



Fact sheet

Dredge Methodology

Flinders Ports
Outer Harbor Channel Widening Project

Dredging will be conducted using state-of-the-art equipment and a methodology that aligns with best practice dredge management to minimise impact on the environment.

Flinders Ports has appointed international dredging and marine specialist contractor Boskalis to undertake dredge works to widen the Outer Harbor channel and swing basin.

Boskalis' role is to conduct the dredge works under the approved Dredge Management Plan and licence conditions issued by the Environment Protection Authority (EPA).

Boskalis is a world-leader in dredge works and ensuring effects on the marine environment are minimised. The dredging works include:

- Channel widening, from the existing 130m to 170m
- Widening the swing basin, from an existing diameter of 505m to 560m
- Some dredging of the existing channel to achieve 14.2 m depth across the channel and swing basin

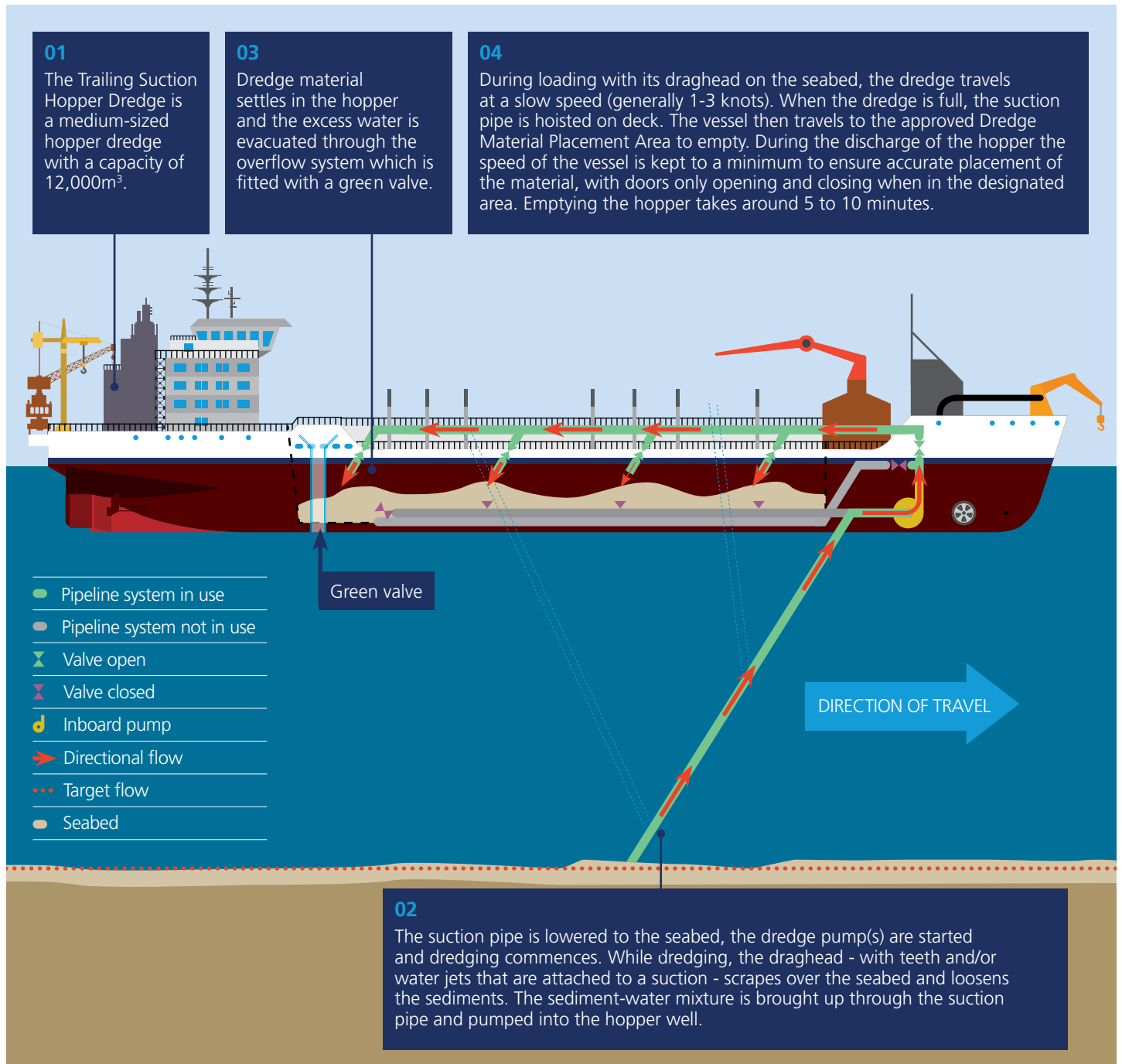
The total amount of material to be dredged is estimated at approximately 1.55 million metres³. The final dredge material volume will be confirmed upon completion based on a pre- and post-dredge survey.

Dredged material will be transported and deposited in the Dredge Material Placement Area.

The equipment used for dredging and dredge material placement includes:

- One Trailing Suction Hopper Dredge, fitted with a green valve. The Trailing Suction Hopper Dredge will be the primary dredge used and will move most of the material.
- One Backhoe Dredge, used for harder material that cannot be removed by the Trailing Suction Hopper Dredge.
- Two Split Hull Barges to carry dredge material removed by the Backhoe Dredge.
- Sweeping Vessel (also known as a bed leveller) will be used to level any ridges remaining from the dredging. It will also be used to assist the Trailing Suction Hopper Dredge by moving materials from areas that are difficult for it to access.

HOW THE TRAILING SUCTION HOPPER DREDGE WORKS

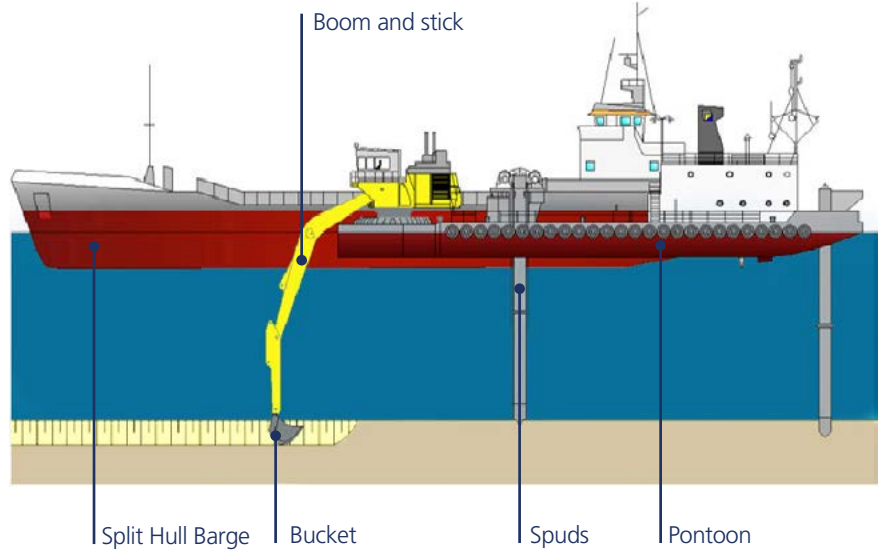


The Backhoe Dredge will dredge the harder soil or material not accessible by the Trailing Suction Hopper Dredge. A Backhoe Dredge is basically a hydraulic excavator installed on a pontoon.

The Backhoe Dredge positions its spuds on the seabed. The bucket mounted at the end of the stick excavates material from the seabed and lifts it to the surface. Lifting and lowering of the bucket, boom and stick occurs in a very controlled and monitored manner.

The material in the bucket is then loaded into a Split Hull Barge.

When the Split Hull Barge is full, it travels to the Dredge Material Placement Area (pushed by a tug) where the dredged material is placed.



Two Split Hull Barges will be available during the project to allow continuous dredging by the Backhoe Dredge.

THE GREEN VALVE ON THE TRAILING SUCTION HOPPER DREDGE

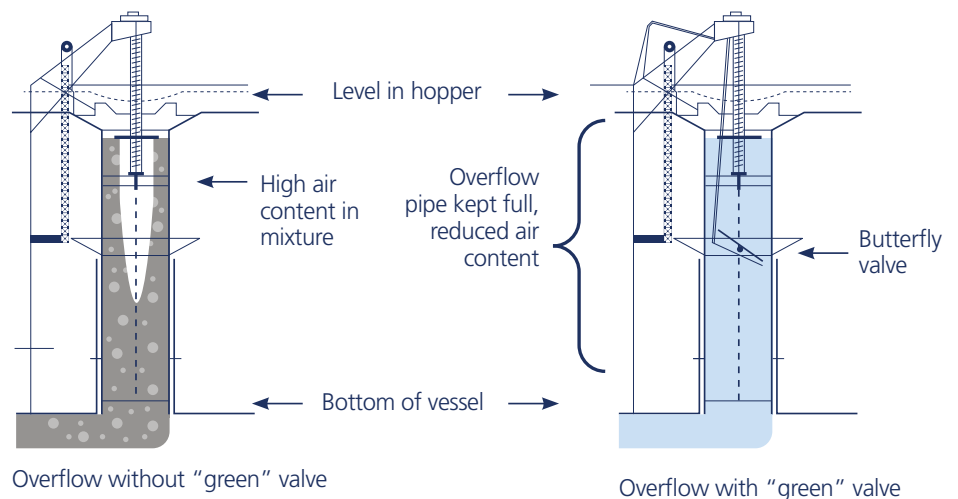
The Trailing Suction Hopper Dredge has an overflow on the hopper to expel excess water.

Without a green valve, the overflow would be fully open and the water mixture, which includes fine sediments that have not settled in the hopper, would free fall down to the seabed.

During this free fall, air gets trapped. Once expelled, part of that mixture, including sediments, can then be pulled towards the water surface by the rising air bubbles creating a visible plume.

A green valve reduces turbidity by preventing air from getting into the water overflow. The overflow system remains partly closed, preventing air from being trapped. This in turn means fewer air bubbles are present, diminishing the amount of fine sediments suspended in the upper layers of seawater.

Sediment plumes are therefore reduced and mainly confined to the lower parts of the ocean where currents have less power for sediment dispersion.



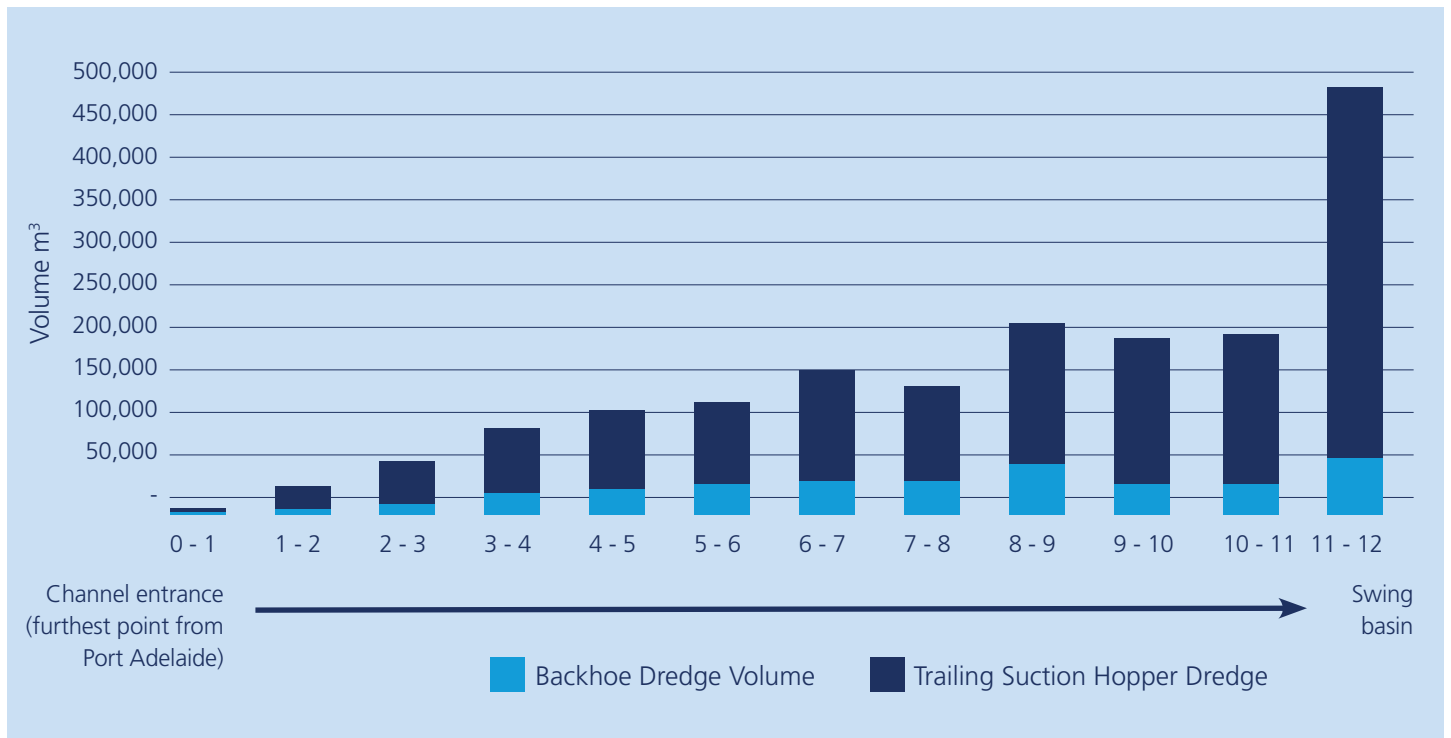
The dredge material consists of primarily shelly sand and silt, with some clay and limestone.

Softer material will typically be dredged by the Trailing Suction Hopper Dredge and the harder material by the Backhoe Dredge. The Trailing Suction Hopper Dredge will remove the largest amount of material.

The estimated split of volume between the Trailing Suction Hopper Dredge and Backhoe Dredge activities across the Outer Harbor channel is shown in the figure below.

The volume of dredge material to be removed generally increases from the channel entrance in Gulf St Vincent and most in the swing basin.

APPROXIMATE VOLUME OF DREDGE MATERIAL TO BE REMOVED BY THE TRAILING SUCTION HOPPER DREDGE AND BACKHOE DREDGE



MAP OF WHERE MATERIAL WILL BE DREDGED IN THE OUTER HARBOR CHANNEL AND SWING BASIN

