

Securing Adelaide's metropolitan beaches, the next stage

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Introduction

- Coast is out of equilibrium with wind and wave climate.
- net northward drift of 100,000 cubic metres/year.
- Active management since 1973, to provide protection and beach amenity.
- In 2005, moved towards using pipelines within cells created by coastal structures and works.

What if Adelaide's beaches weren't managed?

Sand naturally moves north from wind and wave activity

Adelaide's coastline if unmanaged

Sand builds up



Largs Bay

Semaphore

Henley Beach

West Beach

Sand erodes

Sand pumping

- Glenelg to Kingston Park a success.
- Multiple intake and discharge locations for flexibility.
- Pump stations visible, but very quiet.

Glenelg 2017



Seacliff 2009



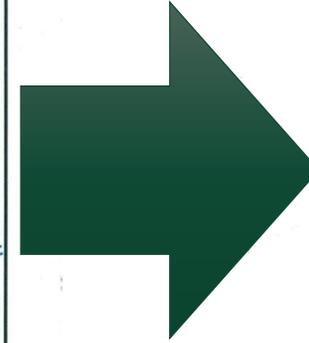
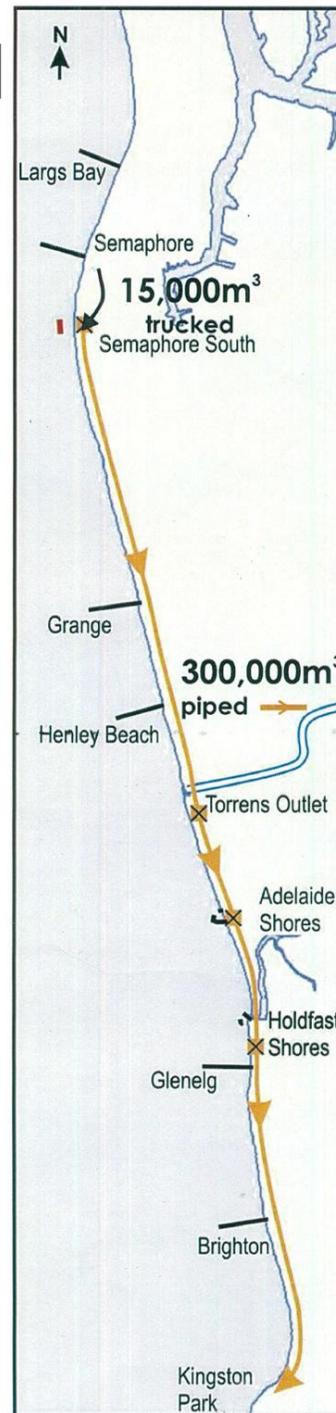
Seacliff 2018



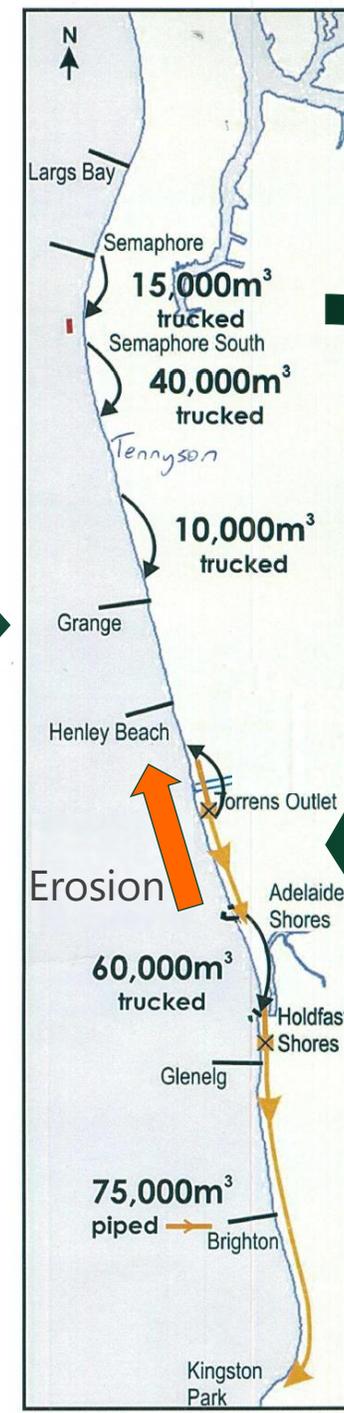
- Stable, vegetated dunes.
- Low community impact.

Adelaide's beach management system

Designed



Delivered



Trucking
2018-
2021

Background (cont.)

- Partial implementation of pipeline system left a vulnerability at West Beach.
- No capacity to recycle sand from northern areas of build-up.
- One-off funding followed 2016 winter – with record storms.
- *New life for our coastal environment* commitment provided additional \$1 million in 2018 to replenish West Beach.
- DHI report presented modelled scenarios which informed Coast Protection Board and DEW advice to the Government in early 2019.



West Beach

1968



2014



Securing the future of our coastline

- 1) Rebuild beach volumes at West Beach and Henley Beach South (\$20m) with:
 - a) Sand carting from Semaphore South and Semaphore in 2019-20 & 2020-21.
 - b) 500,000 m³ of sand from an external source.
- 2) Complete sand pumping pipeline from Semaphore to West Beach so replenishment matches erosion rate (\$28m).
- 3) Partner with community, Green Adelaide, councils to rebuild and revegetate stable sand dune buffers.



Key benefits

- Addresses long-standing issues & criticisms.
- Completed system will set up metro beach management for decades.
- In the medium-term, large-scale trucking will be nearly eliminated on beaches (safer, less disruptive).
- System will be responsive to changing patterns of erosion/accretion as climate/sea level changes.



Securing the future of our coastline

2019/20

2020/21

2021/22

2022/23



\$48.4 Million

Large scale beach replenishment with sand from an external source

STAGE 1

- Identify external sand source
- Consider practical, logistical and environmental factors along Adelaide's beaches

- Develop a plan to access the sand
- Gain approvals
- Engage contractor for works

STAGE 2

Commence delivering additional sand to vulnerable areas of Adelaide's metropolitan coast

Increase immediate beach replenishment at West Beach and Henley Beach South

Additional sand carting to match current rates and loss and stabilise and maintain the beaches and dunes in the short term

Sand dune restoration and revegetation in partnership with local councils and coastal community groups

Construction of a sand recycling pipeline from Semaphore to West Beach

STAGE 1

- Design the pipeline and identify locations for infrastructure, such as pipeline route, pump stations, intakes and discharge points

- Plan and consider physical, engineering and environmental impacts
- Consult with community
- Gain approvals
- Engage pipeline construction contractor

STAGE 2

Begin construction of sand recycling pipeline

STAGE 3

Sand recycling pipeline becomes operational

Keep the community informed

\$4 Million

Provide additional support to protect and conserve our regional coastlines

An additional \$1 million per year for 4 years for regional coasts to help repair, restore and sustain them in partnership with local councils



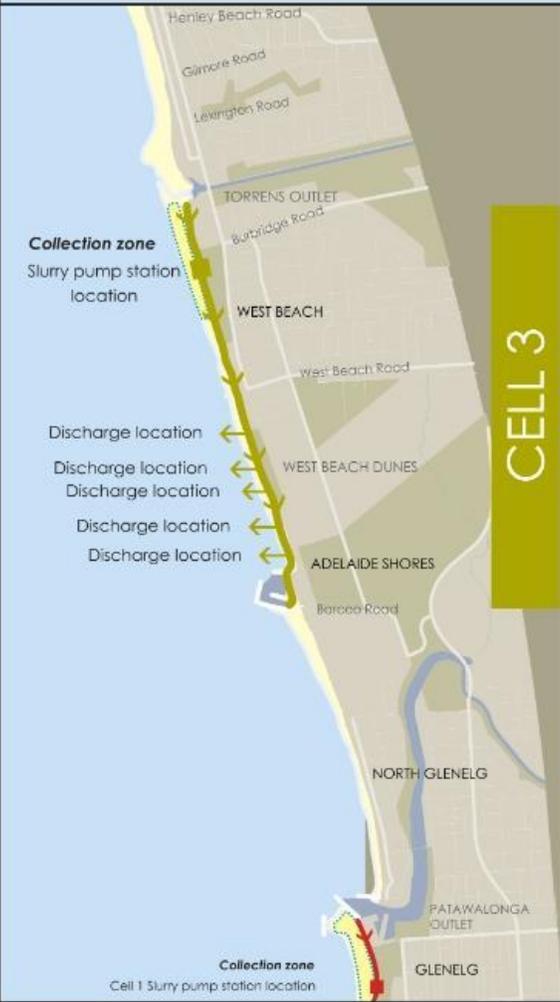
SOUTH AUSTRALIA



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PHOTO: JAMES WATSON



- How it will work**
- 1 Collect the sand and place into the sand collection unit
 - 2 Mix the sand with seawater to form a sand slurry
 - 3 Pump the slurry southwards in pipelines to discharge locations
 - 4 Littoral drift will naturally move sand northwards

NORTH
↑

LEGEND
 ● main pump station and sand collection
 ● booster pump station
 ← sand discharge location
 ← combined booster pump station and sand discharge location
 ↓ pipeline showing flow

SCALE
 0 500m 1km

line

between Glenelg and Kingston

11 outlets over 9km.

metres of

ex. 12km.

in





West Beach

Henley Beach

Grange

Tennyson

Semaphore

New sand recycling pipeline to recycle the large sand volumes required to maintain West Beach and Henley Beach South. The pipeline will also reduce the need for trucks on the roads and beaches in the future.

Location: From Semaphore to the Torrens outlet at West Beach

Start date: 2021/22

Expected completion: 2022/23

Note dotted line for illustration purposes only

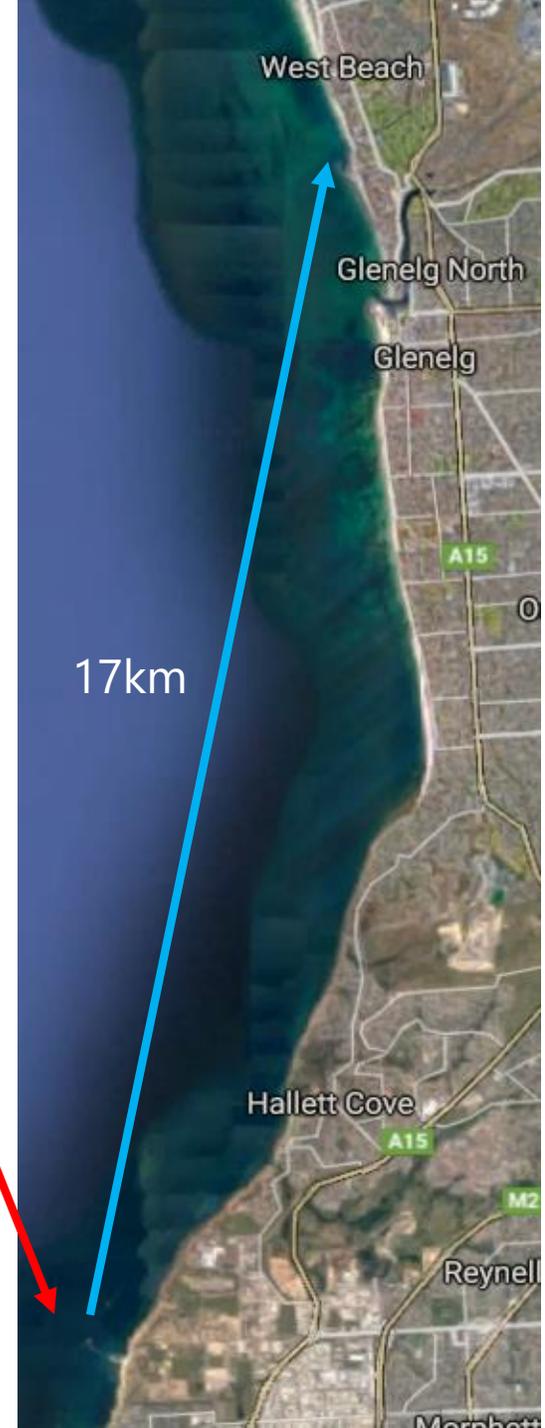
Large scale beach replenishment to raise the beach levels and boost sand dune buffers using sand from an external source. The government will also restore sand that is currently being lost each year.

Location: West Beach/Henley Beach South

Commencing: 2019/20

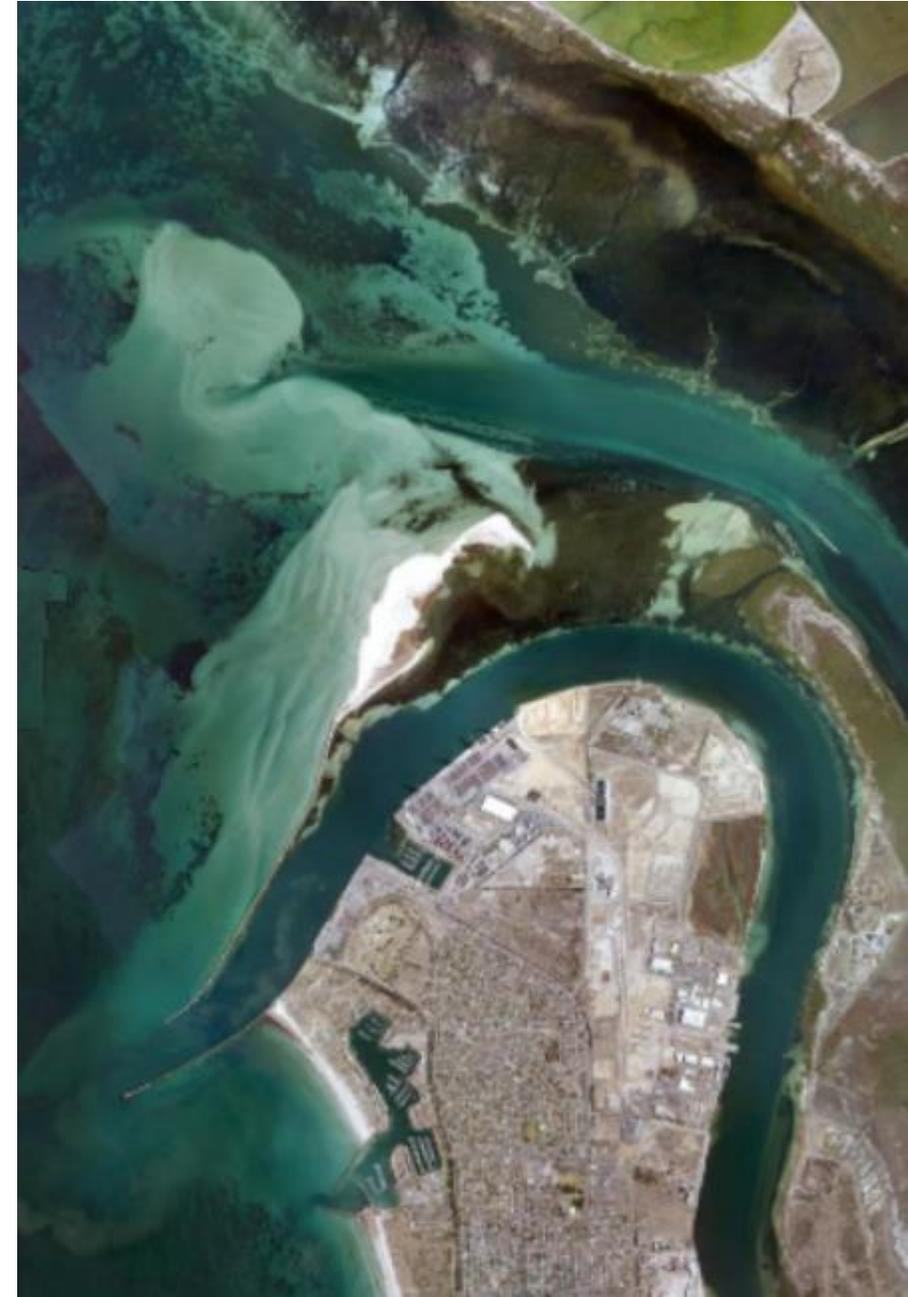
External sand source

- CPB dredged sand offshore from Port Stanvac in 1990s to replenish beaches (> 1 million m³)
- Deposit is not part of Adelaide's littoral zone (10-20m water depth)
- Refinery and wharf has been demolished, possibly opening up access to remaining sand deposit
- Site needs proving and testing
- 17km to West Beach by sea



Alternative sand sources

- Quarries have expressed interest, e.g. deposits at Mount Compass
- Will have to consider logistics, social impacts.
- DEW has assessed the Section Bank, which has areas of suitable sand, but significant environmental sensitivities
 - Increasing importance for shorebird nesting
 - Shelter for Barker Inlet
 - Is not receiving significant volumes of sand from the beach system



The longer term

- Periodic addition of external sand will be needed to offset erosive impact of rising sea levels (averaging about 25,000m³/yr) and maintain beaches.
- Pumping system will have the capacity to accommodate and increase in net northward sand movement in the future.
- Expected life of pipeline is greater than 25 years – other components are accessible for maintenance.
- Long-term limit of strategy will depend on future SLR, availability of sand sources, community sentiment/priorities.



MSL 2009

MSL 2100





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