

**RE-ASSESSMENT OF THE PRESENCE OR ABSENCE OF
CAULERPA TAXIFOLIA AND *CAULERPA RACEMOSA*
VAR. *CYLINDRACEA* AT THE DREDGE SPOIL DUMP
SITE FOR THE OUTER HARBOR DREDGING**

Prepared for KBR and Flinders Ports Pty Ltd

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Executive Summary

Qualitative video surveys of the Outer Harbor dredging spoil dump site, approximately 38 km from Outer Harbor, during March 2008 suggest that *Caulerpa taxifolia* and *Caulerpa racemosa* var. *cylindracea* are not likely to be present in this area as at March 6th 2008. It should be noted that these surveys are part of a risk assessment process, and do not categorically rule out the presence of *Caulerpa taxifolia* and *Caulerpa racemosa* var. *cylindracea*, although similar surveys of this type in other areas have identified invertebrates and macroalgae including *Caulerpa* in the past.

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1. Background

In 2006, Flinders Ports undertook a capital dredging program at Outer Harbor to provide a deep-sea port accessible to fully laden Panamax class ships. The project involved dredging a large area of the swing basin and existing approach channel by 2 m, and dumping the spoil at an offshore site. Prior to the dredging, attached and drifting *Caulerpa racemosa* var. *cylindracea* and drift *Caulerpa taxifolia* were observed within the area to be dredged (Rowling *et al* 2005). The spoil dump site is located approximately 38 km west of Outer Harbor in a water depth of 30 – 40 m (Figure 1).

As part of the environmental impact assessment process, SARDI conducted two sets of 42 video transects of the spoil disposal site prior to dredging to firstly assess the presence and distribution of flora and fauna (Marsh *et al* 2002), and secondly to specifically determine if either species of *Caulerpa* were present (Rowling and Tanner 2005). Neither of these surveys indicated the presence of any seagrass or macroalgae in the area. Now that the major dredging operation has been completed, a third survey of the site is required to assess if there has been any translocation of *Caulerpa* during the dredging operations.

This report documents the findings of a series of video surveys conducted at the spoil disposal site by SARDI Aquatic Sciences. The sole aim of the surveys was to determine if either species of *Caulerpa* is likely to be present at the site, and thus no attempt was made to identify or quantify other species, although the video footage is archived at SARDI if this information is required in the future.

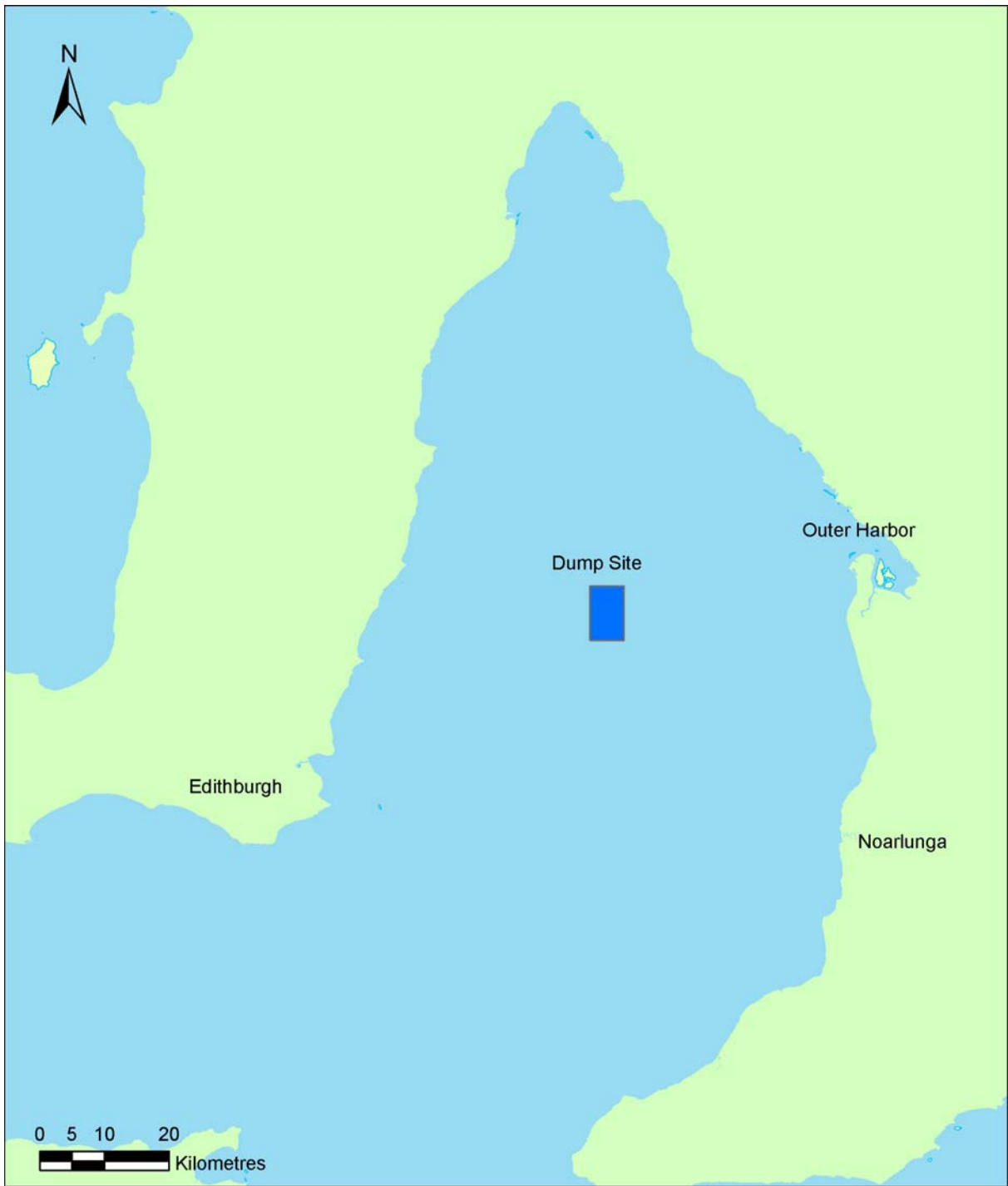


Figure 1: Location of spoil disposal site within Gulf St Vincent.

2. Methods

To assess the presence or absence of *Caulerpa taxifolia* or *Caulerpa racemosa* var. *cylindracea* at the dump site, remote video surveys were used. The dump site was divided up into 42 1 km x 1 km blocks. A video transect was undertaken approximately through the centre of 15 of these blocks, ensuring that at least two transects were conducted through each of the seven rows and six columns of the dump site area (see Figure 2 for the locations of each transect).

For each transect, a video camera (Morphcam) was lowered to 0.2 - 0.5 m off the bottom and the substrate filmed while the boat drifted for either 10 min or 500 m, whichever came first. A GPS (Garmin GPS 72) was used to record the start and end point of each transect. The location of the camera relative to the bottom and quality of footage was monitored on board the boat via a live feed to a surface monitor (Sony DV). This methodology followed that used by Marsh *et al* (2002) and Rowling and Tanner (2005) in the initial assessments of the site.

Video footage was analysed visually by a trained observer to determine the presence or absence of both *Caulerpa* spp. along each transect. The types and abundance of other taxa were not assessed; although this can be done at a later date if needed, thus allowing comparison with data obtained in this area in 2002 and 2005.

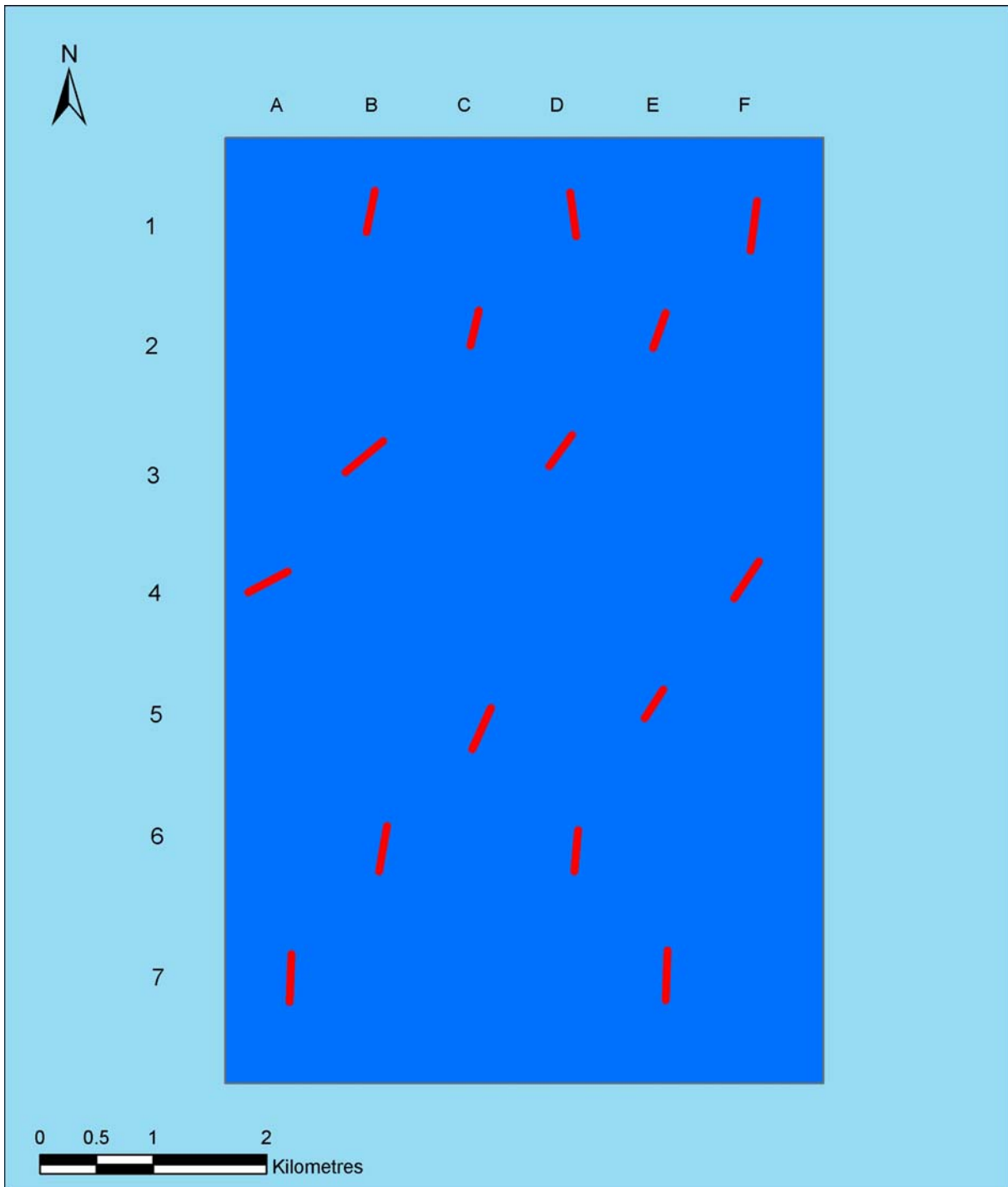


Figure 2: Detail of the spoil disposal site showing transect locations of video surveys.

3. Results

No *Caulerpa taxifolia* or *Caulerpa racemosa* var. *cylindracea* was found on any of the transects surveyed.

4. Discussion

It must be emphasised that while *Caulerpa taxifolia* and *Caulerpa racemosa* var. *cylindracea* were not found in this survey, there is still a possibility that they are present in the area. The specificity and sensitivity of video surveys are limited, but this does not discount them as credible tools for cost-effective surveillance for macroscopic marine pests. Small plants may not be observed and it is possible that areas of infestation will occur away from transects. This type of survey, however, can cover representative areas of benthos rapidly.

The effectiveness of video surveys is difficult to quantitatively assess, but it is possible to make out individual sponges, bryozoans and ascidians as small as ~5 cm on the video footage, suggesting that any but the smallest *Caulerpa* plants would have been detected if within the field of view of the camera. Other surveys using remote video of this type have allowed identification of algae including *Caulerpa* to genus level (Eglinton and Tanner 2003), further suggesting that *Caulerpa* would have been detected if filmed. These surveys, coupled with the lack of other macroalgae at the site, indicate that *Caulerpa taxifolia* and *Caulerpa racemosa* var. *cylindracea* are unlikely to be present in the dump site area.

5. References

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6. Appendix

Start and finish coordinates for each of the videos. Grid refers to the location of the video on the site, taken from Figure 2. Datum is WGS 84.

Grid	Start	Finish
F1	-34.81396 138.1613	-34.81633 138.1609
D1	-34.81333 138.14674	-34.8155 138.14691
B1	-34.81321 138.13097	-34.81508 138.13051
C2	-34.8231 138.13878	-34.82437 138.1385
E2	-34.82306 138.15359	-34.82449 138.15334
D3	-34.83289 138.14623	-34.8341 138.14525
B3	-34.83297 138.13098	-34.83447 138.12935
A4	-34.84332 138.12345	-34.84423 138.12166
F4	-34.84263 138.16085	-34.84485 138.15956
E5	-34.85281 138.15378	-34.85412 138.15281
C5	-34.8569 138.13899	-34.85388 138.14001
B6	-34.86642 138.13132	-34.86318 138.13171
D6	-34.86677 138.14686	-34.86362 138.14701
A7	-34.87679 138.12419	-34.87364 138.1244
E7	-34.87662 138.15387	-34.8735 138.15397