CHAPTER 15

ALTERNATIVES FOR DEVELOPMENT

15.1 Sustaining Principles to Development

Environmental impact studies typically address two or more alternatives. Typically, two alternatives studies usually represent a choice between construction and operation of a project versus non development. The alternatives to be addressed may encompass a wide range of considerations.

With this in mind, the general principle involved in identifying the option(s) of the proposed development is to ensure that the option chosen, which may be the 'non development option', would result in optimal returns in social, economic and environmental returns. In effect the option chosen should corroborate well not only for the developer, but also for the environment and stakeholders in the area.

15.2 The 'No Action Alternative'

The "No Action" alternative is posed as a possible route rather than to pursue development as outlined in the previous chapters and described in physical, biological and environmental terms. Would the intended use of the site offer the most advantageous option in social, economic and environmental returns?

Clearly the site offers many attractions and can be put (and has been put) advantageously to a variety of other uses in the past. The no action alternative must therefore be rejected out of hand from the historical context and in view of the many favorable attributes that this site possesses which could help to forward the sustainable development of the caye and on the country as a whole. Belize, like most of the developing world is undergoing dramatic changes which are transforming it socially and economically.

The government is under pressure to improve the standard of living of the people. To this end tourism development has been earmarked as one of the most promising avenues to growth. As always the more relevant issue is how to steer this growth in a sustainable direction so that it will do the most good for all the local and national stakeholders. The question then becomes whether the approach to the project is sustainable socially, economically and environmentally and if not how could it fulfill these higher principles.

15.3 Conceptual Strategy

The alternative to development outlined in regards to the currently proposed Pelican Point Marina & Yacht Club project is based on an articulation of those options, where they exist, to demonstrate the second and third options that may be adopted in the best interest of the project and the integrity of the environment. The options articulated are inherently hierarchal in nature,

with Option #1 being the option to be followed in the proposal, and Option #2 being the second most favorable course of action, and Option #3 being the least preferred alternative.

A brief summary of the various conceptual strategy options to development are outlined in Table 15.1 below:

Table 15.1: Options for Development

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Development Concept			
	Marina + Hotel/Resort and Residential Villas: Addresses demands and needs for a full service marina for Caye Caulker area… And is consistent with the natural endowment of the area and trademark of subsequent development of this sort in and around Caye Caulker, San Pedro and other cayes.	*Resort and Villas:* Resort and villas facilities alone would negatively affect the strategy to generate capital necessary to realize development. Passive recreation would interest some tourists, but would exclude the major portion of the boating enthusiast clientele.	*Non Development Option:* Lack of a proper marina and docking facilities which is an increasing requirement by the tourism industry – Also, loss of US$ 20 million in investment and non-creation of full time jobs for 100 persons during the construction phase of the project, as well as full-time jobs for 40 persons almost all of whom should be Belizeans…. The generation of foreign exchange on a annual basis has been estimated at US$12-$15 million.

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Sitting			
Siting of the Overall Development	*General Siting:* Location consistent with the area's development requirements for the provision of a caye based and sea based recreational opportunities along with the construction of a proper berthing and servicing facilities.	*Un-named location on Caye:* No other parcel is available to the developer in Caye Caulker or any other location in Belize….Also the declared interest of the Developers is to pursue the development of the project in the ambience that it has been submitted at the proposed location, given the natural assets of the area.	*Status Quo:* The non-development option would not serve the interest of the developers or indeed the tourism industry…Also, the non-development of an adequate marina for the international and local boating enthusiasts.
Siting of Yacht Marina	*Current proposed siting west of the development:* Proposed location based on development plan. Area chosen on leeward side of caye away from the southeast and easterly prevailing winds and thus heavier sea states and consequent battering of vessels.	*Substitute:* No other placement location exists… Exposure to heavy sea states and battering of crafts – Would result in damage claims and loss of clientele to more amenable locations.	*No-Development Option:* A major demand for marinas with growth in sea-based tourism in Belize – Absence of marina would erode viability and integrated scope of proposed development.
Siting of the Utility Pier/Small Marina	*Site Chosen Southern End of Project:* Sea-based marina for berthing of small crafts ….Area chose not among prime recreational location of the project… Small marina would be better sourced for services and supplies required by the development.	*Northern End of Project:* Area chosen would interfere with subdivision developmental plans and traffic projected for the subdivision.	*Non-Development Option:* Erodes feasibility of project….Sourcing of servicing and supplies would pose a danger to local and international boating enthusiasts.

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Siting of Land based Facilities	*Land –based Hotel/Resort and Residential Facilities:* Current option based on developer's design concept for the proposed portion of property…Also design in accordance with Civil Aviation.	*Alternative:* Other Design concepts would not be accommodated on site and would be in violation with Civil code.	*Non-Development Option:* Space could not accommodate a feasible return investment.
Siting of Utility Zone	*Planned sitting southern end of Project, in front of utility service marina:* Sitting away from prime recreational location and towards the leeward portion within the property. In addition, small marina - ease of accessibility with supplies and services to the project.	*Alternative:* Location is prime recreational location which would detract from optimizing the project site potentials.	*No-Development Option:* Could entail either no service infrastructure or the decentralized location-No service would make the project untenable, decentralized location of utilities would make for the non-optimal use of space in addition to competing use conflicts.
Path of Small Access Road	*Western tip of Airstrip heading north towards and into property:* Placement of access road/path would facilitate residents south of the project to access the village via the project.. Also, this option would alleviate the hazards posed by residents in traversing the air strip to gain access to the village or the windward side of the caye.	*Alternative: Other option would pose health risk to residents traversing either on the air strip or on the runway's buffer zone.*	*Non*-Development Option: Would pose serious health and hazards risks to both aircraft and general public… No foreseeable road linking the east side of the caye to the west side of the caye which is southwest of the air strip.

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Siting of Dredging Spoils	*Proposed siting to reclaim eroded beach:* Present beach is severely eroded and placement of spoils for reclamation purposes….. In addition, filling of low lying areas in conjunction with the neighboring subdivision development.	*Alternative:* Placement of spoils other than intended use would be unwarranted and pose serious environmental issues.	*Non-development option:* reclamation of the beach front could jeopardize the visitation frequency and beach goers of the area and of the resident guests and transient visitors.
Siting of the Fuel Storage Tanks	*Proposed siting in the Utility Zone:* Best suitable location in terms of project accessibility and feasibility of off-loading the product… In addition minimum piping network to offload.	*Alternate Siting more east of Utility zone:* Inaccessible -- Proposed sitting is a distance away from the small marina and would require extensive piping to off-load the stored product possibly leading to product spills and/or leaks.	*Non-development option:* Untenable and may jeopardize the project's services to the boating enthusiasts.
Siting of Waste Incinerator	*Proposed siting in the utility zone:* In conjunction with development concept and environmental requirements to mange and dispose of international waste once on project site. Volumes considered small and anticipated impacts such as nuisance can be successfully mitigated by scheduling operation of the unit. More so, unit is quite easily accessible and safe to operate from this location.	*Alternate Placement of project incinerator:* May hinder overall development concept in addition to causing a nuisance to guests and residents when exhausts is in favor of prevailing winds. Also accessibility to the incinerator would be problematic and incidence time could propagate unwanted environmental impacts.	*Non-Development Option:* This option is untenable given the nature of the garbage and its implication on human health and environmental impacts to the receiving environment.

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Dredging and Beach/Shoreline Reclamation			
Marina Dredging	*Dredging to allow access for marina berthing and dockside services:* Dockside berthing of international and local watercrafts is the most viable alternative to the current sea based tourism. In addition, berthing of freight barges necessary during construction phase of operation and to a lesser extent during the operational phase of the project. Strategy is to off-load equipment and supplies as closest to the site.	*Dredging small marina:* Limited dockside berthing for international and local water crafts.. In addition limited services due to tidal influxes and influences in the proposed area.	*Non-Development Option:* Means no access to dockside berthing, without this component the proposed project becomes unviable In addition the transportation of construction materials and proposed services would jeopardize the project and neighboring community.
Sitting and Placement of the Marina and Piers	*Proposed Location:* The proposed location is adequate and meets the needs of the developer as well as it complements to overall design of the project. Moreover, it will financially sustain the development as it intends to maximize the available area without jeopardizing the environmental setting.	Reduction of the large marina and removal of the small marina: The reduction and removal of the marina component will jeopardize the viability of the project as it is the life blood of the project. Moreover the landing barge for the transportation of construction supplies and services will be significantly impeded.	Non-Development Option: This action would not be supportive of the developer's intent to offer adequate berthing facilities to its guest and visitors. Moreover, not constructing the marina would have a social impact on the community in the form of job losses etc.

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Beach Reclamation	*Reclamation of West coast beach*: Inherent with the opportunistic view of restoring the eroded portion of the beach…. Added influx of tourism and access to beach front commodities for neighboring residents. Prime recreational location for tourists	*Reclamation of other coastal fronts:* No other area can be allocated within project scope, moreover, existing conditions does not warrant such activity due to inherent canal and cul-de-sac systems.	*Non-development Option:* This is the default position that would result in non-action…This would not be of benefit to the developers or clients of the facilities.
Canal Reclamation/Sea Defenses	*Sea wall for the canal and small marina:* Installation of a plastic steel sea wall as part of overall design concept… Wall would prevent further erosion produced by wakes. Composite material would resist corrosion and retain both the marine and land environments.	*Seawall with conventional material:* Material may be prone to fracture as a result of constant wave action, movement of soil and sediment. Alternate material such as wood is not recommended.	*Non-development option:* Imperative-this area is prone to heavy erosion and siltation..Loss of recreational land necessary for development.. would not appeal to visitors to the site
Utility Infrastructure			
Water Supply	*Rainwater Catchment Supplemented by Reverse Osmosis and Wastewater Recycling:* Entails the harvesting of rain water coupled by the extraction of seawater and the exhaustion of hypersaline by deep well injection. ..In addition, treated wastewater used for flushing purposes only. All three viable options are environmentally friendly and demand can be supplemented by either	*Rainwater Harvesting for 100 % demand:* The volume collected would not suffice the project at full occupancy. Moreover, given the projected rain season and climatological conditions, this venture must have alternative means of being supplemented to suffice project demands.	*Non-Development Option:* The actual rudimentary water system utilized by the village is insufficient to fulfill the project's demand-Also, the system suffers from outages. Perhaps feasible in the near future after upgrade

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Sewage/Wastewater	*Installation of BESST Treatment Technology:* This entails 'secondary' level treatment of sewage and the recycling of effluents to flush toilets and irrigate lawns and hedge rows - Option is least deleterious on the environment, not only in terms of direct ecological impact, but also because it significantly reduces water demand, which is a scarce commodity on the cayes in general.	*Septic Tank System:* Lack of freshwater resources on the site and presence of saline influences greatly constrains functionality of 'soak away' to reduce nutrients and fecal pathogens…Also possibility of leaching of effluents into sea which is a threat to both human health from viruses and bacteria, as well as threat to the environment from eutrophic or nutrient enrichment influences.	*Non-Development Option:* This is redundant given the fact that such a development cannot take place without effective waste-water treatment. Impacts too deleterious to the receiving environment.
Energy Generation	*Privately sourced using diesel generators supplemented by Alternate energy sources:* Entails the provision of safe, reliable and constant source of energy from all aspect of development. Necessary to power and maintain development in operation… The supplementing of the primary diesel generator with rainwater catchment and wind generators reduces the reliance on fossils fuel and internal combustion both of which have positive implications for the environment	*Diesel Generators:* Diesel generators alone as the source of energy for the facilities entails heavier cost on the environment in terms of increased use of fossil fuel, air pollution and noise pollution.	*Non-Development Option: This option is untenable since the project cannot proceed without energy generation. This is especially relevant given the fact that the project presently cannot be supported by the national grid provider. Future considerations will prove this option feasible.*

Development Issue	Option #1 & Justifications (Chosen Option)	Option #2 & Justifications	Option #3 & Justifications (Non-Development)
Solid Waste- Sitting of Incinerator for International refuse, sitting of dump site	*Chosen Option for Solid Waste Management: See Chapter 7 for chosen option* …. Most sound environmentally option given reduction of organic waste to form that does not attract feral animals or pests…Carting inorganic waste away to dumpsite of landfill eliminates habitat for breeding of insect pests and interaction of plastics with sea turtles and other marine animals.	*Burning and Burial of Wastes on the Caye:* Burning and burial of wastes would result in significant air and water pollution, aesthetic and ecological impacts.	*Non-Development Option:* This is un-tenable given the volume of garbage that would accumulate over time and the fact that a development of this magnitude would not be able to sustain over time with this strategy.

15.4 Development Summary

In considering the development alternatives, the proposed Pelican Point Marina & Yacht Club plans to exercise its first option considering the associated economic characteristics and environmental impacts. This decision comes after the careful design of the proposed project in conjunction with the different environmental factors that were taken into consideration.

With this in mind, the development concept and mitigation measures will forge to create a sustainable development capable of serving its intended purpose with sacrificing the receiving environment.