not on the existing long list that should be considered?



## Adelaide Beach Management Review

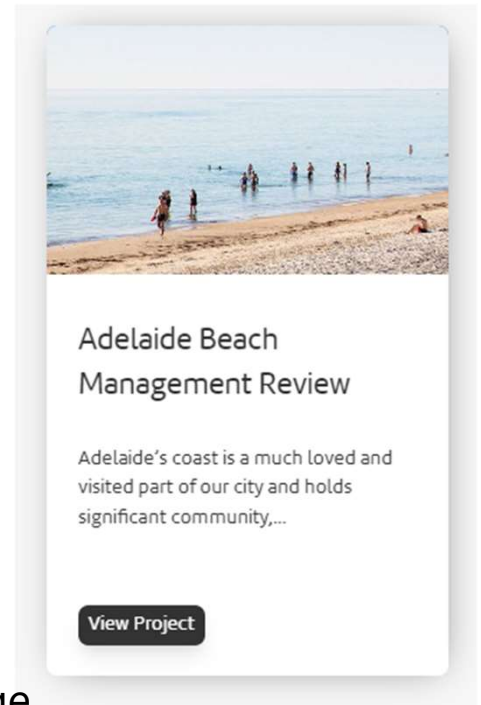
Adelaide's coast is a much loved and visited part of our city and holds significant community,...

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# Stage 1 Engagement Outcomes

601 survey responses and 119 written submissions

- **Most disruptive:**
  - Sand management vehicles on beaches, and permanent plant or equipment that impacts on views
- **Least disruptive:**
  - Temporary plant/equipment or infrastructure that interrupt views
- **Most important:**
  - Protecting coastal habitats, native plants and animals, and maintaining the integrity of existing sand dunes
- **Least important:**
  - Avoiding carbon emissions from transport and operation of machinery, and protecting and acknowledging First Nations heritage



# Stage 1 Engagement Outcomes

## Key themes

- Manage impacts on beach amenity and access
- Manage impacts on dunes and biodiversity
- Opposition to a pipeline, sand mining and sand carting
- Desire for best practice, science/data-driven solutions resilient to climate change
- Desire to improve the equity of sand distribution
- Concerns the survey was biased and communities were pitted against each other



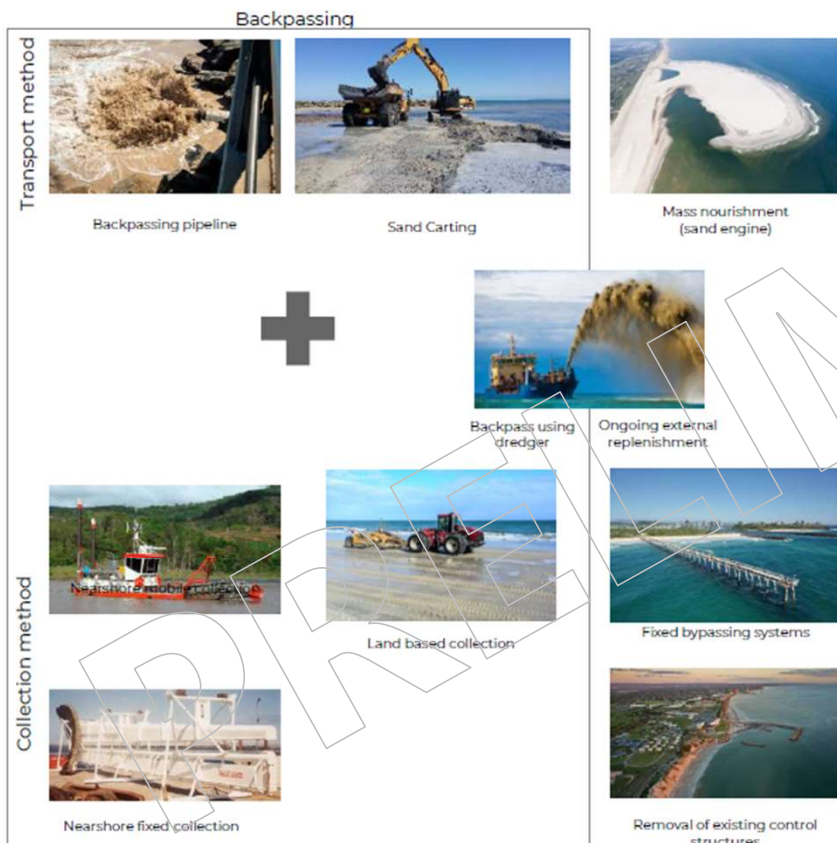
### Adelaide Beach Management Review

Adelaide's coast is a much loved and visited part of our city and holds significant community,...

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# Longlist Options

## Sand management



## Slow sand movement



Shore based control structures



Offshore control structures



Reduce wave climate (e.g., artificial islands, shaped offshore dredging, wave energy converter array)



Coarse external sand

## Relocate/defend



Seawalls



Planned retreat/relocation 'Migrate with sand'



'Do nothing'

## Complementary management



Dune stabilisation



Restoration of seagrass/artificial seaweed



Smart monitoring



# Coarse Filtering Approach (Bluecoast)

**Is the option effective? (will it work?)**

- Does it provide coastal protection?
- Does it provide amenity?
- Level of confidence in solution?
- Adaptable to climate change?

**Is the option practical? (can it be done?)**

- Engineering feasibility?
- Strategic alignment with action owner?
- Does the owner have the financial capacity to deliver it?

**Is the option acceptable? (should it be done?)**

- Does it have acceptable environmental impacts? Is it expected to be approved?
- Is it legal?
- What is the expected level of community support?

	Is it effective?	Is it practical?	Is it acceptable?
<b>Go</b>	Provides a medium to long-term sandy buffer against coastal hazards	Can be implemented with available coastal management techniques	No adverse impacts and clear approval pathway
<b>Slow</b>	Provides a less effective sandy buffer against coastal hazards	Requires new technology or advances in existing technology or techniques	Acceptable impacts/ impacts can be managed with identified approval pathway
<b>Stop</b>	Does not provide adequate buffer	Can't be implemented	Unacceptable impacts / illegal or not likely to be approved

# Shortlisted Options

## Dredging



Dredging would involve sand being collected from the seabed using a dredging vessel and being delivered to West Beach or other beaches in need of sand. This could include taking sand from deposits offshore of Largs Bay, Outer Harbor and/or Port Stanvac.

## Pipeline



Sand pumping uses underground pipelines to transfer sand and seawater from beaches where sand is building up to beaches in need of sand. Operating the pipeline would involve collecting sand from the beach or nearshore for 4 months at a time. Quarry sand would be delivered annually over the first 5-year period to restore West Beach.

## Carting



Maintain current arrangement: Moving sand using trucks and machinery and external quarry sand.

## OPTION 1.1

### Dredge existing sand near the shore



About **2km offshore** of **North Haven** when collecting sand from the seabed and would move to 100-150m offshore of **West Beach** when placing the sand.



Sand would be collected from the seabed using a **small dredge**, which would sail south and pump the sand into **West Beach** using a **floating pipeline** that runs from the **vessel to the shore**, to deposit sand near the shoreline. Sand could also be delivered to other beaches as required.



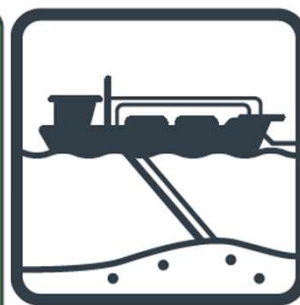
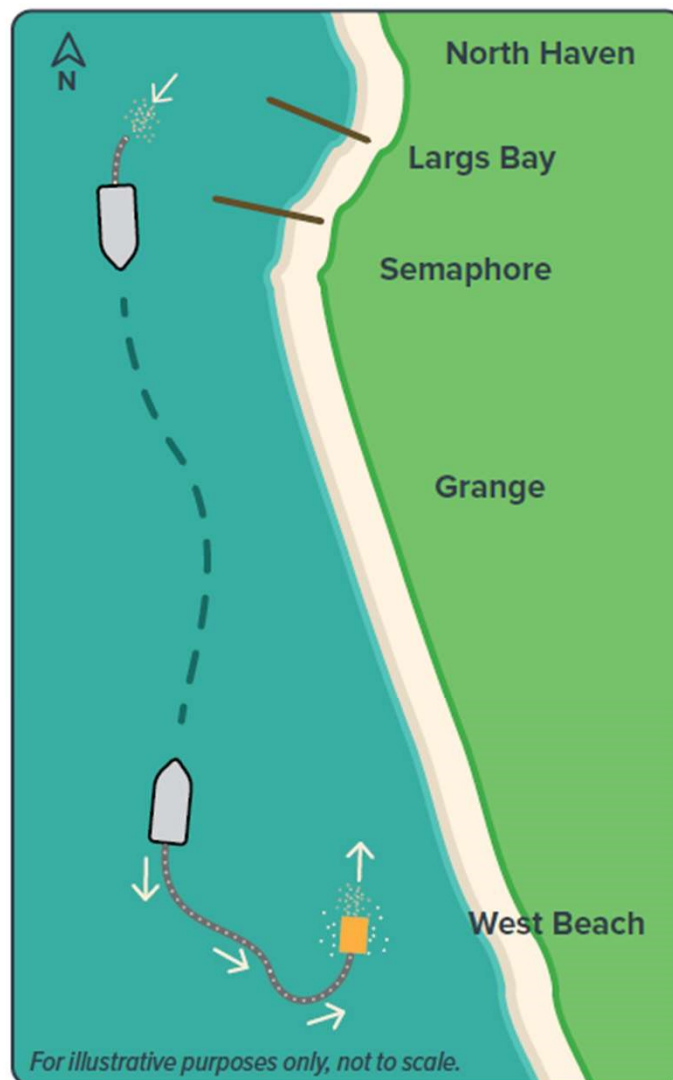
This option would involve an initial **large quantity** of sand being collected from offshore of North Haven and then delivered to West Beach in the first year of operation and ongoing sand **top-ups** every **4 years**.



The initial collection and delivery of a large volume of sand would be expected to take about **3-4 months**. Ongoing top-ups would be delivered every **4 years** and would be expected take about **2 months** to complete.



The estimated total **20-year cost** for this method is **\$45-50 million** subject to the availability of a suitable dredge.





**OPTION 1.2** Dredge using large offshore sand deposits



Location about **2km offshore** at the chosen collection site(s) and then 100-150m offshore of **West Beach** when delivering the sand.



**External sand** could be sourced from the seabed at larger offshore deposits, including **Largs Bay**, **Outer Harbor** and/or **Port Stanvac** (subject to further investigations and approvals).



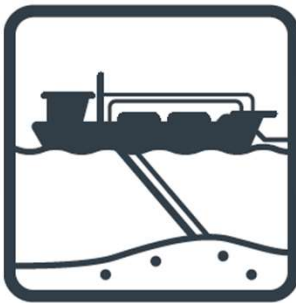
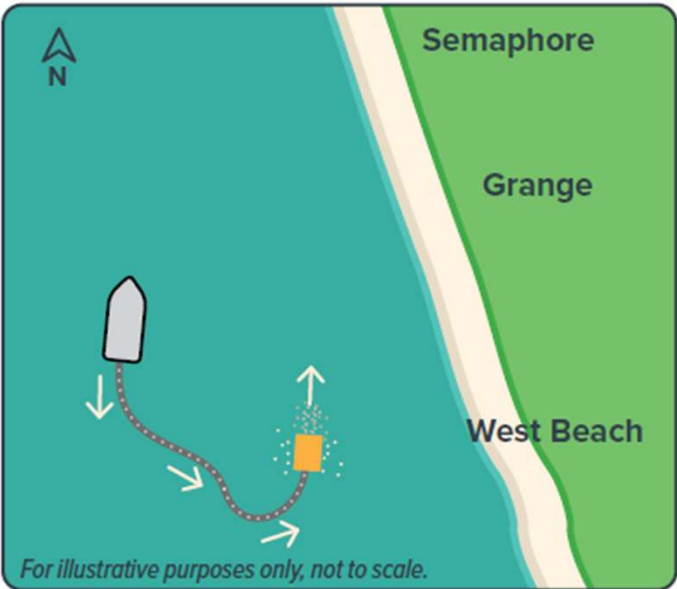
Sand would be collected from the seabed using a **medium-sized dredge**, which would pump the sand into **West Beach** using a **floating pipeline** that runs from the **vessel** to the **shore**, to deposit sand near the **shoreline**. Sand could also be delivered to other beaches as required.



Delivery of a **very large quantity** of sand from nearby sources would be expected to take **3-4 months**.




The estimated total **20-year cost** for this method is **\$55-60 million** if using **nearby sand** sources subject to availability of a suitable dredge.





## OPTION 1.3


### Combination of dredging offshore deposits and trucking quarry sand

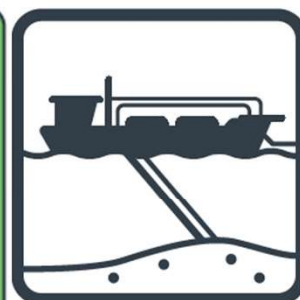
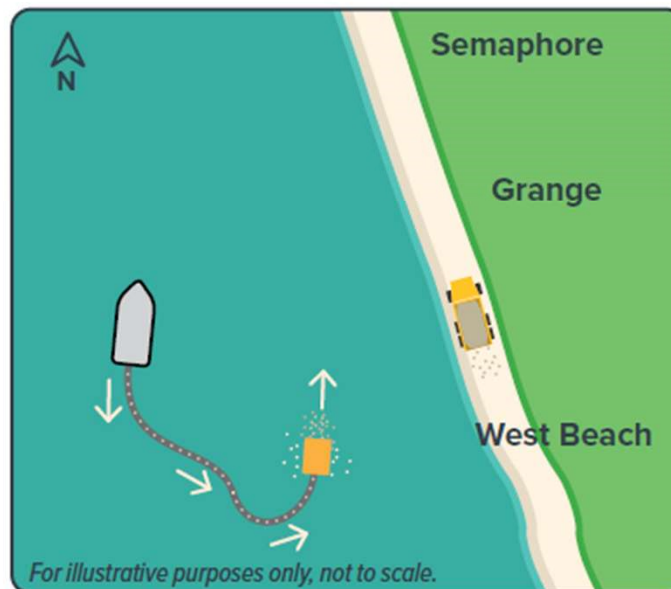
 The dredge would be located offshore at the collection site and about 100-150m offshore of **West Beach** when distributing the sand.

 **External sand** could be sourced from the seabed at offshore deposits, including **Largs Bay, Outer Harbor** and/or **Port Stanvac** (subject to further investigations and approvals). In addition, dredged sand would be complemented with sand sourced from **land-based quarries**.

 Sand collected by the **dredge** would be pumped as a slurry into **West Beach** using a **floating pipeline** that runs from the vessel to **deposit sand** near the **shoreline**. **Quarry sand** would be delivered on to the **beach** using **trucks**.

 Delivery of a **smaller annual quantity** of **quarry sand** would be expected to take about **3 months each year** for the first **5 years**. Delivery of the **medium quantity** would be expected to take about **3-4 months every 4 years** commencing from the second year.

 The estimated total **20-year cost** for this method is **\$60-100 million** subject to the availability of a suitable **dredge** and **sand deposits**.



## OPTION 2.1

### Pipeline using tractors/trucks on beaches



Sand would be collected **onshore** using **machinery** (trucks and scrapers) and fed into the **pipeline** through **sand collection units**. The sand would be **pumped south** through an **underground pipeline** and released at **West Beach** or other locations as required. **Permanent booster pump stations** would be located along the **pipeline route**.



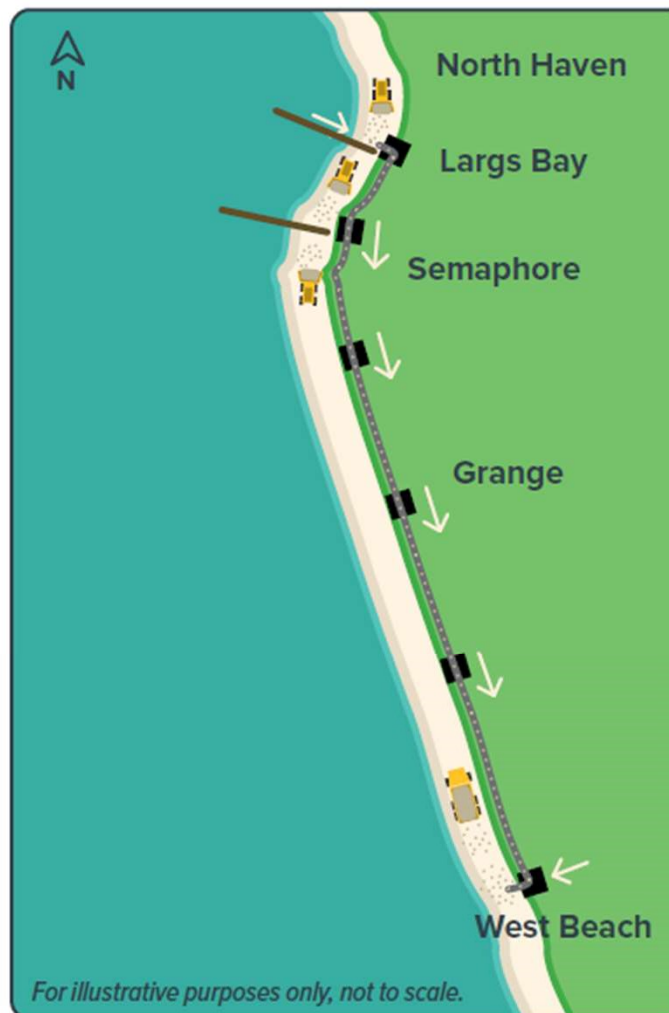
Delivery of a **small annual quantity** of **quarry sand** would take about **3 months** each year for the **first 5 years**. Sand collection units would be located at **Semaphore South**, **Semaphore** and **Largs Bay**. Sand would be collected from the beach by **tractor** and **sand scraper** around the **Semaphore** and **Largs jetties**, and the **Semaphore South breakwater**.



Work would be undertaken **yearly** over about **4 months**.



The estimated **20-year cost** for this method is **\$140-155 million**.





**OPTION 2.2** Pipeline using dredge pump system on jetties



This option involves a **submersible pump** operating from a crane on the **Semaphore** or **Largs Bay jetties**. The dredge pump would mobilise the surrounding seabed sand, which is then pumped into the pipeline system through a pipe along the jetty and under the beach (see illustration).



Delivery of a **small annual quantity** of **quarry sand** would be expected to take about **3 months each year** for the **first 5 years**. **Four jet pumps** would be installed on the **Semaphore** and **Largs Bay jetties**. Sand would be **collected adjacent/under the Semaphore and Largs Bay jetties**.



Work would be undertaken **yearly** over about **3-4 months**. Jetties would likely be closed to the public during collection.



The estimated **20-year cost** for this method is **\$140-150 million**.



*For illustrative purposes only, not to scale.*



**OPTION 2.3** Pipeline using a temporary dredge



A small sized dredge would collect sand from the near shore seabed and pumped directly into the pipeline through the nearest collection station. A mobile collection method using a dredge provides flexibility on where sand can be sourced



Delivery of a small annual quantity of quarry sand would be expected to take about 3 months each year for the first 5 years. Sand would be collected from the seabed using a small dredge between Semaphore South and Largs Bay jetty.



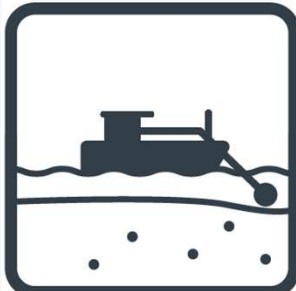
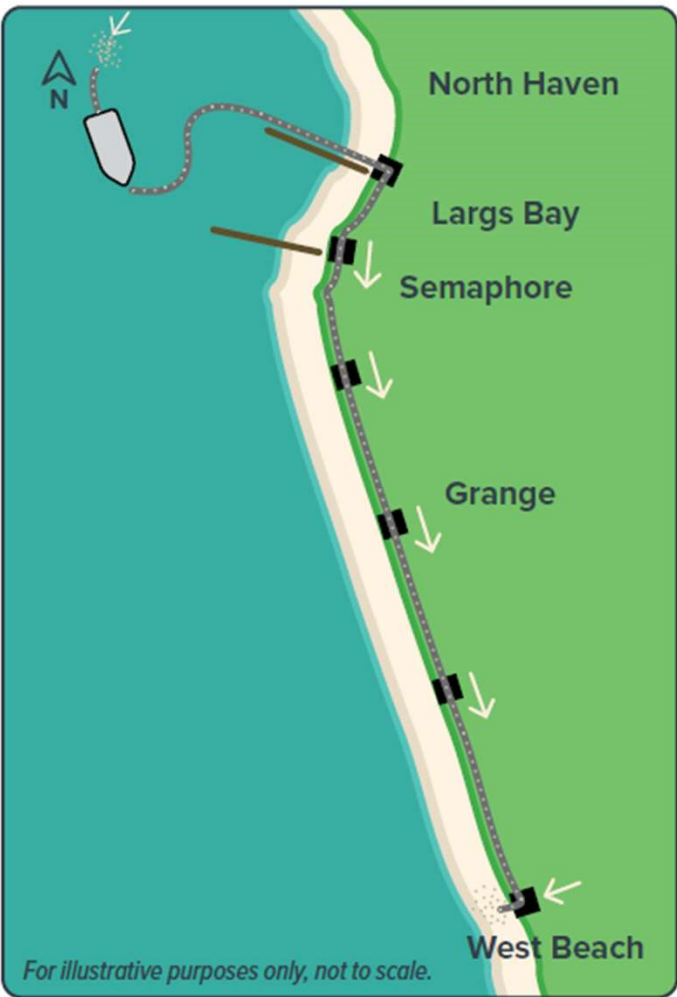
The dredge would collect sand from the seabed offshore near Largs Bay and Semaphore and pumped into the pipeline.



Work would be undertaken yearly over about 4 months.



The estimated 20-year cost for this method is \$140-155 million.





### OPTION 3

### Moving beach sand and quarry sand using trucks and machinery



Sand would be **collected** from the **beach** using an **excavator** and **front-end loader** and trucked to areas where sand is required. **External quarry sand** would be delivered using **trucks on public roads**. **Excavators** would be used to move the deposited sand to achieve the **desired beach profile**.



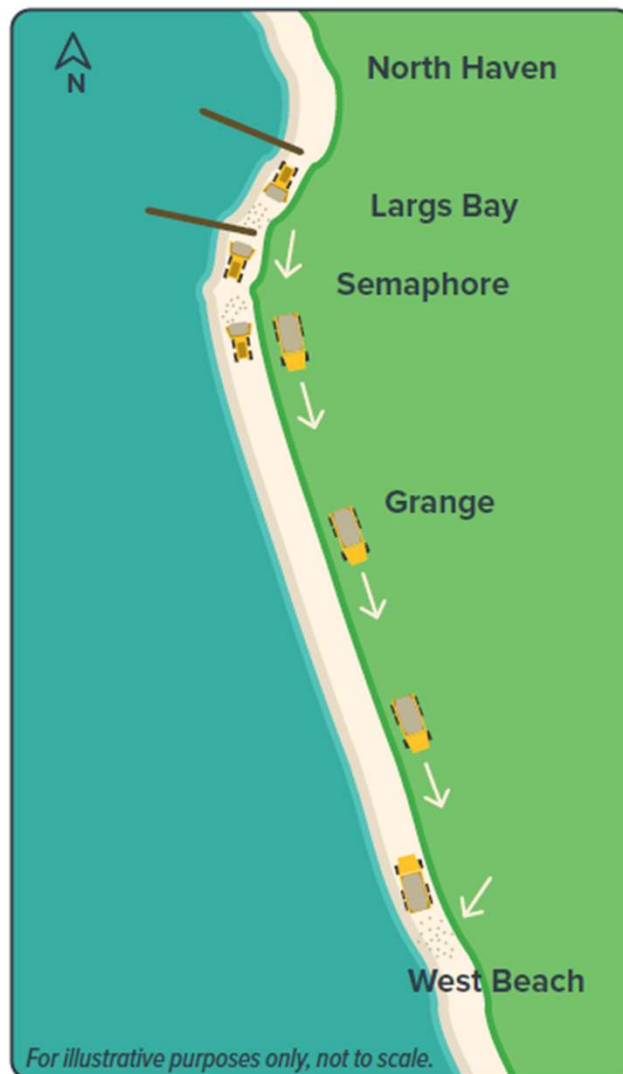
Equal amount of sand would be **collected onshore** from **Semaphore South** and **north of the Semaphore jetty** and delivered using **trucks on public roads** to **West Beach** or other beaches in need of sand. Sand sourced from **land-based quarries** would be delivered to West Beach using trucks accessing the beach via the **Adelaide Sailing Club**.



Sand delivery would happen **twice a year** over **2-3 months**.



The estimated **20-year cost** for this method is **\$100-110 million**.



# Stage 2 Survey Questions

You can provide feedback on as many or as few of the 7 options as you like (all questions optional)

- What is your level of support for each option?

Strong support	Support	Neutral / don't know	Do not support	Strongly do not support
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- Tell us why you answered this way
- Do you have any other feedback?
- Would you like to be heard by the Panel?



## Adelaide Beach Management Review Options Shortlist

Let us know your thoughts on the shortlisted options to manage our Adelaide beaches.

What's...

[View Project](#)

Stage 2 consultation closes  
**5pm 15 October 2023**

**[www.yoursay.sa.gov.au/abmr-shortlist](http://www.yoursay.sa.gov.au/abmr-shortlist)**  
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