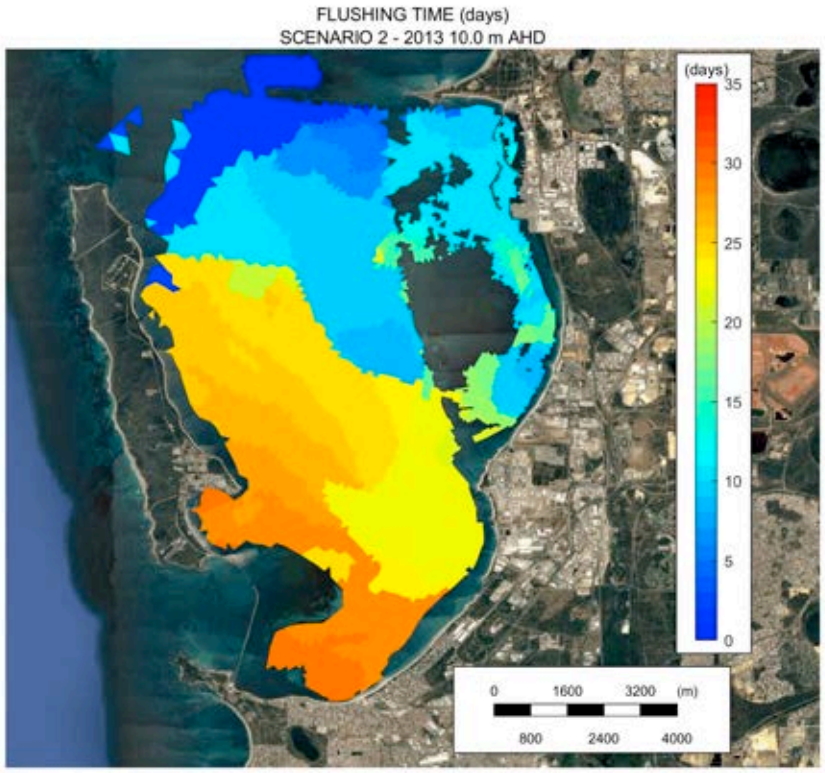
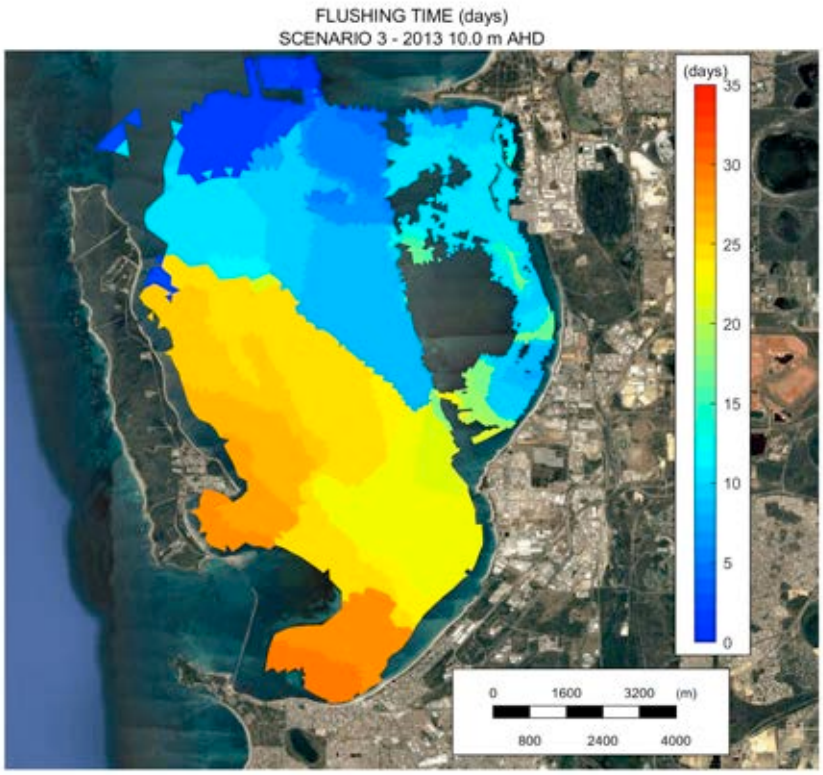
- **Scenario 2:**

  Based on the deepening and widening of the existing channel to 18.76 metres' depth and 220 metres' width.



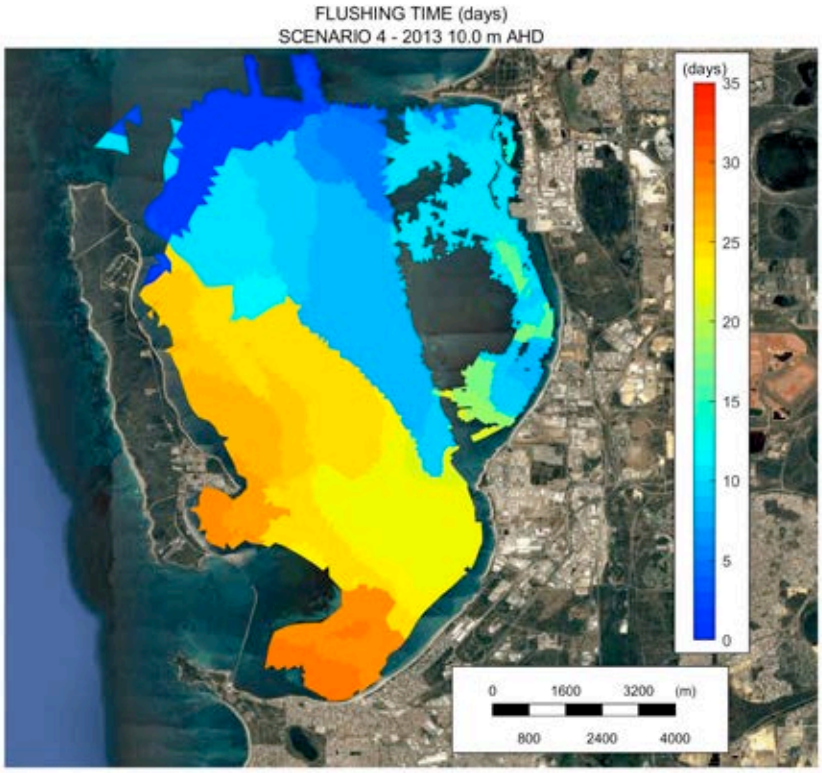
- **Scenario 3:**

  Based on the existing navigational access channel (with no changes to depth or width) but with an additional access channel in parallel to the existing one. This channel was dredged to 18.76 metres' depth and 220 metres' width through Parmelia and Success banks.



• Scenario 4:

Based on Scenario 3 with both the existing and additional channels, but with filling to occur in the designated disposal area to a level of 7.76 metres' depth to simulate the effect of a potential seagrass offset measure.



The following conclusions were drawn from these hydrodynamic simulations:

1. A wider, deeper channel improves the flushing of Cockburn Sound and is felt over most parts of the year and across most of the deep basin.
2. Dredging a second channel in addition to the existing channel is the best option for improving flushing rates.
3. Filling in holes on the sand banks to offset seagrass habitat loss does not negate flushing improvements created by the new channel.
4. Seasonal medium-scale and broadscale water circulation regimes in Cockburn Sound were not affected.

The anticipated result was that a new, deep channel into Cockburn Sound would help flush the basin faster, with marginal improvements in the southern section.

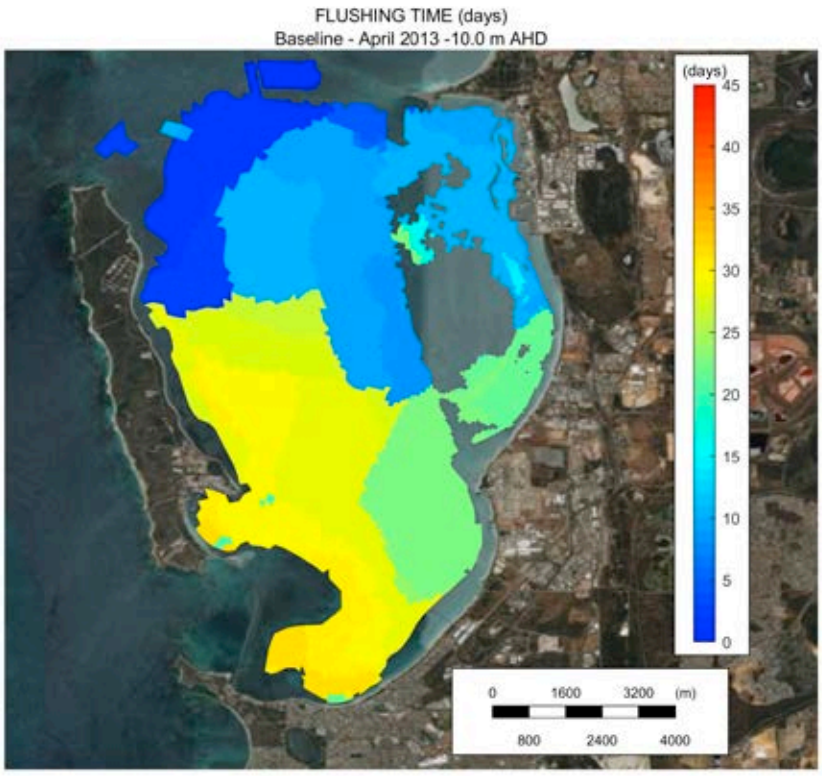
6.3
Flushing impacts of the Kwinana ports

The second component of the modelling study investigated the potential for the various channel and port configurations to affect circulation regimes. BMT ran a series of simulations on the three end state Kwinana ports – Options A, B and C – to determine the impacts of the port footprints on flushing in Cockburn Sound.

The results of the three simulations are depicted in the diagrams for Scenarios 6-8, along with the baseline (Scenario 5):

- **Scenario 5:**

  Depicts the baseline, which is the current situation of having one access channel, but without the industrial intakes and discharges. This is the hydrodynamic model against which the Option A, B and C impacts are measured to determine whether they improve flushing in Cockburn Sound or not.



- **Scenario 6:**

  Depicts the hydrodynamics for Option A at its end state (handling 3.8 million TEUs) with a second access channel, excluding industrial discharges. The larger areas of blue and green in Scenario 6 show an improvement in flushing throughout Cockburn Sound for Option A.