

6. SAMPLING SITE SELECTION

6.1 General Water Quality Study

Sampling sites were chosen based on the various aims of the study in terms of the different possible contaminants. Figure 6 show the sites selected and their designation. Each site and its selection criteria are listed below. The parameter codes are given at the end of the list.

Station One (S1). Gustav Creek above the road bridge.

Station Two (S2). Gustav Creek below the road bridge. Stations One and Two provide information on the quality of water entering the marina site from Gustav Creek and identify inputs from the small existing sewerage plant and existing surrounding residential and tourist development. S2 has an intermittent salt water flushing when high tides coincide with Gustav Creek being open through the barrier dune while S1 is primarily freshwater from the Gustav Creek catchment. Parameters measured were A,B,C,D,E,F,G, H,I,J,K,L,M,N,O.

Station Three (S3). This site was selected to try and quantify the composition of groundwater flows under the existing beach. Water was collected on two occasions from hand dug wells and attempts made to install a small pumped bore but the water obtained in all cases was extremely turbid with soil contamination and the water analysis results are not considered particularly reliable as an indicator of groundwater composition.

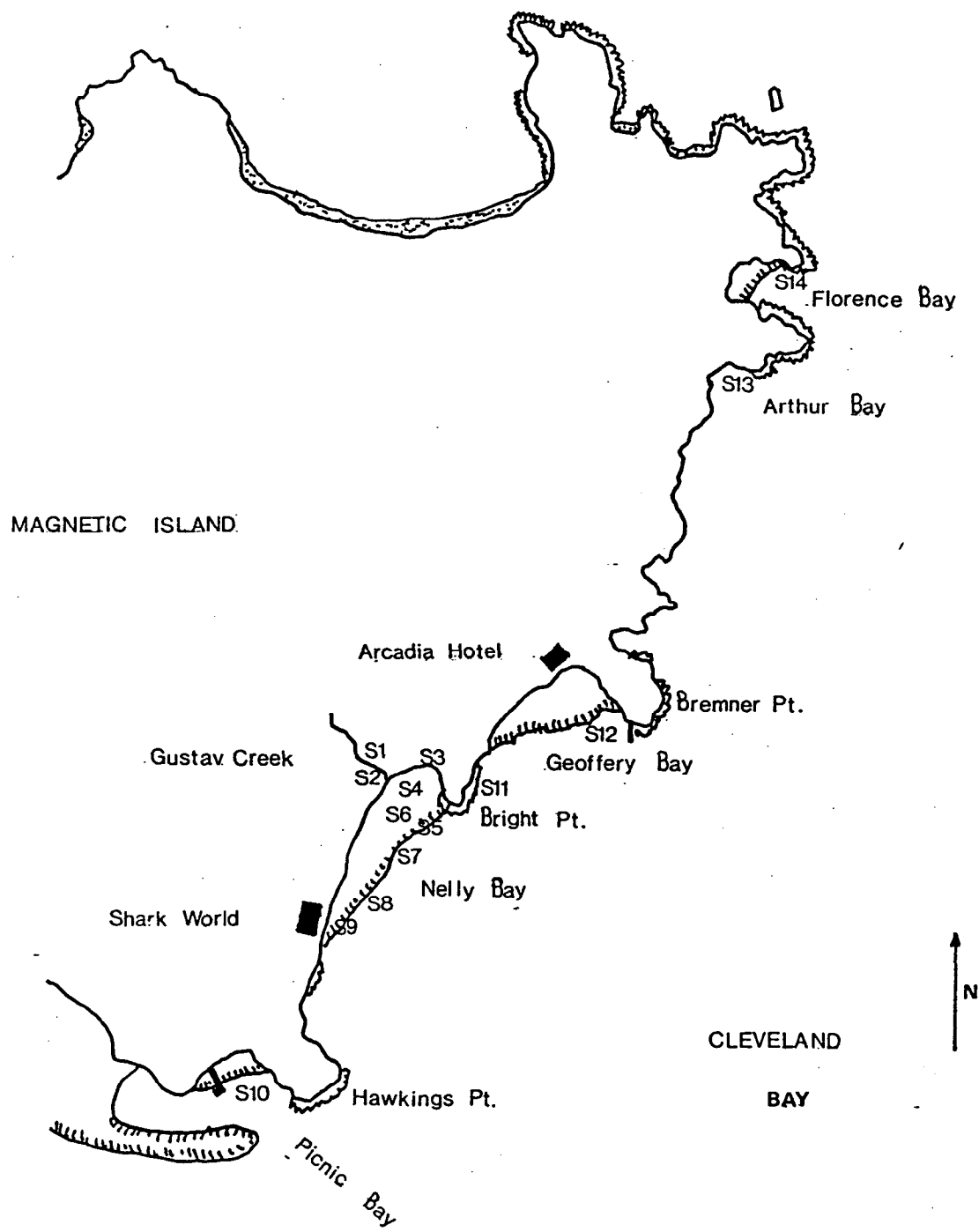
Station Four (S4). A baseline site for hydrocarbon utilizing bacteria from water and sediment. It is in eventual marina area and was monitored for parameter P.

Station Five (S5). This site lies near the eventual access channel to the harbour. Parameters measured were A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,Q,S,T.

Station Six (S6). A tidal current concentration site. Parameters measured were A,B,C,D,E,M,N,O,P.S.

Station Seven, Eight (S7 & S8). Baseline sites above reef transects. Parameters measured were the same as S5.

Figure 6



Station Nine (S9). Tidal current concentration site particularly for water from Picnic Bay to quantify contaminants entering Nelly Bay from Picnic Bay. Parameters measured were as for S6.

Station Ten, Twelve (S10 & S12). Picnic Bay and Geoffrey Bay sites. Parameters measured were as for S5.

Station Eleven (S11). Tidal current concentration site particularly for water flowing around Bright Point from development site into Geoffrey Bay. Parameters measured were as for S6.

Station Thirteen, Fourteen (S13, S14). Florence Bay and Arthur Bay reference sites. Parameters measured were as for S5.

Parameter List and Key

Suspended solids	A
Clarity	B
Salinity (profile)	C
Dissolved oxygen (profile)	D
Biochemical oxygen demand	E
Nitrate	F
Nitrite	G
Ammonia	H
Orthophosphate	I
Total phosphorus	J
Particulate nitrogen	K
Silicate	L
Total coliforms	M
Faecal coliforms	N
Heterotrophic plate count	O
Hydrocarbon utilizing bacteria	P
Chlorophyll-a	Q
Petroleum hydrocarbons	R
TBT and copper	S
Temperature (profile)	T

Other details.

Sites were not physically marked but were identified by sighting lines based on physical landmarks.

6.2 Sediment/Turbidity Study

Sampling sites were chosen to lie near or over the benthos transects where the sediment traps were placed and also to give good spatial coverage of Nelly and Geoffrey Bays from inshore to well offshore. The sites were arranged in a number of lines radiating from inshore to offshore and are shown in Figures 7 & 8. The designation of the lines and sites are also shown in these figures. The position of the sites was taken from sighting lines based on physical landmarks.

7. SAMPLING METHODS

Water samples were collected at the surface and at depth. Surface samples were collected approximately 20 cm beneath the surface with minimal collection of the surface film. Samples from depth were collected in a PVC van Dorn sampler. Only one (the surface) sample was collected when water depth was less than three metres.

Samples for aromatic hydrocarbons were collected in 2.5 l glass winchesters with aluminium foil protected lids (for all containers cleaning procedure details are included in the methodology section in Appendix ...). Extraction of the 2 l sample was begun as soon as possible after return to the laboratory.

Samples for suspended sediments and chlorophyll-a were collected in one litre high density polythene bottles. Chlorophyll-a extraction was begun on return to the laboratory. Tri-(n-butyl) tin samples and copper samples were collected in 500 ml high density polythene bottles (see also discussion of results for TBT concerning collection bottles), the TBT samples were stored at $1-3^{\circ}\text{C}$ while the copper samples were stabilized with redistilled nitric acid.