Annex III

Sediments and macrofauna of the sub-tidal channel in inner Castlemaine Harbour

(Extract from a report to the Marine Institute 2010 from ERM, MERC)

Sampling in inner Castlemaine Harbour

Twenty seven samples were collected using a hand held 0.025 m^2 van Veen grab from the channel that runs from Rossbehy and Inch Points inshore into Castlemaine Harbour. All of these were accepted as being of high enough quality for analysis. The depth of the samples varied from 2.5-8.5 m. The majority of the samples from the harbour itself were taken at approximately 4-
5 m, whilst deeper sites were found towards the centre of the channel leading into the harbour. The shallowest sites were associated with Rossbehy, Inch and Cromane Points. All sites were considered to be sheltered.

Figure 1 shows the sediment types that were recorded during the survey. A total of 37% of samples were medium sand and were widely distributed throughout the area and 22% were fine sand. Shelly sand was the next most common, followed by shell and one sample each of coarse shelly sand, fine sand and shell, medium sand and shell, sand and sand/humus. Three of the 27 samples were found to contain hydrogen sulphide, detected by odour (*Figure 2*). These were found within the 4-6 m depth range. Two of these were also recorded as being stratified. In addition three other samples were stratified indicating a distinct redox layer below which oxygen levels are low (*Figure 3*). The majority of stratified samples were taken from within Castlmaine Harbour, with one sample further west of Cromane Point.

The fauna within the samples in this survey area were relatively sparse. Mussel was detected in 10 of 27 samples and ranged in abundance from 1-104 per sample. The fauna was dominated by polychaetes with isolated high levels of abundance of the amphipods *Caprella, Corophium* and *Jassa*.

The average number of taxa and abundance of benthic macrofauna, in samples containing mussel, was 23 and 358 respectively. The equivalent in samples not containing mussel was 5 and 31 respectively.

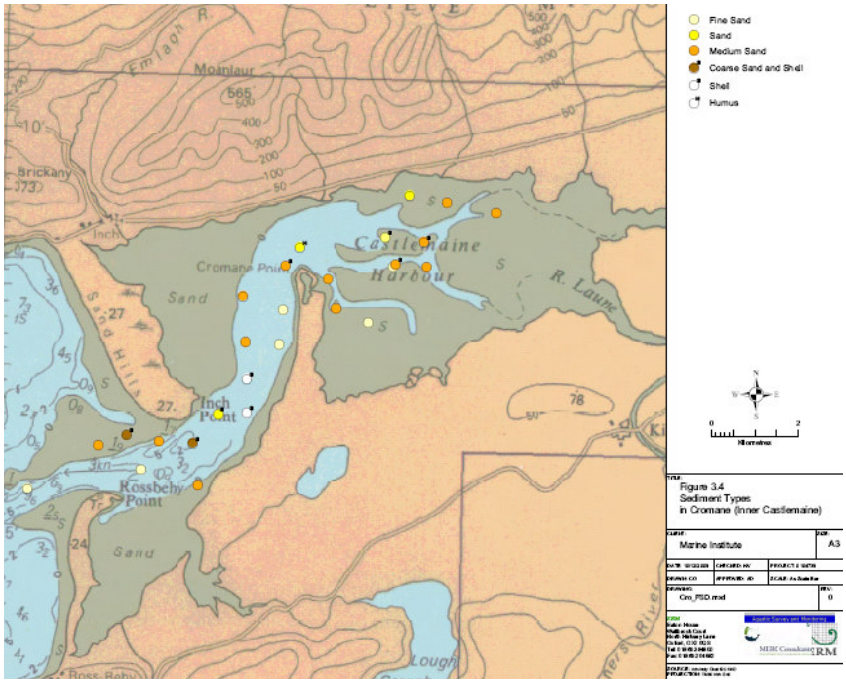

Figure 1. Distribution of sediment types in the sub-tidal channel of inner Castlemaine Harbour

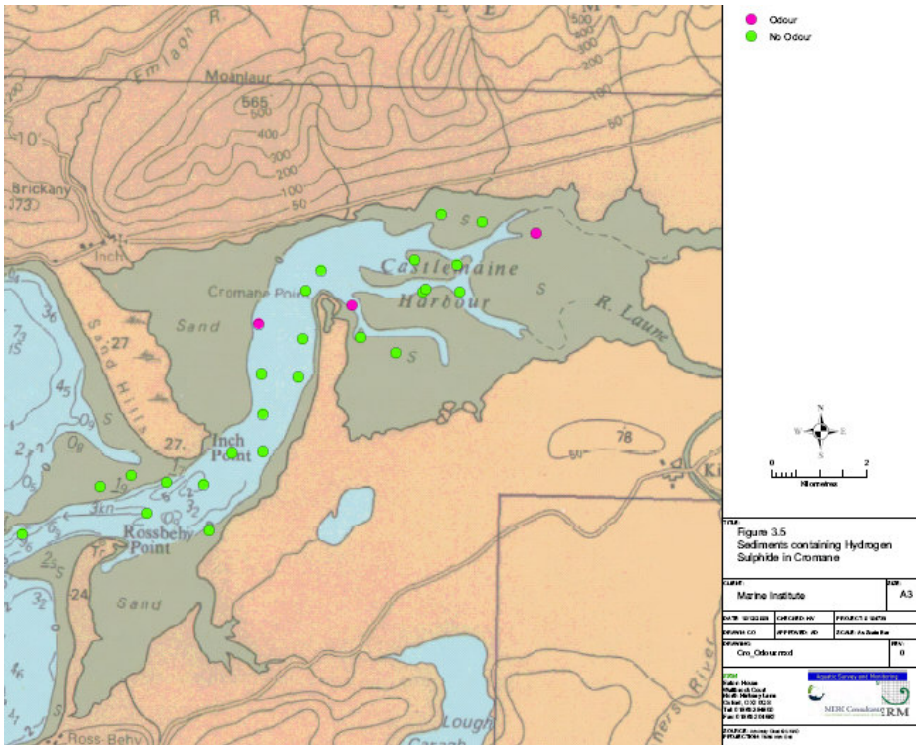

Figure 2. Distribution of evidence of hydrogen sulphide in grab samples in the sub-tidal channel of inner Castlemaine Harbour

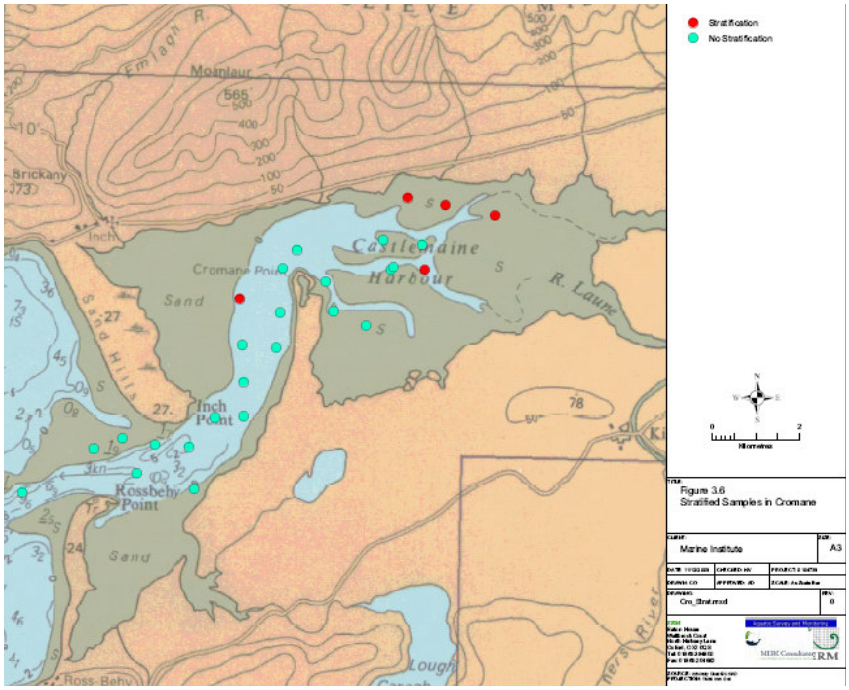

Figure 3 Distribution of stratified and non-stratifed sediment conditions in grab samples in the sub-tidal channel of inner Castlemaine Harbour