
CHAPTER 16

MITIGATION AND MONITORING PLAN

16.1 Overview of Environmental Impacts

The study of and the commitment to mitigate the impacts have become an extensive and meaningful part of the environmental impact assessment process. In many circumstances, potentially adverse impacts can be avoided or mitigated to acceptable levels through careful design, planning and implementation of appropriate measures or techniques to reduce and eliminate the severity of the effects.

All possible measures to mitigate potential impacts should be included in the proposed action. The Council on Environmental Quality (CEQ) defines mitigation measures to include:

1. *Avoiding* the impact
2. *Minimizing* the impact by limiting the degree or magnitude of the action
3. *Rectify* the impact by repairing, rehabilitating, or restoring the affected environment.
4. *Reducing* or eliminating the impact over time
5. *Compensating* for the impact by replacing or providing substitute resources or environments.



Plate 16.1 Mitigation and Monitoring Elements

The level of adverse, or alternatively, beneficial impacts on the ecosystem and in general of any given area in question is a function of the scope of the development, the ecological fragility or sensitivity of the receiving environment, and the conceptual value assigned to the integrity of the natural resources of the area by the wider community.

Figure 16.2 summarizes the potential impacts that can be encountered during construction and operation of the project. These impacts can be viewed as affecting both marina and land environments and its associated cumulative impacts.

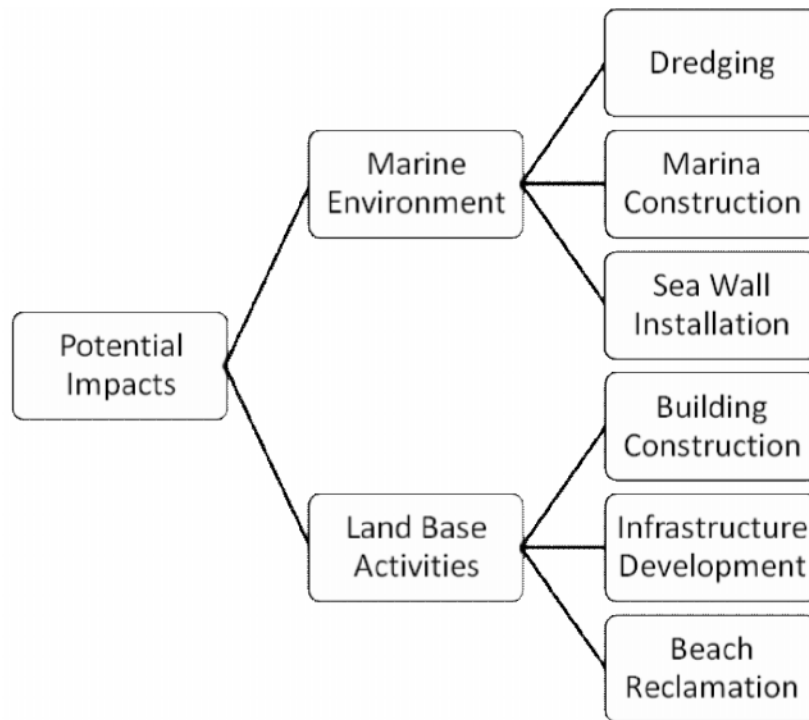


Plate 16.2 Potential Impacts Summary

The connectivity or hierarchal nature of the impacts of the proposed project has been reinforced by the integration of a residual impact rating matrix outline in Table 16.1. This matrix evaluates the mitigation measures options in the following terms:

- **Magnitude:** High (H), Medium (M), or Low (L);
- **Direction:** Beneficial (+) or Adverse (-);
- **Duration:** Instantaneous (I), Short term (S), Medium (M) or Long term (L);
- **Scope:** Instantaneous (I), Short term (S) , Medium (M) or Long term (L);
- **Significance:** Not Significant (NS), Low (L), Medium (M) or High (H) significance

The primary activities that are likely to result in some environmental impacts of note are the construction and operation of the marina, services provided as well as the construction of the buildings. The potential for pollution from air, noise, solid waste and a shift in the increase of land property are also of relevance.

Table 16.1 Impact Rating Matrix for Pelican Point

		Potential impact	Magnitude	Direction	Duration	Scope	Significance
Marine Environment	Dredging Activities	Benthic Sediments	H	-	I,S	I,M	L,M
		Benthic Fauna	H	-	M	M	L,M
		Toxic Bioaccumulation	L	-	L	L	L
		Water Quality	M	-/+	S	S	L
		Nutrient Re-suspension	L	+	M	M	L
		Marine Organisms	M,L	-	S,M	S	M
	Marina Construction	Sediment Re-suspension	M	-	I,S	I,S	L
		Benthic Fauna	M	-	S	S	L
		Toxic Bioaccumulation	L	-	I,S	S	NS
		Water Quality	L	-	S	S	L
		Nutrient Availability	L	-	I,S	S	NS
		Marine Organisms	L	-/+	S	S	L
		Socio-economic influence	M	+	S	S	M
	Sea Wall Construction	Sediment Re-suspension	L	+	I,S	I,S	H
		Benthic Fauna	M	+	S	S	M
		Toxic Bioaccumulation	L	-	S	S	NS
		Water Quality	L	+	S	L/+	H/+
		Nutrient Enhancement	L	+	S	S	L
		Marine Organisms	L	+	S	L/+	M/+
		Socio-economic influence	M	+	S	S	M
	Land Based Facilities	Building Construction	Soil Alteration	M	-	I,S	I,S
Land Alteration			L	-	L	L	L
Surface Water Alteration			L	-	S	S	L
Noise Generation			L	-	S	S	NS
Fugitive Emissions			L	-	S	S	L
Solid Waste Generation			L,M	-	S	S	L
Socio-economic Influence			M	+	S,M	S,M	M
Infrastructure Develop. & Oper.		Soil Alteration/Pollution	L,M	-	I,S	I,S	L
		Water Contamination	L	-	S	S	L
		Spills and Leaks/Services	L	-	I,S	I,S	L
		Drainage Alteration	M	-	S	S	L
		Fugitive Emissions	L	-	I,S	I,S	L
		Noise Generation	L	-	S,M	S,M	L
		Aesthetic Enhancement	H	+	L	L	H
		Socio-economic Influence	M	+	S	S	M
Land/Beach Reclamation		Habitat Alteration	M	-/+	I,S	I,S	L
		Soil Alteration	M	-	I,S	I,S	L
		Land Alteration	L	-	L	L	L
		Surface Water Alteration	M	+	S	S	L
		Drainage Alteration	L	+	S	S	L
		Aesthetic Appeal	H	+	L	L	H
	Fugitive Emissions	L	-	I,S	I,S	L	
	Socio-economic Attraction	H	+	L	L	H	

16.2 Specific Mitigation Measures

The mitigation measures to be implemented by the proposed development are in relation to ameliorating those impacts that are considered as moderately adverse impact as shown in Table 16.2. The four (5) main developmental issues requiring specific mitigative responses are: dredging and land reclamation activities, waste management (Solid waste and liquid waste), energy generation, transportation means and socio-economic concerns.

The following sections describe the proposed impacts that can arise from the proposed undertaking:

16.2.1 Dredging (Canal and Marina) and Land Reclamation Activities

The primary impacts associated with the dredging activity are the navigational and berthing of the dredging equipment at the proposed site as well as the dredging or excavation activity itself. The concern related to the navigation and berthing of the dredging equipment is the threat of sea accidents causing physical harm and injury. This is especially relevant to the boat traffic from tourists, water taxis, and fisher folks in the near shore areas. The mitigative responses to this impact are in large part related to the placement of navigational aids such as beacons and buoys to alert mariners.

The issues associated with the actual dredging of the marina and canal is sedimentation and turbidity impacts to the marine environment. The mitigative response to these impacts is to mechanically contain or enclose the sediment plume produced from the excavation process through the deployment of sediment curtains. Other related responses include activities designed to ameliorate the re-suspension of sediments, as well as measures that would reduce the physiological stress on sessile and slow moving benthic organisms.

Secondary mitigational measures include the rapid undertaking of the overall dredging operation to decrease the severity and range of impacts in space and time. In addition, the suctioning or vacuuming of the re-suspended sediments ashore to decrease the potential of the expansive dispersal of sediments, nutrients, possible toxics and adjusting the overall mechanics of the dredging operation to allow for the re-colonization of the area by benthic organisms

16.2.2 Waste Management Related Impacts

Waste related impacts associated with the proposed development include liquid waste and solid waste generation produced as a result of the construction and operational phases. The primary impacts associate with human wastes and domestic effluents are: eutrophic or nutrient-enrichment, increases in the risks of pathogenic diseases, increases in BOD and suspended solids.

The mitigative responses to these impacts include the application of BESST Sewage Treatment Technology and the recycling and reuse of effluents. These responses reduce the levels of macro-nutrients, BOD substances and suspended solids to levels where they do not constitute a threat to human health or a risk to the integrity of the environment.

The solid waste accruing from the general commissioning of the Pelican Point Marina & Yacht Club operation includes biodegradable and non-biodegradable components. The biodegradable components includes in large part discarded and unconsumed food from the restaurant. The non-biodegradable component relates to packaging materials, construction wastes and damaged and abandoned equipment and equipment parts. A major component of the non-biodegradable wastes would be 'plastics' in the form of wrappings, bottles, and cups.

One of the major impacts of the wastes generated by the development would be the attraction of feral animals and pests such as rats, and birds to the area to scavenge. The mitigative response to be implemented by the proposed development is the judicious collection and segregation of the wastes into biodegradable and non-biodegradable components. These wastes are to be composted and/or transported from the caye on a regular and recurrent basis. The implementation of an education and sensitization campaign focused on the tourists and visitors in general is also a part of the mitigative response.

The entanglement and ingestion of plastics by sea turtles, birds and other fauna is also a relevant concern that will be dealt with in a judicious manner. The full range of impacts and mitigative responses has been dealt with in appropriate detail in Table 16.2.

16.2.3 Energy Generation Impacts

The primary impacts associated with the energy generation are the onsite potential for hydrocarbon spills, as well as the noise produced by the operation itself. The concern related to the potential spills stems from the operation of the generators along with the storage of bulk fuel. Spills, even though localized, have the potential to contaminate the water and soil. The mitigation response to these impacts will be handled by the implementation of contingency practices aimed at preventing, reducing and containing the spills. In addition, preventative maintenance will be carried out on the generators to address these potential problems.

The issues associated with the actual operation of the diesel generator are the noise generation and subsequent air pollution that will be produced. Some of the mitigative responses for this impact include the placement of the generator in an adequate location, away from any sensitive areas. In addition, proper sound attenuation measures will be incorporated to reduce the noise levels. Also, proper preventative maintenance will be carried out to reduce the incidence of significant air pollution. It is anticipated that the impacts will be minimal during the operation phase and therefore present no significant impact to the receiving environment.

16.2.4 Transportation Related Impacts

Transportation related impacts associated with the operation of the proposed development include the location of the air strip, the marina access road and the project access road. The concern related to the location of the runway in relation to the project is primarily for safety reasons applying to approaching or oncoming aircrafts. To mitigate this impact, the proposed undertaken plans to construct its building in accordance with the Civil Aviation Department regulations and guidelines in conjunction with the Belize Airport Authority.

In addition, the proposed development plans to aid residents further south by constructing a small feeder road from the western corner of the runway that would have access to the project and further access to the village. This necessitates from the present and current dangers faced by the residents further south in transiting the runway and its buffer zone to access the village.

The issue with the construction of the marina access road does not entail complicated impacts. More so it is restricted to building materials and drainage but nevertheless, the impacts associated with this type of venture must be examined and mitigated especially considering the siting and location of the project in relation to the tourism development.

16.2.5 Socio-economic Impacts

The social impact assessment in principle includes the process of evaluating the intended and unintended consequences of the development, and identifying and articulating the mitigative measures that are to be put in place to circumvent and ameliorate these impacts. Relevant in this regard are the issues of the growing tourism industry and the need for skilled and unskilled workers to cater to such demands.

Resources in this sector are needed to satisfy an ever growing clientele. This demand has also posed a conflict with traditional users of the area and the desire to conserve conventional and habitual practices: the most pertinent being the fisher folk and the erosion of some of their conventional fishing grounds. In addition to this, the issues or impacts related to transportation for the general marine traffic poses a navigational conflict in dealing with the dredging activities and the associated dangers.

16.2.6 Other related Impacts

The section relates to other impacts related to the proposed project that must be examined and properly mitigated. Such impacts can arise from both the construction phase and the operation phase and include the need for proper safety and health practices, water usage related issues, design concepts issues, erosion and currents just to name a few. These impacts can have a cumulative effect if not successfully mitigated and addressed by the proposed development.

The mitigative responses to these impacts include the implementation of several plans to ameliorate and circumvent the negative effects associated with the development. Such plans will focus on specific objectives such as the health and safety plan as well as the water usage plans along with the design concept.

16.3 Impacts and Mitigation Measures

Table 16.2 summarizes the proposed impacts and mitigation measures for Pelican Point Marina & Yacht Club. In some instances, some of the impacts and mitigation measures are discussed further in the relevant chapters.

Table 16.2 Summary of proposed impacts and mitigation measures for PPM&YC

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
Dredging (Canal and Marina) and Land Reclamation Activities			
1. Dredging of the proposed sites within the development constraints	1a. Disturbance of seabed, along with the suspension of fine sediments and the re-deposition of coarse fractions.	1a1. Direct physical destruction of benthic habitat, and attenuation of light impeding photosynthesis of sea grass, macro-algae, phytoplankton and other autotrophs.	1a1a. Use of ‘Silt Curtains’ at dredge site, ensuring that the lower end of ‘skirt’ is resting upon the sea floor, and ensuring that top of the ‘skirt’ is always above the surface of sea.
			1a1b. Monitoring and where necessary repairing and/or replacing leaky pipes and faulty couplings of the spoil discharge pipes.
			1a1c. Utilizing velocity reduction measures where spoils are deposited such as baffles to precipitate solids and curtail turbid influences in effluent stream.
			1a1d. Decrease time frame over which the dredging operation is to take place, to avoid the re-suspension of sediments.
			1a1e. Ameliorate the impacts of the daily re-suspension of sediments by the suctioning of sediments that have resettled.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			1a1f. Ameliorate the re-suspension of sediments by confining the dredging operations to calmer sea states.
			1a1g. Assist the re-colonization of seafloor by sea grass and other benthic plants as well as by invertebrates through ensuring that the gradient of the walls of the burrow pits are not at an angle that is steeper than 35 degrees.
		1a2. “Blanketing” or smothering effects on benthic habitat and sessile and slow-moving invertebrates.	1a2a. Institute monitoring program to ensure that light penetration at seafloor is at least 25% of that at the surface.
	1b. Decrease in Dissolved Oxygen and increase in BOD.	1b1. Physiological stress and lethal effects on benthic invertebrates and to a lesser extent, fin-fishes.	1b1a. Completion of dredging operation in as short a time-frame as possible.
	1c. Increase in temperatures brought about by the re-suspension of sediments with a ‘specific heat capacity’ capable of raising water temperatures by as much as 4 – 6°C.	1c1. Lethal and sub-lethal effects on sessile and slow-moving benthic invertebrates.	1c1a. Proper deployment of ‘silt curtains’ to ensure that suspended sediments at burrow sites are corralled and that any re-deposited sediments are ‘suctioned’ and rapidly deposited on shore.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
2. Navigation, Berthing of Dredge and Deployment of Spoil Discharge Pipes.	2a. Navigational hazard.	2a1. Threat of injury and possibly death associated with boat traffic.	2a1a. Ensure that marker buoys and navigational lights are deployed and activated on dredge, sediment curtains and spoil discharge pipes – Buoys are to be large and brightly colored in florescent hues: Navigational lights are to be fully operational from 6:00 a.m. to 6:00 p.m. on a daily basis.
Waste (Liquid and Solid) Management Related Impacts			
3.0 Domestic Effluent Waste	3a. Nutrient enrichment from the injection of macro-nutrients into the environment.	3a1. Stimulus to plant growth on land and in the water column, in the case of the latter this includes phytoplankton, seagrass and macroalgae, including the possibility of the overgrowth of reefs by macroalgae.	3a1a. Installation of Biologically Engineered Single Sludge Treatment or its equivalent to treat waste to ‘Tertiary’ Levels, where Total Nitrogen Loads are reduced to less than 10 mg/l and Phosphorus are reduced to 2-3mg/l.
			3a1b. Reduce effluents going into the environment by recycling effluents to flush toilets – effluents from BESST Treatment Plant will be stored and disinfected through chlorination before it is reused for flushing toilets.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			3a1c. Reduce further nutrient loads going into the water column by using stored effluents from Treatment Plant to irrigate lawn and hedgerows.
	3b. Pathogenic microbes that can negatively impact human health.	3b1. Infection of tourists and staff at the project site by pathogenic viruses and bacteria.	3b1a. Thorough disinfection of effluents potentially going into water column or otherwise making contact with humans by use of BESST Sewer Treatment Plant, combined with chlorination of post-treated effluents.
			3b1b. Reduction of effluents going into the environment by use of BESST Treatment Plant and incorporation of recycling and reuse of effluents for flushing of toilets and watering of lawn.
	3c. Suspended Solids from undissolved components of human waste and domestic effluents.	3c1. Suspended solids impedes light penetration of the water column and erode or arrest photosynthesis.	3c1a. Application of BESST Treatment technology reduces TSS to less than 10 mg/l, this in combination with effluent recycling and reuse regime reduces suspended solids to insignificant levels in the water column.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
	3d. Sedimentation associated with settlement of flocculent fraction of human waste and domestic effluents.	3d1. Blanketing of seabed and suffocation of slow-moving and sedentary invertebrates.	3d1a. Application of BESST Treatment technology reduces TSS to less than 10 mg/l, this in combination with effluent recycling and reuse regime reduces suspended solids to insignificant levels in the water column.
	3e. Increase in BOD substances and consequent reduction in dissolved oxygen.	3e1. Precipitation of physiological stress and in extreme circumstances death in relation to sessile and slow moving invertebrates.	3e1a. Application of BESST Treatment technology reduces BOD to less than 10 mg/l, this in combination with effluent recycling and reuse regime reduces BOD to insignificant levels in the water column.
4.0 Commissioning of the proposed development and its related components.	4a. Discarding of waste food and associated packaging materials.	4a1. Attraction of feral animals such as rats, and vagrant birds to the project to scavenge and in effect shift the ecological balance in a way not induced by nature.	4a1a. Judicious collection of discards by staff with composting biodegradable component and storage of non-biodegradable component in impervious plastic bins for transportation to Caye Caulker Dumpsite in lieu of the Mile 24 Landfill Site

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			4a1b. Implementation of a public sensitization and education campaign focused on tourist and visitors in general
	4b. General discarding of cans, bottles and plastics in general from foods, beverages and in general packing materials.	4b1. Habitat for mosquitoes and other insect pests, as well as aesthetic pollution from odor and unsightly accumulation of solid waste.	4b1a. Separation of discard and refuse into biodegradable and non-biodegradable components where they will be secured in plastic garbage bags and stored in plastic bins for transportation to the designated landfill. Biodegradables will be composted and used as mulch for lawns and hedgerows,
		4b2. Entanglement and ingestion of plastics floating in the water column by sea turtles, sea birds and other fauna in the area.	4b2a. Judicious collection, confinement and disposal of solid wastes as described above.
Energy Generation Impacts			
5.0 Energy Requirements as a result of construction and operation of the development.	5a. Excessive noise pollution to neighboring development and activities	5a1. Increase in ambient noise levels as a result of constant energy generation use	5a1a. Attenuate noise levels by enclosing generators with sound attenuation material and by the proper use of mufflers and other sound reduction devices designed to minimize the ambient impact.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			5a1c. Examine and develop a best siting scenario for the operation of such generators
			5a1d. Limit the operation hours to daytime activities by maximizing the day light hours during the summers.
	5b. Pollution risk due to accidental spill from fuel storage tanks.	5b1. Hydrocarbon spills and leaks can contaminate the waterways and soil on direct contact.	5b1a. Contain all fuel tanks in an enclosed concrete wall capable of storing 110% of the total stored volume.
			5b1b. All fuel pipes and dispensers will be standardized with the dispenser having a break-away joint for safety.
			5b1c. Fuel dispensing will be done by a certified attendant hired by the project.
			5b1d. Develop a contingency plan to address any spills and leaks that can occur both on land and at sea during transportation.
	5c. Pollution risk due to poor maintenance.	5c1. Air pollution can have a significant impact on the ambient air, especially during prevalent winds.	5c1a. Develop and implement a preventative maintenance manual to address all concerns related to repair and operation of the equipments.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			5c1b. Develop a contingency plan for unwanted air pollution e.g. Fires, accidents, etc,
Transportation Related Impacts			
6.0 Construction of Buildings next to existing or proposed runways or airstrips	6a. Construction of project development 100 feet from runway center line.	6a1. This type of activity can produce unwanted air turbulence during approach and take offs.	6a1a. Project will be constructed using the recommended construction ratio of 1:5 (feet) as stipulated by the Civil Aviation Department and the Belize Airport Authority.
			6a1b. This project development plans to enhance the buffer zone by draining the section prone to flooding during high tides and heavy rains.
			6a1b. In addition to this, an additional 100 feet buffer zone will be demarcated for the runway.
7.0 Construction of access and feeder roads	7a.Fugitive dust emissions arising from the project development.	7a1. Respiratory health problems along with visual impact.	7a1a. Utilize spray mist to reduce fugitive dust particles from impacting the surrounding environment.
	7b.Alteration of the natural drainage pattern.	7b1. Flooding of undesired areas ie. Localized flooding	7b1a. Design proper drainage system for proposed marina road and feeder road.
		7b2. Loss of sediments due to erosion and flooding	7b2a. Install sediment traps to contain sediments from being eroded during heavy rains and flooding.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
Other Related Impacts			
8.0 Health and Safety Issues relating to construction and operation processes.	8a. Movement of materials and supplies and heavy equipment into the area.	8a1. Human health and safety issues.	8a1a. Navigation of boats to and from Belize City and other locales observing national sea lane rules and navigational protocol, and ensuring that equipment and supplies are securely stored and fastened during transportation.
			8a1b. Safe and secure mooring of boats when loading and offloading equipment and supplies will be strictly adhered to by management.
			8a1c. Response to construction injury includes first aid kit on-site, and in severe case the deployment of boat/aircraft to ferry injured party (ies) to Belize City.
			8a1d. Berthing of dredge securely with adequate lighting at nights, and deployment of buoys and beacons with warning flags marking sediment curtains and spoil discharge pipes.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			8a1e. The Developer shall comply with all applicable building codes and standards in regards to all standing structures.
	8b Accidents and incidents can claim life and property	8b1. Staff and visiting population are prone to injury or physical harm once on site.	8b1a. The developer will implement a health and safety program to address internal accidents and incidents.
			8b1b. Development of a Medical Evacuation plan to cater to the ill/injured.
			8b1c. Install adequate lighting and illumination on the marina piers to allow incoming vessels to safely navigate the waters around the marina, but in a way not detrimental to marine organisms.
			8b1d. All marine vessels entering the marina will be required to lower their mast while navigating the canal or marina.
	8c Introduction of unwanted pests and diseases into local territorial areas of the project and on a larger scale, the country of Belize	8c1 Alteration of the local flora and fauna causing irreversible damages.	8c1a. Implement some form of biosecurity measure for the containment and confinement of fruits, vegetables, plants and animals brought onshore by international

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			mariners. Liaison with personnel from BAHA on matters pertaining to this important issue
		8c2. Infection of local population due to inappropriate international solid waste management.	8c2a. Judicious collection of international waste by staff with subsequent incineration and transportation of incinerate to Caye Caulker Dumpsite in lieu of the Mile 24 Landfill Site.
9.0 Landing of Aircrafts	Safety hazard and possible accident related to the mast and docking of marine vessels	Landing abortions	Request that mast of sailboats be lowered when entering the large and small marina
			Vessels should not remain or anchor around airstrip approach vector
			Construction of buildings as far away as possible from the flight approach
			Consult with the local airlines Civil Aviation Authority on any other hazards that may be of significance.
10.0 Water usage related issue	10a Loss of needed potable water from wanton disregard by staff, residents, guests and visiting population.	10a1. Expensive venture to allocate lost water resources.	10a1a. Implement a water conservation plan aimed at addressing the project's potable water needs and its importance.

Development Activity	Primary Impacts or Environmental Disturbance	Secondary and Tertiary Level Environmental Impacts	Mitigation Measures
			10a1b. Develop a contingency plan for water shortage (s) and water contamination if so is the case.
			10a1c. Implement a water recycling plan (Section 5.7) aimed at utilizing wastewater for non potable uses.
11.0 Marina Design Concepts	11.a Marina design can pose some aeronautical threat to civil aviation	11a1. Marina design can cause an accident or alter the approach of incoming aircraft.	11a1a. Final design based on recommendations from the Civil Aviation Department.
			10a1b. Marina will be constructed with appropriate materials including concrete and wood.
	11b Sea wall design and configuration Poor materials can beak due to design.	11b1. Loss of soil and sediments in addition to erosion of the canal sides and washing away of the reclaimed areas.	11a1c. The sea wall will be constructed of high tensile strength composite material designed to withstand heavy wave action over time.
	11c. Approaching Wave velocity and intensity can provide for an unstable environment inside the marina.	11c1. Prone to accidents involving boat collision and improper mooring of marine vessels, injury to boaters can result as well.	11c1a. The marina's wave attenuators are designed and built to provide wave protection for the marina in adverse operating conditions.
			11c1b. The project proponents will chose the appropriate wave attenuators for the marina.

16.3.1 Social Impacts

In an effort to determine or predict those social impacts of the proposed development project, the social assessment carried out took into consideration the general dynamics of the area and region. The dynamics include those measurable demographics in an effort to understand those measurable changes if any, the development will have on the area and the region on a whole. These variables include but are not limited to probable change in, population characteristics, community and institutional structures, community resources, labor and employment, traditional activities and areas of traditional uses, and as applicable, policy change.

The main purpose of the social impact assessment is to analyze those overall social factors the proposed development activity may have on the immediate area and the region on a whole. Those factors will be analyzed for both positive and/or negative impacts based on the proposal for resort development at its current site.

This social impact assessment will also attempt to examine those issues related to the proposed development activities, without intending to change or modify project development, social groups or values, or current and ongoing activities in the area and the region. It does however intend to complement and enhance the execution of the proposed development during the construction and operational phase.

The following components summarizes the social impacts in detail.

a. Development Activities

Proposed Impact

Location and Size of Project

The proposed development site is located along the southwestern end of the island of Caye Caulker and north of the Caye Caulker airstrip. The proposed development site itself is surrounded by the remainder of the property which includes a residential subdivision.

For decades, the area of the proposed site was not accessible to the public as the area has been vegetated with mangroves. The site itself along the property western coastline has seen some erosion due to hurricanes, wave damage and also from the dredging of a small marina to accommodate land fill for the Caye Caulker Airstrip.

Mitigation Measures

At its location, the principle of the 66 foot reserve beach/public access may need to be accommodated. However, because of the location of the proposed development and because of an existing canal which divides the rest of the property, the 66 foot reserve will only accommodate this site and will not have any impact on future development activities on the adjacent property. Because of its location near the local airstrip, the height and setback of facilities to be constructed are recommended in Chapter 10 and 11 of the EIA.

b. Post Construction and Operational Activities

Potential Impacts

- ▶ Access to site during all phases of construction and operational activities
- ▶ Transportation of construction materials and equipment during all phases of development
- ▶ Unloading of construction materials and equipment during all phases of construction
- ▶ Operation of construction and all machinery

The site is located along the south western coastline of Caye Caulker. Current access to the site for most its current operational activity is by sea access along this southwestern point. Access for miscellaneous supplies and materials for existing operational activities in the business area of Caye Caulker, as well as access by locals to the site for miscellaneous purchases is via a proposed road along the northern property boundary or by way along the airstrip over the wooden bridge to the site.

Mitigation Measures

So as not to impact existing road conditions on the island, or to disrupt daily activities and road users in and through the area of/and to the development site, the Developer intends to import all supplies and materials from the mainland. Supplies, materials, equipment and machinery will be unloaded along this south western coastline.

Supplies and materials to be obtained locally will utilize small transportation equipment such as golf carts and bicycle carriers; where necessary, local marine crafts (boats) are recommended. The local airstrip should not be utilized to access the site for any purpose.

All materials, supplies and equipment transferred to the site whether by land or by sea should be properly secured. Unloading of all supplies and equipment should be done during low tides or in good weather conditions; all vessels should be properly secured. Though the area of the proposed development is not necessarily fully developed in terms of residential developments, construction activities and the operation of all equipment should be done between 6:00 a.m. and 6:00 p.m.

All operators should be trained and involved in development plans, safety procedures and use of safety equipment. The proper safety equipment should also be provided for all workers. As required, adequate transportation, should be provided or be available for workers.

c. Current and Proposed Uses in the Area

Potential Impacts

- Impact on other proposed or development activities in the area

- ▶ Disruption of traditional user activities
- ▶ Regulated access and use of traditional activities
- ▶ Increased use by newcomers
- ▶ Decreased economic benefits by traditional users of the area

Within the marine environment, no other development activity is being planned or has been identified. On land, though the proposed resort development is sited within the property itself, the construction of residential homes on the adjacent land are planned.

The marine environment less than thirty feet immediately in front of the proposed development site is purportedly utilized by at least one fisherman during the various lobster and conch seasons. This fisherman has claimed that the construction of a canal at this location, have, over the last few years, affected fishing and economic activities in the area. Furthermore, the construction of a pier and activities proposed in the marine environment will further affect his fishing ground and cause decreased economic benefits.

At its location, both the marine and land environment will see increased use by newcomers to the area and region.

Mitigation Measures

Proposed development activities at the site will not affect other proposed activities on the adjacent subdivision site. However it is recommended that for planning purposes, adequate development control measures are built into project design such as public access, setbacks, buffer zones, height and restrictions etc, be considered with the overall site development.

Traditionally, local fishing and other marine vessels utilizes this marine route to access local public docking facilities, to access the western coastline along the caye, as well to access the caye during times of local storms and strong wind conditions. The construction of the pier at this site will not have a big impact on this route. Alternately, traditional marine traffic utilizing this route will be altered or will need to be rerouted.

Access to the property on land will be via a proposed road within the subdivision to the site. Access to the property from the marine environment is proposed through the proposed local marine or proposed pier to be constructed. In terms of the disruption of traditional user activities in the marine environment, at least one fisherman will be impacted where this fisherman may need to relocate to another fishing ground. This fisherman will see decreased economic benefits.

d. Marine Traffic

Potential Impacts

- ▶ Increase number of vessels to the area and the region
- ▶ Impact on natural environment by increased boat usage

During all phases of construction, there will be an increase in the movement of vessels to the proposed development site carrying equipment, supplies, materials, and heavy equipment.

Mitigation Measures

The movement of workers, machinery/equipment and cargo, should be scheduled in advance to provide for the smooth movement of vessels to the area. Mariners should be advised beforehand and on a daily basis by radio public announcements, television, and internet bulletins of intended activities to be carried out.

All marine vessels utilized for construction purposes will need to be equipped with day and night reflectors; these vessels should not obstruct existing activities or marine traffic in the area. No construction waste should be discarded in the marine environment to cause undue accidents; all vessels should be equipped with the necessary emergency equipment.

All marine vessels should ensure the securing mooring and berthing of vessels. Alternate routes should be used especially in areas of traditional uses. Day and night markers, reflectors and buoys should be installed around construction areas for all users to and through the area for day and night time users. A seawall may need to be constructed so as not to cause undue erosion on the existing beach area from constant wave action from increased boat usage.

e. Population/Housing

Potential Impacts

- ▶ Increased population density in the area
- ▶ Increase housing needs at site
- Pressure on existing resources and social infrastructure

The area of the proposed development is located on the island of Caye Caulker. The proposed development will experience temporary worker population increases to and at the site during all phases of construction. Imported worker populations for permanent housing needs will also see some demand. The demand for services by workers during post construction phases at the site will be temporary. Pressures on existing resources and institutions can also be the demand for personal needs and existing social institutions (church, school, etc.).

Mitigation Measures

It is anticipated that there will be no great demand for housing and resettlement schemes near the site as it is envisioned that most of the worker populations will be obtained locally. To accommodate imported worker populations, housing and rooming facilities are available while others are currently in the process of being constructed. It is also recommended that the Developer where possible, construct and provide temporary housing facilities as required.

It is not anticipated that there will be a great impact on existing resources or demand for local services as it is expected that the Developer will provide the basic services required during all phases of construction. These include sanitary facilities, water, etc. It is noted however, that because of the location of the site, it is expected that local entrepreneurs may provide local services (such as food items, water etc.) near the site. As it is anticipated that locals from the island will be hired, it is not anticipated that there will be additional pressures on existing social infrastructure. As it is, the island continues to see additional increases by multi-cultural ethnic groups to the island.

f. Socio-Cultural

Potential Impacts

- ▶ Pressure on existing institutions and social groups
- ▶ Marginalization of minority groups and locals
- ▶ Pressure on existing lifestyles

Potential impacts are the marginalization of locals and pressures on existing institutions and social groups.

Mitigation

It is not expected that [any] local groups or social groups will be marginalized or will there be any pressure on existing lifestyles and local institutions during post construction and operational phases of the project. Local institutions can be strengthened through Developer initiative to assist with local projects such as the Caye Caulker waste dump. This initiative will complement the village of Caye Caulker as well as the aesthetic value of the proposed development site.

g. Emergency and Health Services

Potential Impacts

- ▶ Increased pressure on existing health institutions
- ▶ Increased pressure on sanitary facilities
- ▶ Workers/staff not trained in basic emergency procedures
- ▶ Safety equipment not available at the site

The potential for increased pressure on existing health institutions and existing sanitary facilities are two main concerns with any new developments or increased population growth in any given area. These impacts are note-worthy especially in areas where the existing health and sanitary

systems do not accommodate population growth, nor are they strengthened by the local political systems.

It is also noted that in many construction developments, workers on a whole are not trained in basic emergency procedures, nor are there safety equipment on site or emergency plans in place in the event of an emergency.

Mitigation Measures

Because existing local health institutions are limited in providing emergency services, it is recommended that the Developer have on site, emergency plans in the event of an unlikely emergency. The workers and staff should be trained in basic emergency procedures and operation of machinery and equipment.

Training in safety procedures for all employee or worker activity should be provided on site prior to commencement of construction activities. Emergency plans and equipment should also be installed on site in the unlikely event of accidents, natural disasters and/or individuals needing emergency medical attention.

It is also recommended that the Developer or the construction company hired for proposed development activities coordinate or establish contact with the local institutions in the event this may be necessary. Emergency access to the mainland is also recommended in the event this may be required.

h. Employment

Potential Impacts

- ▶ Skilled laborers from the region not employed during construction phase

In developing countries, many jobs occupied by local people are at a lower level, while higher-paying and more prestigious managerial jobs go to foreigners or "urbanized" nationals. This can cause conflict and undue irritation as well as increase the gap between the cultures.

Mitigation

Locals should be first considered for employment opportunities. Where possible, locals should be trained for employment opportunities as well as to strengthen regional skilled employment individuals. Laborers are paid as per skill requirement(s). All workers be provided with restroom facilities, adequate drinking water, basic health services, and safety equipment. The labor laws should be enforced.

i. Noise and Dust Nuisances

Potential Impact

- ▶ Disturbance of noise pollution from equipment and machinery during all phases of construction

- ▶ Disturbance from dust and smoke to neighboring facilities and residents
- ▶ Disturbance due to airborne pollutants and contaminants
- ▶ Disturbance from dust on roads constructed within the development

During the construction phase and completion phase, noise and air pollution will be one of the main impacts from equipment and machinery. Impacts on road construction works on the environment include noise, dust and air pollution.

Mitigation Measures

All installed equipment such as a power generator etc., be enclosed to minimize noise impacts during day and night time uses. Heavy machinery and equipment should be operated during daylight hours only. No burning of debris allowed at or near the site.

All machinery and equipment used during all phases of construction should be maintained in quality condition. Dust, airborne pollutants, contaminants, etc, is expected to be minimal

j. Roads

Potential Impact

- ▶ Improperly designed roads access roads into the property to the development will disrupt existing road traffic and access into the area
- ▶ Improperly designed access roads may decrease traffic safety and efficiency
- ▶ Impacts from road construction on adjacent properties and the existing environment
- ▶ Transportation of construction materials and equipment during all phases of development
- ▶ Opening up access road could increase demand pressure on sensitive areas
- ▶ Disturbance from dust on roads constructed for the proposed development

Mitigation Measures

There is one main access road that leads into the subdivision and hence into the development site. This existing road will need to be formalized; however, it will not cause undue impacts on adjacent property and environment. In fact, it will complement the existing environment and at the same time provide access to the adjacent eastern properties.

Roads access should be designed with proper gradient to ensure proper drainage and mitigate flooding, and to ensure against erosion. The road should also be designed access to ensure traffic safety and efficiency. As required, materials transported from the center of town to the development site should be covered and properly secured. All on site materials should be properly stored.

The access road will not create undue impact on existing environment, existing roads or adjacent properties. The access road will not put undue demand on sensitive areas. It will in fact complement the work of the Council.

k. Tourism and Recreational Facilities

Potential Impacts

- ▶ Impact on protected areas and recreational attractions
 - ▶ Impact on other tourism accommodations and facilities on the caye
 - ▶ Disruption of tourism activities relating to marine traffic through the area
- Resource use conflicts such as competition between tourism and local populations for the use of prime resources like water and energy because of scarce supply

Impacts on nearby protected areas and recreational attractions from increased visitations to these nearby sites are potential impacts to tourism destinations. The main impact on these protected areas will be unsupervised visits to these sites. There is also the impact of additional accommodations on other existing tourism accommodations and entrepreneurial facilities on the caye. This can be seen as decreased economic returns on other tourism and related facilities on the island.

Increased boating activities in and through the marine area may also have some impact on fishery resource and on traditional tourist activities in the area. The potential for resource use conflicts between tourism and local populations for prime resources such as the scarce supply of water on the island can also be a potential negative impact. Another main concern is that crime rates typically increases with the growth of tourism activities in any given area.

Mitigation Measures

The proposed development site is not located within any immediate marine or terrestrial protected area. A management plan has been proposed for the Caye Caulker Forest and Marine Reserves, and an office established to deal with visitation and carrying capacities of zoned areas within the reserves. In other sites, trained local guides should be utilized by the development when visiting these sites to educate new visitors as well as to reduce impacts on and to these areas.

The resort (condominium) and marina development being proposed will cater to a different type of clientele and should not affect existing local accommodations. The proposed facility intends to utilize existing local facilities for all its tourism recreational activities such as tour guides, tour operators etc, and hence economic benefits realized not only from employment opportunities but from spin off activities.

Increased boating activities in the marine area during all phases will have an impact on the marine environment, and all boating and traditional users through this area will need to relocate

to other areas or utilize alternative routes or areas. The proposed development site will have its own supply of water and other utilities at the site.

16.4 Monitoring Plan for Pelican Point

The principles underlying an environmental monitoring plan as it relates to any given development is to document, track and report any changes in environmental parameters over time that would be associated with the project. These changes would in principle vary over time in both magnitude and direction. In the case of the latter it is important to bear in mind that changes in environmental parameters may be positive or negative.

Thus in principle a monitoring program for the project would not necessarily focus only on the perceived or anticipated negative changes precipitated by a given development activity, but also on the positive or beneficial changes. The parameter chosen are those that have been identified in the analytical process as being affected in the most significant way by the proposed development.

16.4.1 Specific Monitoring Issues

The proposed monitoring plan for the project will entail those parameters and ecosystem components that have been identified through the mitigation matrix and other mitigation components. A number of these issues have also been highlighted in the mitigation plans and matrices associated with the previous section. These issues include:

- Water Quality monitoring (Marine and Effluent)
- Beach Dynamics
- Bathymetry
- Waste Management
- Soil contamination (spills)
- Biodiversity
- Environmental health and safety
- Engineering aspects
- Socio economic influence
- Others

The proposed monitoring program has been developed not only in relation to satisfying the statutory requirements of the EIA process, but also as a proactive tool for the proper implementation of the proposed development, within the context of its relationship to the integrity of the environment as well as the stakeholders in the area.

16.4.2 Surface Water Quality Monitoring Program

As with so many of the EIA's, the marine component plays an important role in the overall scheme of the proposed development. With this in mind, it is critical to conserve the marine environment and its resources in order to promote a healthy and stable marine ecosystem around the proposed project.

Pollution from all the different sources can pose a serious threat to the marine ecosystem and therefore considering the negative impacts, the proposed development plans to incorporate a complete water quality monitoring program. This program, which will further be developed by the proponent and DOE.

Water samples will be collected and analyzed on a monthly basis for the following parameters using the recommended protocol required by the *Effluent Limitations Regulations* (this regulation recommends the use of the Standard Methods for the Analysis of Water and Wastewater):

a) In situ Measurements

- Salinity
- Temperature
- Dissolved Oxygen
- Ph
- Turbidity
- Total Dissolved Solids
- Conductivity

b) Laboratory Analysis

This will include the determination of

- Total Suspended Solids
- Total Nitrate
- Total Phosphate
- Total and Fecal Coliform
- E. Coli

Table 6.3 Monitoring Plan for Surface Waters

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Nutrients (Phosphate and Nitrates)	Monthly	10 mg/l	Incorporate monitoring sites as illustrated in the water sample location. In addition samples may be taken from - 0.5 mile east of Project site - 0.5 mile south of Project Site	High Priority	DOE, CZAMAI
TSS/TDS	Monthly	100 mg/l	Incorporate previous monitoring sites along with - 0.5 mile east of Project site - 0.5 mile south of Project Site	High Priority	DOE, CZMAI

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Turbidity	Monthly	Observing disappearance of secchi disc and comparing this over time at different locations.	Incorporate previous monitoring sites along with - 0.5 mile east of Project site - 0.5 mile south of Project Site	High Priority	DOE, CZMAI
BOD	Monthly	30 mg/l (EPA/WHO)	Incorporate previous monitoring sites along with - 0.5 mile east of Project site - 0.5 mile south of Project Site	High Priority	DOE, CZMAI
Dissolved Oxygen	Monthly	< 4.0 mg/l (DOE)	Incorporate previous monitoring sites along with - 0.5 mile east of Project site - 0.5 mile south of Project Site	High Priority	DOE /Fisheries, CZMAI
- Total Coliform - E. coli - Fecal Coliform	Monthly	0/100 ml of sample	Incorporate previous monitoring sites along with - 0.5 mile east of Project site - 0.5 mile south of Project Site	High Priority	Public Health

16.4.3 Wastewater Monitoring Program

Just as with the water resources monitoring program the proposed development intends to develop a wastewater monitoring program that will be tied into the surface water monitoring program. This program among others will monitor the quantity and quality of treated effluent (wastewater) generated by the treatment plant.

In addition, the program will also develop a maintenance plan encompassing structural failures, inspections, monitoring of equipment (treatment plant, grease traps, oil/water separators, etc.) short and long term repairs as well as training for new employees in charge of supervising the

plant. Also, notice and warning signs will be posted throughout the project site and especially the marina on proper wastewater practices. At the marina, this will include the prohibition of bilge and sewage disposal near the adjacent areas.

Samples of the treated wastewater will be collected and sent to an approved DoE laboratory for testing or in default tested in house (DoE permission required). In any event, the developer will comply with all applicable laws relating to this matter. Table 16.4 shows a proposed monitoring template that will be reviewed by the project and DoE.

Table 16.4 Wastewater Monitoring Template

Date (day/month/year)	Dissolved Oxygen (mg/l)	Ph (Units)	Total Phosphate (mg/l)	Total Nitrate (mg/l)	TSS (mg/l)	BOD (mg/l)	F. Coliform (count)	E. Coli (count)
____/01/____								
____/02/____								
____/03/____								
____/04/____								
____/05/____								
____/06/____								
____/07/____								
____/08/____								
____/09/____								
____/10/____								
____/11/____								
____/12/____								
Annual Average								

16.4.4 Solid Waste Monitoring Plan

As part of the overall management structure, the proposed development plans to undertake an intensive solid waste monitoring plan in order to address all the relevant issues that can arise from the collection, storage and disposal of garbage. Table 16.5 describes the outline for which the activity will be monitored.

Indicators will be developed to keep track of this activity and report any incident/accident to the local authorities. Such examples include inadvertent spillage during barging, flying or ‘blowing’ away of uncontained garbage etc.

Table 16.5 Parameters for Solid Waste Monitoring

Parameters	Frequency	Critical Levels	Area/ Locale	Priority	Agency Responsible
Solid Waste Management					
Collection	Daily	Same as above	Anywhere where available trash receptacles are located.	High	SWMA, DOE , Public Health
Disposal	Weekly	Clean environment	Collected waste will be transported to the Caye Caulker dumpsite in lieu of the mile 21 dumpsite.	High	SWMA, DOE , Public Health
Storage	Daily	Same as above	At WTS on the project site	High	SWMA, DOE , Public Health
Management	Daily	Development, implementation and documentation	All aspects of the management plan	High	SWMA, DOE , Public Health

The proposed expansion project will carefully evaluate its options and implement a waste minimization strategy to cope with the anticipated generated volume. Options however, are limited, especially considering that the local infrastructure for the handling and disposal of solid waste.

16.4.5 Biodiversity Monitoring Program

The objectives of the monitoring programs are to minimize and reduce the environmental impacts on wildlife and their habitats, and to minimize detrimental effects on protected or endangered species. The use of the caye for recreational activity should be carried out with caution.

Recommended Monitoring Measures for flora and fauna are as follows:

- A checklist will be developed in order to ensure data collection in terms of the abundance of local species. In the event of an important sighting e.g. manatees or other important species, the siting will be recorded.
- Assist in any way possible by relocating animals if found within the construction sites, if necessary.
- Establish communications with relevant Government Departments or NGOs in the event for the need for relocation of wildlife (e.g. crocodiles and manatees).

- Posting of warning signs throughout the property about wildlife, especially the crocodiles.
- Minimize effects on the receiving environment by minimizing the negative impacts that may hamper potential navigational interests.
- Confinement of the construction activities to as small an area as possible.
- Establish monitoring program for biological communities for a period of three years. This should focus on features which are likely to reflect changes in environmental conditions (such as specie composition and distribution, changes in number of species, birds, fish and other animals).

Table 16.6 Proposed Biodiversity Monitoring Plan

Parameters	Frequency	Critical Levels	Area/ Locale	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 existing data	To be done on project site and adjacent areas.	Moderate Priority	Forest Dept.
Manatee population	Twice per year during December and June.	Population changes to be noted over time.	- Waters surrounding project site and adjacent areas	High Priority	CZMAI, Fish. Dept.
Feral Animal Population (Crocodiles, raccoons and rats)	Twice per year during June and December	Population changes to be observed over time.	- Project site and immediate vicinity	Moderate Priority	Forest Dept., Public Health
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.	Marina and dredged sites around project site	High Priority	Fish. Dept.

Parameters	Frequency	Critical Levels	Area/Locale	Priority	Agency Responsible
Sea-grass biomass and density (if any)	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.	Dredged sites and marina basins. Additional areas could include the neighboring mangrove reserve areas	High Priority	Fish. Dept.
Sea-grass Re-colonization Rate of the Burrow Pits (if any)	Twice annually in June and December.	Estimate seagrass biomass by count of rhizomes.	Burrow pits and other dredged areas of the project site	Moderate Priority	Fish. Dept.

16.4.6 Social Monitoring Plan

Due to the increase in the demand for permanent employment in the country, this project will result in positive benefits for the Belize District. A number of new jobs will be created during the implementation of this project. It is expected that employment will come mainly from Caye Caulker, San Pedro and nearby communities such as Belize City and the northern districts.

Table 16.7 Social Monitoring Issues

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Fisheries Landings	Quarterly	Assess lobster and conch landings from selected area and observe for trends over time that may be related to the development.	Areas in front of the large marina as well as areas to the north of this location	High Priority	Fish. Dept.
Employment	Annually	Ratio of locals to foreigners as well as migrant workers	Construction site and administration of proposed project	High Priority	Labour Department

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Services	Annually	Acceptable/non acceptable	Marina and residential component	High Priority	BTB, BTIA

16.4.7 Other Monitoring Plans

The proposed expansion project will also implement other monitoring plans as part of their EMS program. These plans will be further expanded as the project develops and gradually comes to light. The following table summarizes the proposed monitoring plan that will aid in both the yearly environmental audit and reporting scheme.

Table 16.8 Proposed Monitoring Plan for Pelican Point Marina

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
Beach Dynamics					
Beach erosion	Quarterly	Observable loss of beach material.	- North-east main development site	Moderate Priority	CZMAI, 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 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	CZMAI, Fish. Dept.

Parameter	Frequency	Critical Level	Geographic Area	Priority	Agency Responsible
		Inspection of shore-based spoil deposition pit or de-watering 'bund' for leakages and collapse of walls.	- Done along perimeter of bund.	High Priority	DOE, CZMAI, Fish. Dept.

16.5 Conclusion

It is anticipated that the proposed project, once commissioned, will have its degree of potential negative impacts. These impacts, however, will be mitigated according to the outline described in this chapter. Much of the activities that will be carried out will result in some sort of impact, some with much importance than others. It is envisioned that the mitigation plan will be carried out in conjunction with the governmental authorities who are summoned to keep vigilance and safeguard the environment from any detrimental and irreversible impacts to the environment.