## *SECTION FOUR*

## *DEVELOPMENT ALTERNATIVES*

### 4.1 Introduction

Development alternatives are an essential tool in the decision making process of the EIA. This component is usually reserved for important issues that require one or more development alternatives. These alternatives can encompass a wide range of considerations and represents a choice between the different development activities for the proposed undertaking.

The general principle involved in identifying option(s) to the proposed development is to ensure that the option chosen, which indeed may be the 'non development' option, would result in optimal returns in social and environmental capital. In effect the option chosen should bode well not only for the developer, but also for the environment and stakeholders in the area. The various options are detailed in the following sections.

### 4.2 The 'No Action Alternative'

In the analysis of the preferred alternative, the results will be based on environmental, technical, and economic grounds. The option with the highest cost-benefit factor, the most technically feasible and with least residual impact is identified as the preferred option.

The "No-action" alternative or non development option which is the extreme case is usually discussed as an option in the development alternative process. However, this alternative is difficult to consider as a viable option due to the pre-existing investments which have been incurred by the developers. One of the most costly investments that are normally incurred prior to project approval is land purchase.

In some instances, certain companies make arrangements for land purchase after project approval, after the EIA process. However, there are circumstances when land purchases have been conducted prior to the EIA preparation, thus the application of the EIA discussion of alternatives cannot include the options for alternative project location, as is the case of the proposed project.

The initial investments already incurred were the primary reason for the no action alternative not to be found economically feasible. This option would result in the loss of investment capital, and the loss of economic opportunities such as employment generation, revenue and foreign exchange generation etc. However, the EIA as a planning tool is considered critical for the determination of potential negative impacts, mitigation measures and as an important part of the process of identification of best technology for the project.

However, beneficial results of non-development options cannot be ignored. These benefits include ecological and environmental preservation, and the reduction of stress to existing flora

and faunal assemblages. One of the primary habitats that continues to be degraded and lose its ecological characteristics is the mangrove forests, which is an important vegetation type of the coastal plains of Belize. Mitigation measures addressed elsewhere, call for the clearing of this vegetation by selectively identifying important plants within the zone of impact and ensuring their preservation.

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.

### 4.3 Technical and Economic Analysis

For a project to be viable it must ensure that the development is technically, economically and financially feasible. Cost Benefit Analysis (CBA) of projects of this nature often compares the economic feasibility of all options. CBA is concerned with an analysis of cost and benefits for the economy as a whole. The objective is to know the difference between social benefits and social costs.

During the analysis, financiers also looked at the need to develop the site using the most practical technology bearing in mind the objective of maintaining as much as possible, the ecological integrity of the area and the habitats it supports.

Technical and economic feasibility is then weighted against environmental /ecological degradation. Consideration of technical and economic analysis included consideration for population density, suitability of site, accessibility, and protection against natural disasters, construction costs, recreational benefits, job creation and revenue generation.

### 4.4 Conceptual Strategy for Alternative Analysis

The alternatives to development for the proposed project are outlined in the rationale and the strategy approach of the particular alternative. This new approach is delineated by the different options that are available for discussion and the magnitude and scope of the related impact. The following sections summarize the different development alternatives and their related impacts to the receiving environment.

#### 4.4.1 Potable Water Alternatives

Considering that the anticipated development will primarily source their potable water from rain water harvesting, several other sources were investigated to possibly suffice the water demand. In all, three alternative sources were analyzed from all angles including their related residual impact, feasibility, and sustainability. Table 4.1 summarizes the options evaluated for the proposed Bellcan Luxury Eco Resort development. Incorporated into the options are also the associated components that will be required to be installed. In addition, the several treatment

methods that will be implemented by each option will be explored. These alternatives are in response to the sourcing of potable water as defined in Section 3.2.3 and Table 3.2.

*Source Alternatives*

Based on the development concept and potable water demand, the anticipated project will require a water demand of about 7,100 gallons/day. Based on the project location, the developers opted to harvest rain water from the seasonal rains as their primary source of water (See Sections 3.2.3 and Table 3.2). Considering this scenario, several other development options were explored with the aim of sufficing the potable water demand. With this in mind, the following development alternatives were examined.

- *Water Desalinization*

The proposed project will make use of a water desalinization plant (Reverse Osmosis) capable of producing 10,000 gallons of freshwater per day. The plant will be installed in the Back of House Area (Utility Zone) and the desalted water will be pumped to the different residential buildings and reservoirs by a series of transmission mains. The demand from this plant will vary depending on time of year (rainy / dry season).

Only one plant would be acquired to accommodate the varied demand and to have backup in place. The input source will be extracted from an abstraction well and the brine will be disposed into an injection well and into the receiving environment. This volume should be miniscule and will instantaneously be dispersed into the deep injection well where it will be safely disposed.

- *Belize Water Services(BWS)*

Belize Water Services Limited is presently San Pedro Town's supplier of potable water and to the country on a whole. BWS is presently servicing the surrounding areas south of the project site with potable water. The proposed eco resort development is located about 15 miles north from the nearest water distribution line and therefore remotely located from any possible connection to the national provider.

It is anticipated as development progresses, the distribution line will eventually extend to the project site. When this occurs, the project site will obtain potable water from the national provider to suffice part of the water demand.

- *Importation*

Importation of water would only occur as a last resort if the water desalinization plant were to malfunction. Imported water would be pumped into the reservoir system that will serve as catchment for the rainwater. This method would be restricted and limited to important areas of the method development only. Only the required volume of water will be transported to the site as this method is expensive and time consuming.

*Discussion*

These alternatives would be beneficial in terms of reducing the dependency on a single source as well as to cut down the cost of potable water. In any event, the anticipated development will consider the adequate and efficient use of these potable water alternatives. This will ensure that the different influences that each alternative has on the environment is respected and taken into consideration.

**Table 4.1** Summary of Alternative Potable Water Sources

| Option | Source | Rationale | Strategy | Impacts |
|---|---|---|---|---|
| 1.0 Water Desalinization | Sea, brackish water from perforated wells | This is a very good option. The concerns are that the initial cost is expensive, the energy consumption is high, thus resulting in a high operating and maintenance cost. | Perforated well(s) along with sea abstraction, use of membrane filters, deep well injection for brine, mechanized pumping system with distribution mains and valves. | Operation will generate a constant supply of brine as waste. High over-head expenses at first – use of pressurized systems may require careful maintenance. Excellent secondary source of water as brine production can be significantly reduced. |
| 2.0 Barging water to the project site from San Pedro Town | BWS, | Importing almost two thousand gallons of water on a daily basis requires a dedicated service boat for this purpose. | Barging of water from a dock to dock location, employing a pumping mechanism for loading and unloading along with storage tanks on project site | Barging to project is too far and would be expensive considering fuel and transportation costs. This method is prone to accidents at sea, especially with the coral reef. |
| 3.0 BWSL | San Pedro Town | Supplement the potable water demand for the proposed project, or be sourced as a future primary option. | Install the necessary distribution line to project site and eventually hooking up to the development's own distribution system. | Very minimal impacts. |

### 4.4.2 Wastewater Treatment Alternatives

It is anticipated that the proposed development will take into consideration the possible wastewater treatment alternatives described in Table 4.2. As mentioned previously, the project chose a package system with secondary treatment capacity (See Section 3.3.5) such as the BESST or its equivalent for its phase one development. Based on this, various alternatives were sought and therefore the project will consider the different criteria that will be influencing the proposed alternatives. The various options considered made the following assumptions:

**Option # 1 "Individual Treatment Systems."** This system assumed that each separate infrastructure unit would consider installing individual units with the same secondary and tertiary treatment capacities. However, these systems would be individually owned instead of owned collectively.

**Option # 2 "Household Systems."** This option considered using Individual Septic Tank Systems, with appropriate leach fields.

**Table 4.2** Generic Evaluation of Wastewater Disposal Alternatives

| Option | Rationale | Strategy | Impacts |
|---|---|---|---|
| 'Individual Treatment Systems' | Individual treatment units in the buildings would treat waste more effectively and efficiently, lower impacts to receiving environment by means of secondary and tertiary treatment | Individual connections with mechanized pressure systems. Individual reservoir for treated wastewater and subsequent disposal | Low to medium impact considering the density of the proposed project. However, the number of available units/systems would magnify the need to carry out frequent periodic monitoring, especially considering the project site. In other words, the installation of excessive force mains would make the option vulnerable to leaks and system malfunction. Effluent might not meet DOE requirements. |

| Option | Rationale | Strategy | Impacts |
|---|---|---|---|
| Household Systems | Individually operated system can collect building's waste water and offer moderate treatment – Dimensions would vary according to number of wastewater generating sources | Gravity feed system involving leach or tile field disposal. Plumbing and gradient considerations. | Moderate to high environmental impacts especially considering the existing soil conditions and project site. The soil conditions would limit the functionality of the 'soak- away' to reduce nutrients and fecal pathogens…Possible leaching of effluents into sea which threatens both human health as well as the environment from eutrophic or nutrient enrichment influences. |

### 4.4.3 Disposal of Treated Wastewater

The anticipated project will undoubtedly generate wastewater as a result of the operational activities. Once treated, the effluent can be used for several non – potable uses such as those described in the following sections. In considering the magnitude and scope of the proposed project, two disposal alternatives were considered for the development.

**Table 4.3** Evaluation of Treated Wastewater Disposal

| Option | Rationale | Strategy | Impacts |
|---|---|---|---|
| 1.0 Wastewater Recycling (Post Chlorinated wastewater) | Recycling of treated wastewater for flushing of toilets only will reduce the overall water demand on the primary source. | Dedicated color coded line will be used for flushing of toilets. | Possible cross contamination due to improper valve setup. Possible contamination of land due to leaks, and plant malfunction. |
| 2.0 Diffusion in a deep injection well | Safe and rapid dispersal of treated wastewater. | Collection and subsequent diffusion of the treated and post chlorinated effluent by deep well injection. | Minimal impact considering the quality of the treated wastewater and quantity. Safe dosing time for residual chlorine to dissipate. |

| Option | Rationale | Strategy | Impacts |
|---|---|---|---|
| 3.0 Irrigation purposes only | Rapid recycling of treated wastewater and subsequent dispersal of wastewater volumes. | Install irrigation mechanisms in most residential and 'green' areas of the proposed development. | Treated wastewater volume is too low for intended use. |
| 4.0 Diffusion into the lagoon | To discard the treated wastewater generated by the proposed project. | Install the necessary infrastructure for the diffusion of the treated wastewater into the lagoon. Discharge pipes would convey the effluent from the package plants to a diffuser that will disperse the effluent. | The treated wastewater stream may have elevated levels of chlorine that is toxic to most aquatic organisms. Erosion problems may occur at diffusion site. |

### 4.4.4 Solid Waste Disposal Alternatives

As mentioned previously, the anticipated project will generate solid waste as part of the construction and operational activities. Both activities will generate different but similar types of waste with the latter being more prominent as development progresses. The anticipated development will generate about 437.8 lbs/day of solid waste without waste management and minimization strategies.

Considering this volume, several disposal alternatives were developed to adequately address the solid waste disposal. As described earlier, the proposed project opted to address the solid waste issue by separating the waste into organic and inorganic components (See Section 3.4.3). This approach is deemed the most appropriate considering the project location and existing environment. This option however, was based on several other disposal options. This approach is important in considering that this action would eliminate the dependency of having a single disposal method.

*Disposal Alternatives*

The development has explored several other viable disposal options considering the projected volume of solid waste. With this in mind, the following section outlines the alternative options for solid waste disposal taking into account the project location and its impact on the surrounding environment.

- **Option # 1** - Separation of solid waste (organic and inorganic) with onsite burial of inorganic waste and composting of the organic portion.
- **Option # 2** - No separation of solid waste with onsite burial of both organic and inorganic waste.

**Table 4.4** Domestic Waste Disposal Option

| Option | Source | Rationale | Strategy | Impacts |
|---|---|---|---|---|
| **Domestic Waste** | | | | |
| 1.0 Separation of solid waste with onsite burial of inorganics. | Waste generated as a result of the construction and operation of the project. | Rapid disposal of inorganic waste, as well as the utilization of such to fill low lying area of the project site. | Selection of the low lying areas within project site. Rapid collection and disposal mechanisms for solid waste. | Minimal impact at first but as volume increases and accumulates, the prevalence of waste would be exponential. This in turn would magnify the impact and contaminate the site with pests and diseases. |
| 2.0 Onsite burning and burial of waste without separation | Same as above, except with both organic and inorganic waste | Elimination of solid waste imploring the least costly method. Reduce overhead expenditures involving environmental management. | Selection of low lying areas on the project site conducive for burning and burial of solid waste. | Moderate to high environmental impact especially considering the project site. This action would also propagate the prevalence of pests and diseases on the area. |
| | | | | Water contamination can also occur given the nature of the project location. Moreover, impacting a new site on the property would threaten the receiving environment. |

### 4.4.5 Energy Generation Alternatives

As part of the energy generation alternatives, the proposed project plans to explore every available option including those of the eventual development of the area. This approach is essential considering that this is a premium commodity given the project location. With this in mind, the following section summarizes the source description along with their respective potential impacts.

**Table 4.5** Alternative Analysis for Energy Generation

| Option | Rationale | Strategy | Impacts |
|---|---|---|---|
| 1.0 Diesel Generators | In view of the project location, the aspect of having a continuous and uninterrupted supply of energy comes at a premium. For this reason, the proposed project plans to utilize a generator to suffice the development during emergencies. This option was chosen because the wind speed and duration can be hampered by climatological conditions that can reduce the energy output. | The developer will therefore utilize diesel generators to produce and supplement the wind and solar energy. Considering this, the project plans to utilize one to two diesel generators capable of generating 500 KW a day. Generators will be purchased according to the project's energy demand. | Generators tend to create excessive noise pollution as a result of their operation. Pollution risk due to accidental spill from fuel and oil storage tanks can also occur. In addition, air pollution and combustion fumes can pose serious health risks to humans and contaminate the air over prolonged operation. Therefore, plans are underway to 'possibly' install a propane/butane fired generator thereby reducing the risks associated with spills and leaks |
| 2.0 BEL | Similar to the above state rationale, with the exception that energy can be interrupted periodically over the life of the project. | Harness the energy that is readily available from the National Grid Provider (once it is available and at a minimum installation cost). | No residual impacts related to this source. Currently the transmission lines are far away south from the development and only more development will attract the national grid provider to the area. |

### 4.4.6 Excavation and Land Reclamation

As previously described, the anticipated development will excavate about 4,518 cubic yards of material from the project site. It is important to note that no material will be dredged from the seabed and used for land reclamation purposes. The excavation activities will produce adequate volumes of spoils to reclaim the lower lying portions of the project site and for other infrastructural development on the site. In considering the development alternatives for the fill material, the following table summarizes the siting and placement of the excavation areas that will be utilized for land reclamation processes.

**Table 4.6** Land Reclamation Activities

| Option | Rationale | Strategy | Impacts |
|---|---|---|---|
| Extending the proposed excavation areas to obtain additional fill materials. | Primary needs for excavation is to further allow obtain additional fill material for the land reclamation process. | Use of backhoe and excavator where necessary | Low to moderate impacts considering the area to be excavated and the spoils volume. Anticipated impacts would require successful mitigation measures to be in place as described in Section 6.3.1. |
| Obtaining additional fill by dredging the windward shorelines of the project site. | Primary needs are to accommodate the 'beaches' especially since the coastal areas are swampy and shallow. | Strategy will employ the use of excavators. | Medium to high impacts considering, the nature of the shoreline and conservation issues of the Reserve. |
| Transportation of fill material from inland or other sources | Reduce overall area to be excavated and related impacts generated by this alternative. | Selection of inland source with transportation of material by barge to the site. | Minimal impact, however the venture would be extremely expensive and would not be of native materials that are required for project development. |

### 4.4.7 Ecological Development Alternatives

In considering the ecological importance of the 'Non Development' option, the development intends to conserve and protect the project's natural vegetation as much as possible with minimal residual impact to the receiving environment including the Bacalar Chico National Park. This approach can only be accomplished by evaluating the development concepts (high and low density), project footprint (areas of buildings and amenities) and population density (resident and visiting) of the anticipated development.

Therefore, the proposed option was derived at taking into consideration several other development alternatives to the ecological alterations (See Table 4.7). These alternatives were evaluated based on the 'worst' case scenarios as well as the 'Non Development' option. With this in mind, the following table summarizes the ecological option chosen and its development alternatives.

**Table 4.7** Ecological Alternatives

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| 1.0 Land Clearance | Partial land reclamation where appropriate as part of the overall development component. Portions will remain in its natural state as a sign of good stewardship. | Clear cutting the project site in order to accommodate the different development infrastructures would not be beneficial, especially considering the littoral forest | No-Action alternative would conserve the low lying areas but would not allow for any development thus loss of about $75-100 million in potential investment. |
| 2.0 Land Reclamation | Carry out the reclamation activities within the scope of the EIA and development concept in order to reduce and limit potential environmental impacts related to this activity. | Deviating from this option could be detrimental to the project needs, especially when considering the maximum investment returns and tidal rise influences. | No-Action alternative would be detrimental to the project especially considering the tidal influences which would pose a serious risk to the low lying areas, especially considering global warming and the effect of tidal rise. |
| 3.0 Open Space | Availability of 'open spaces' within the confines of the project would facilitate the development with a reduced density value contained in the project areas. | Lack of the 'open spaces' would increase the human carrying capacity and increase the associated anticipated impacts related to domestic and tourism activities. | No-Action alternative would jeopardize the investor's development policy in that there would be no buffer zone and no protection scheme in promoting ecotourism. |

### 4.4.8 Siting and Placement

The eventual siting and placement of the overall development and its associated infrastructural components will play an integral part in the decision making process. This approach is not without extended evaluations of the placement and siting of the different project components. Thus the notion of displaying two alternative options for each infrastructure is for the general audience to foresee the different justifications. The anticipated siting and placement of the related infrastructure will play a vital role in the construction of the proposed project. The following table summarizes the development component and its development options.

**Table 4.8: Options for Development**

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Development Density | The chosen option (See Figs. 1.2a and 1.2c) for the overall development density was in consideration of the project location and the need to promote sustainable development for both the project and of the BCNP/MR. Thus the low density and low impact development was derived based on an environmental approach rather than an economic approach. This eco-tourism venture is well suited for the area. | The high density development would not have been in contention with the aims of the BCNP/MR for private lands located within the reserve (See Fig. 1.2a). This approach was more economic oriented rather than environmental. This was based on the 'possible usage' of the entire property for optimum investment return without environmental protection | The Non - Development option would not prove feasible for the developers. Potential loss of economic influx into the area such as jobs and other spin-offs. |
| Siting of Overall Development | The project's intention of a low key density development is consistent with the concept of complementary coexistence with the Bacalar Chico National Park and Marine Reserve.Legal provisions made with BCNP/MR management regime allows for private property and development activities that would not negatively impact the environment, or otherwise be at variance with the mandate of the Protected Area. | Other development areas would not be conducive of a low key density development project. The declared interest of the developer is to pursue the development of the project in the alternative configuration that has been submitted given the natural assets of the area. | The project site in its predevelopment state has no economic impact, thus non-development option means total loss of capital investment and revenues which would amount to US $ 75-100 million for the tourism and construction industry. |

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Siting of land-based facilities. | The current strategy entails the usage of 16.6 % of the land for the installation and construction of the infrastructure, residential and supporting service. | Placement of the land based facilities on the leeward mangrove lowlands would increase pressure on the ecological sensitive habitat, with attendant negative impacts to fish life and birdlife. | Non-Development Option will involve circumventing any environmental impacts. However, the option would not yield any economic and social benefits consistent with the tourism industry. |
| Siting of Supporting Services for the development (Utility Zone or Back of House/Staging Area) | Proposed location has an advantage in that all the necessary resources can be reached to the site. Moreover, the location is not on the windward side of the project site which is subjected more to scrutiny. | Placement of this infrastructure on the windward side of the project site or just opposite the pier. | Non Development option will not support the project as this infrastructure is essential for project construction and operation. |
| Siting of the Wind Turbine | Placement of the turbine(s) in this area would be ideal considering the 'openness' of the area and the elimination of any hazards associated with the landing of the helicopters to the site. Furthermore, the possible impacts to the residents and bird life would be reduced. | The placement of the turbine in this location would also be feasible. However, this location could be hazardous considering the close proximity to the helipad. Furthermore, the area around the Utility zone is dense and 'could' impact the bird life. | Same as above. Thus more solar panels would be required and therefore more battery banks needed to store and supply the development with energy. |
| Siting of Pier | Present location is adequate considering the seabed bathymetry i.e. there is a deep portion on the seabed where the pier head will be located that will be able to accommodate the berthing of boats without the need to dredge. | Any other location would involve actual dredging to accommodate the pier. This component would have severe impacts on the shoreline. | Non-development option would not facilitate the docking of vessels as well as impede access for the Overwater Cabañas. |

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Siting and Dimension of Pier/Arrival Dock | Mid northern latitude of property with length of 228 feet is optimal for sister project to access the eco resort. The length is necessary to reach the required depth to accommodate crafts with drafts of 1-4 feet. | Locating pier in central and southeastern portion of the project site could jeopardize the recreational aspect of the proposed development | Non development would make project infeasible and impractical since there is no pre-existing pier to accommodate the sea-based transportation needs of the project. |
| Siting of Overwater Cabañas | Proposed siting in the central nearshore environment takes advantage of pleasant prevailing winds and over-water siting capitalizes on vista of the sea and seafarers longing for gently lapping wave. Strategy also provides competitive advantage in the market relative to both local experiences as well as regional markets such as Cancun, Cozumel and Guanaha in the Bay Island. Location also relieves pressures on lowland mangroves on leeward side of property, as well as providing a reprieve from nuisance insects during calm weather. | Siting on the northeastern and southeastern end of project site would not bode well with the development concept and would detract from the overall development concept | Non-development would result in a default position of the siting of all amenities and infrastructure on land…Issue of increased and undesired density development in an area where such developments would be out of character with other developments in the area…Strategy would also entail the conservation and preservation of the mangroves on leeward side of caye that would otherwise be cleared. |
| Pier and walkway access for Overwater Cabañas | By making the pier act as a walkway for the overwater cabañas will drastically reduce any potential impacts associated with having two distinct structures. | Construction of the pier and overwater structures apart would increase the aquatic and navigational impacts to the reserve. | Non Development Option – this would exacerbate the potential impacts having two distinct structures on the coastline. |

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Siting of Bathing/Swimming Zones | Two locations needed given extended length of seafront of property and commitment of developers to provide equal opportunities to clients enjoying northern and southern portions of property. | Provisions for one bathing zone of combined capacity of the two can also be envisioned but would pose some discomfiture with some bathers who prefer privacy. | Non-development Option: The absence of a bathing beach in an environment endowed with an expansive sea-frontage and a natural beach that is not useable because of the shallow nearshore seagrass beds, would detract from the experience that should be a natural response to such a location. |
| Bathing/swimming area construction method | Adopted method of placement of geotextile mats in nearshore sea-grass environment and loading with sand excavated from onshore. This method is an alternative to dredging the sea grass beds to produce and environment that is safe and comfortable to the feel to bathers and that provides the requisite depth of water. Strategy of loading geotextile mats with sand compresses seagrass beds to provide the required depth. | Dredging Seagrass beds to produce required depth and feel for swimmers. Dreding to the extend required to produce the bathing areas comes with higher ecological cost than the chosen method, given the degree of siltation and turbid influences. | Non Development option is the default position that would result in non action. This would not be of benefit to the developers or clients of the resort. |

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Elevated walkways | Use of elevated walkways in low lying areas to facilitate the movement of guests, visitors, and staff to their desired location. Important in considering that the proposed walkway would have minimal environmental impacts especially considering that some of the central portions of the project site are low lying. | Reclamations and construction of the access paths through the tidal mangrove swamps and low lying areas to facilitate the movement of guest, visitors, and staff. | Non Development option would be detrimental considering that some of the areas, which are low lying, would require some form of land reclamation activities especially during the seasonal rains. |
| Transportation routes for the barging of materials to the project site | Use of power boats to travel from San Pedro Town to the project site transporting construction materials via the Rocky Point Split. Construction materials would be lightweight since project plans to be constructed out of native materials. | Transporting materials from 'through' the back or border cannel would be limited considering the shallow depths of the canal. Best other option is to transport from Xcalak all the necessary materials pending Customs. | Non development option cannot be considered because construction materials are required for project development. |
| Roads Reserve | Proposed 'road reserve' layout is adequate considering that the proposed road will eventually be developed as the area further develops. This reserve will be semi developed within the spectrum of the development concept of the project site and will run through the mid regions of the development as described in Section 3.6.1. | Fully develop the road reserve in anticipation to avoid future modifications. This action can be seen as both positive and negative to both the project site and to the development area mainly because of the impact this action would have on the environment and its 'uncertainty'. | Non development option within the project site would be detrimental as the area develops. Access to the site and northern Ambergris by road will therefore be impeded eventually translating to potential investment losses. This in turn would restrict the 'corridor' from being accessed by road. |

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Entrances to Project Site | The project will have two entrances which will be a northern and southern entrance. The road reserve will link these two entrances and will run through the property. These entrances will be guarded and decorated to reflect the uniqueness of the area. The project site by all means will be accessible by any and everyone venturing in the area. The project site will carryout surveillance on its visitors. | Due to the design of the project, no other road entrances can be accommodated that would be viable. Therefore the only entrance has to be adequately designed and conceived. | The development requires roads to access the site. Without them the development would suffer serious losses as no supplies and potential investors would be able to access the site. |
| Siting of Security | Placement of the security services at the public entrances is adequate considering that these areas will be transited by staff, residents, will be and visitors in the future. In addition this feature is an integral component of the overall development component, especially in considering today's security issues. | Placement of this service in other areas is also acceptable, barring any unforeseen or calamitous event delaying or preventing the security service to respond adequately. Gating the public entrances can also be considered but would detract from the general concept of the project proponent. | This service is essential and is also a vital part in the overall development plan. Residents and visitors are asked to be acquainted with these areas as well as to be informed of any management policy. |
| Recreational Facilities | The placement of the beach clubs, restaurant/bars, spa/fitness center and others are within the confines of the overall development concept. These recreational areas can be accessed by everyone visiting the project site. | The placement of these areas can be enhanced by the substitution of designated zones for recreational areas in order to better serve the residents and general visiting population. | The placement of these recreational areas other than the ones mentioned would jeopardize the development concept and possibly affect the economic investment. |

| Development Issue | Option #1 & Justifications (Chosen Option) | Option #2 & Justifications | Option #3 & Justifications (Non-Development) |
|---|---|---|---|
| Siting of Helipad | Proposed site located in the central upper northern latitudes of the project site. Site is conducive for the landing and departure of helicopters since the site is somewhat isolated from the project site. | Placement of the helipad in the southeastern latitudes of the project site is also appropriate considering the remoteness of the site. | Non Development option will be detrimental considering the remoteness of the area and the lack of roads. This option is important considering the expanse of the greater Ambergris Caye. |

## 4.5 Conclusion

In accessing the comparative evaluation of the different development alternatives presented for the proposed project, the proponents plan to exercise these alternatives as seen fit. This of course, will fall within the scope of the overall environmental performance of the chosen 'alternative' and its associated impacts to the receiving environment.

In any event, it is necessary to lay out the different options that are available in order to safe guard the environment and its interconnected elements. In considering the different development alternatives presented, the comparative process stems from both the rationale and strategy approach that was devised to discuss the alternative. Therefore, it is in the best interest of the governing body to 'compare and evaluate' the options described.