

Chapter 12

12.0 Monitoring Plans

12.1 Principles Underpinning Environmental Monitoring

The principles underlying environmental monitoring as it relates to any given development is to observe for any changes over time that may be associated with the development. These changes would in principle vary over time in both magnitude and direction. In the case of the latter it is important to understand that changes in environmental parameters and functions may be positive or negative. Thus in principle a monitoring plan does not necessarily focus only on the perceived or anticipated negative changes precipitated by a given development, but also on the positive or beneficial changes. The parameters chosen are those that have been identified in the analytical process as being affected in the most significant way by the development.

12.2 Specific Monitoring Issues

The proposed monitoring plans for the False Caye Development are those that have been identified as being significant in the EIA Matrix outlined in Table 10.1. These issues includes: water quality parameters, biodiversity issues, engineering considerations and socio-economic issues. The proposed monitoring programme has been developed not only in relation to satisfying the statutory requirements of the EIA process, but also as a consequence of the proper implementation of the proposed development.

The details of the proposed monitoring plan are outlined in Table 12.1 below.

Table 12.1: Proposed Monitoring Plan False Caye

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Water Quality Impact					
Phosphate and Nitrates	Monthly	10 mg/l	Sample Locations 1 – 6 (See Chap. 2, Fig. 2.5)	High Priority	DOE
TSS	Monthly	100 mg/l	Sample Locations 1 – 6 (See Chap. 2, Fig. 2.5)	High Priority	DOE
Turbidity	Monthly	Observing disappearance of Secchi disc and comparing this over time at different locations.	Sample Locations 1 – 6 (See Chap. 2, Fig. 2.5)	High Priority	DOE
BOD	Monthly	200 mg/l (EPA/WHO)	Sample Locations 1 – 6 (See Chap. 2, Fig. 2.5)	High Priority	DOE, CZMAI
- Total Coliform - E. coli - Fecal Coliform	Monthly		Sample Locations 1 – 6 (See Chap. 2, Fig. 2.5)	High Priority	Public Health

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Beach Dynamics					
Beach erosion	Quarterly	Observable loss of beach material.	Course of south-east beach	High Priority	Fish. Dept.
Engineering Aspects					
Safety considerations in relation to navigational lights, marker buoy for the dredge.	Construction phase activities to be done on a weekly basis.	All lights aboard the dredge as well as beacons marking the path of the spoil delivery pipes and sediment curtains must be functional, and all marker buoys must be deployed appropriately.	- Associated with the dredge, spoil delivery pipes and sediment curtains.	High Priority	Port Authority
Technical integrity of dredging operation.	Construction phase activity to be done on a daily basis.	Inspection of sediment curtains and spoil delivery pipe for overflows and leakages respectively.	- Done along the entire path of the sediment curtains and spoil delivery pipes.	High Priority	Fish. Dept.
		Inspection of Caye Based de-watering 'bund' for leakages and collapse of walls	- Done along perimeter of the retaining wall around the caye	High Priority	DOE, Fish. Dept.

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Biodiversity					
Bird Abundance	Twice per year, during December and in June (i.e. winter and summer)	Population changes and diversity profile to be noted and compared with pre-development situation.	To be done on entire caye.	Moderate Priority	Forest Dept.
Manatee population	Twice per year during December and June.	Population changes to be noted over time.	- Waters surrounding caye up to 0.5 mile radius	Moderate Priority	Fish. Dept.
Feral Animal Population (Crocodiles, and rats)	Twice per year during June and December	Population changes to be observed over time.	- Entire Caye - Waters surrounding caye up to 0.5 mile radius	Moderate Priority	Forest Dept., Public Health, Fish Dept.
Coral Reef Cover and Diversity	Twice per year, during June and December	Population changes and diversity profiles to be compared over time.	- 2 Patch Reefs of south-eastern and mid-western ends of caye, around caye	High Priority	Fish. Dept.

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Finfish Populations	Twice per year during June and December, and coincident with coral reef survey	Population changes and shifts in diversity to be observed over time and compared with pre-development situation.	- Patch Reefs off southeast and southwestern end of caye	High Priority	Fish. Dept.
Sea-grass biomass and density	Twice per year during June and December.	Sea-grass biomass and density to be observed over time for any discernible trend that may be associated with the proposed development.	- Sample Pts. 1 & 2 (Chap. 2, Fig. 2.5)	High Priority	Fish. Dept.
Sea-grass Re-colonization Rate of the Burrow Pits.	Twice annually in June and December.	Estimate seagrass biomass by count of rhizomes.	- Sample Pt. 1 (Chap. 2, Fig. 2.5)	Moderate Priority	Fish. Dept.
Socio-economic					
Fisheries Landings	Quarterly	Assess lobster and conch landings from Drowned Caye areas for trends over time that may be related to dredging impacts.	- within a radius of 0.5 mile of False Caye	High Priority	Fish. Dept.