PHASE 1 ASSESSMENT: 2020-2021 SAND MOVEMENT

1. Context

The Department for Environment and Water is commissioning an independent assessment of the impacts on the northern Adelaide metropolitan beach systems (including dunes) of sand movement activities associated with the *Securing the future of our coastline* project. The impacts of two components of the project are to be assessed in two stages:

- Phase 1: Interim sand management (2020-21): additional sand carting from the northern beaches to West Beach to match current rates of sand loss from West Beach while a new sand pumping system is planned, designed and constructed from West Beach to the northern beaches.
- *Phase 2 (Not in Scope): Ongoing sand management: annual recycling of sand from the northern beaches to match littoral drift rates out of West Beach, using the new sand pumping system.*

This document defines the required scope of Phase 1 of the independent impact assessment.

2. Approach

Two phases of work are required. Phase 1, the subject of this scope statement, will assess impacts associated with the 2020-21 financial year interim sand carting works. The Phase 1 assessment is to be completed by 31 August 2020 to inform planning for the spring 2020 sand movement activities.

The second phase (not included in this scope statement) will follow Phase 1 and will assess impacts associated with ongoing sand movement activities that will occur annually following construction of the new sand pumping system from West Beach to the northern beaches.

3. Phase 1: Interim Sand Movement Works (2020-2021)

3.1. Activity to be assessed

- Movement of up to 120,000m^3 of sand in the 2020-21 financial year to West Beach from beaches between Semaphore Park and Largs Bay.
- Sand to be collected by land plane (scraper) from the beach between the low water mark and 5m from the toe of dune (noting also the requirement in Section 3.3 to consider alternative offset distances from the toe of dune (5m, 10m and 15m).
- Sand to be moved by truck along the beach to the existing beach access point at the Semaphore Surf Life Saving Club (Point Malcolm Reserve), where it will be loaded onto road haulage trucks and transported to West Beach.
- Sand to be moved under the Semaphore jetty using a mobile conveyor belt system when necessary.

3.2. Scenarios to be assessed

The assessment is to consider the following hypothetical sand movement scenarios for the 2020-21 financial year.

3.2.1. Scenario 1

- Collection of a total of 20,000 cubic metres of sand during 2020-21 from between the Semaphore and Largs Bay jetties, split equally between spring 2020 and autumn 2021.
- No collection from the breakwater salient in spring 2020, to allow the salient to naturally replenish during the peak months of northward littoral drift over summer.

- Collection of 50,000 cubic metres of sand from the breakwater salient in autumn 2021. (This is the volume of sand the breakwater was designed to accumulate in the salient each year).
- Collection of the remaining 50,000 cubic metres from north of Largs Bay jetty, split equally between spring 2020 and autumn 2021.

Table 3.2.1 Summary of Scenario 1

Location of Sand Collection	Spring 2020 (m^3)	Autumn 2021 (m^3)	Totals for 2020-21 (m^3)
Breakwater salient (Point Malcolm)	0	50,000	50,000
Between Semaphore and Largs Bay Jetties	10,000	10,000	20,000
North of Largs Bay Jetty (to Strathfield Tce)	25,000	25,000	50,000
TOTALS	35,000	85,000	**120,000**

3.2.2. Scenario 2

- Collection of a total of 35,000 cubic metres of sand during 2020-21 from between the Semaphore and Largs Bay jetties, split equally between spring 2020 and autumn 2021.
- No collection from the breakwater salient in spring 2020, to allow the salient to naturally replenish during the peak months of littoral drift over summer.
- Collection of 50,000 cubic metres of sand from the breakwater salient in autumn 2021.
- Collection of the remaining 35,000 cubic metres from north of Largs Bay jetty, split equally between spring 2020 and autumn 2021.

Table 3.2.2 Summary of Scenario 2

Location of Sand Collection	Spring 2020 (m^3)	Autumn 2021 (m^3)	Totals for 2020-21 (m^3)
Breakwater salient (Point Malcolm)	0	50,000	50,000
Between Semaphore and Largs Bay Jetties	17,500	17,500	35,000
North of Largs Bay Jetty (to Strathfield Tce)	17,500	17,500	35,000
TOTALS	35,000	85,000	**120,000**

3.2.3. Scenario 3

- Collection of a total of 20,000 cubic metres of sand during 2020-21 from between the Semaphore and Largs Bay jetties in spring 2020.
- Collection of the remaining 100,000 cubic metres from the breakwater salient and north of Largs Bay jetty in autumn 2021.

Table 3.2.3 Summary of Scenario 3

Location of Sand Collection	Spring 2020 (m^3)	Autumn 2021 (m^3)	Totals for 2020-21 (m^3)
Breakwater salient (Point Malcolm)	0	50,000	50,000
Between Semaphore and Largs Bay Jetties	20,000	0	20,000
North of Largs Bay Jetty (to Strathfield Tce)	0	50,000	50,000
TOTALS	20,000	100,000	**120,000**

3.3. Assessment Required (Phase 1)

Environmental

- Identify and review previous assessments by DEW (and others) of the impacts associated with sand movement works to inform this assessment process.
- Propose and implement a methodology to estimate possible dune recession (and remaining dune buffers) at collection zones and adjoining areas in response to the sand movement scenarios described in Section 3.2.
- The estimates of possible dune recession are to be informed by:
    - the topographic surveys undertaken of the sand collection area north of Largs Bay jetty before and after the May 2020 collection of sand from this zone;
    - the before and after surveys of the breakwater salient collection zone from the spring 2019 sand movement works; and
    - DEW's long-term beach profile survey information and sand analysis information (particle size distribution).
- Consider whether the landward (upper) limit of sand collection should be 5m, 10m or 20m from the toe of the dune.
- Using the *Flora Survey of Dunes Semaphore South to Largs North* (T&M Ecologists, March 2020) report, assess the associated likely impact of any predicted dune recession on dune flora and fauna, noting planting works undertaken by community groups undertaken since the T&M assessment.
- Assess the potential impacts of dune recession on stormwater quality, noting that many stormwater outlets currently discharge to the rear of the dune system such that the stormwater is "filtered" by the dunes.
- Assess possible impacts of the sand movement works on beach in-fauna, including as a result of heavy vehicles operating in the intertidal zone and as a direct result of the removal of sand.
- Assess impacts of the sand movement works on bird life, particularly beach-nesting birds and migratory shorebirds, and marine life, including as a result of disruption to beach in-fauna.

Social

- Identify potential social impacts directly associated with the sand movement works such as noise, disruption to beach users and potential accessibility issues due to dune recession.
- Assess whether current speed limits for beach vehicles are appropriate.

Economic

- Based on any identified dune recession, assess the remaining "dune buffer" that provides protection to infrastructure and any risks associated with damage to public or private infrastructure.

Reporting

- Give a presentation on the draft findings to the Impact Assessment sub-group of the *Securing the future of our coasts* Community Reference Group.
- Prepare a draft report summarising findings.
- The draft report is to include recommendations for operational procedures to mitigate identified impacts.
- Respond to comments on the draft report and prepare a final report incorporating agreed changes.

3.4. Not Included in Scope (Phase 1)

- Assessment of impacts associated with the (yet to be designed) sand pumping system from West Beach to Semaphore.
- Assessment of impacts associated with the deposition of sand at West Beach.
- Assessment of non-coastal impacts associated with road haulage.
- Assessment or evaluation of alternative ways of collecting and moving sand.
- Greenhouse gas emission analysis.
- New field work such as topographic surveys or flora and fauna assessments.
- Community consultation.