

**Terms of Reference**  
**For an Environmental Impact Assessment to be conducted**  
**For**  
**CASA LINDA RESORT**  
**Located at Cayo Espanto, San Pedro Town, Ambergris Caye**  
**Owned by Casa Linda Limited**

This draft Terms of Reference (TOR) has been developed pursuant to the EIA Regulations 1995 and subsequent Amendment of 2007. The Terms of Reference has been prepared following a scoping of the most critical issues associated with the development of the Casa Linda Resort. In the preparation of the EIA, the EIA preparers will need to focus on addressing the main areas of concern, such as:

- i. Impacts on water resources and water quality**
- ii. Impacts on flora and fauna associated with habitat alteration**
- iii. Impacts associated with the extraction of materials;**
- iv. Possible impacts to groundwater and soil due liquid/Sewage and solid Waste;**
- v. Possible impacts to marine transportation and navigation**
- vi. Possible impacts to the socio-economic framework of the community.**

Scoping of these issues speeds up the EIA process, cuts down its cost, improves the quality of the development, and ensures that environmental concerns are clearly addressed.

This Draft Terms of Reference is divided into three (3) sections:

- A. Project Description and Physical Environment
- B. Environmental Issues
- C. Mitigation/Monitoring Plan and Alternatives to Development

**A. PROJECT DESCRIPTION AND PHYSICAL ENVIRONMENT**

This section of the document deals primarily with information pertaining to the background of the project and the physical environment within which it is proposed. The EIA will need to address:

**1.0 THE PROJECT DESCRIPTION AND LAYOUT PLAN**

Maps at appropriate scales (1:25,000) must be provided and with proper labels and legends to illustrate the general settings of project related development sites as well as surrounding areas likely to be environmentally affected. These maps shall include topographic contours, where available, as well as location of major surface waters, natural drainage, roads, parks or reserves, political boundaries and existing adjacent land uses (tourism, agricultural, industrial) and a photo-geologic/geomorphic map of the project area showing geomorphic features (by use of aerial photographs, if available). Additionally the following should be provided:

- 1.01 Give the exact location and size of the project and provide proof of ownership of the parcel(s) of land comprising the project site. Include a copy of the land tenure documents.

- 1.02 Provide the following plans:
- a. The layout plan for the overall development, including siting of all facilities such as the utilities, water treatment and storage facilities, sewage treatment facilities, storage facilities including boat storage (if any), drainage facilities, administrative buildings, condominiums, hotels, residential homes, swimming pool, restaurant/bar, power generation, solid waste storage/treatment facilities, etc.;
  - b. A detailed legible layout plan drawn to scale showing the dimensions of all buildings and proposed facilities, 66ft lagoon and sea reserve, areas of natural waterbodies, acreage of all parcels, 30 feet canal buffers (if applicable), size of roads, etc., and open spaces.
  - c. The physical plan for the development should include the siting and rationale of all facilities and infrastructure.
- 1.03 Describe briefly the facilities provided in the plans above.
- 1.04 Provide specifications for the following:
- a. Waste treatment facilities; (liquid and solid)
  - b. Water generating facility
  - c. Energy generating facility (if applicable)
  - d. Extraction of Material (if applicable)
  - e. Residential facilities (condominiums, residential villas)
  - f. Commercial Facilities (hotels, restaurants, condominiums)
  - g. Boat docking area
  - h. Other tourism facilities
- 1.05 Provide information of all water sport activities that will be carried out in the area (if any).
- 1.06 Provide an outline of the overall management structure anticipated for the proposed development.
- 1.07 Describe the implementation of the project in terms of:
- (a) The time-frame over which the proposed undertaking is to take place, including starting date and conclusion;
  - (b) The various phases of the project and the time-frame within which each phase is to be accomplished. (if applicable)

## **2.0 THE PHYSICAL ENVIRONMENT**

- 2.01 Provide details of the basic physical environment of the project site and zone of influence. This should include:

- ◆ **Topography:** a detailed elevation map of the project site, including degree of slopes, flood hazard, drainage patterns around project site and the effects of rainfall averages on these conditions;
- ◆ **Climate:** hydrology and meteorology: including rainfall average per year, prevailing wind patterns and susceptibility to disaster caused by natural events.
- ◆ **Geology:** Provide a detailed description of the characteristics of landform, land surface including exposed rock types, types of unconsolidated materials exposed (sediments), rivers, tributaries, ridges, valleys, and geological structures — faults, folds, if they can be determined by field mapping;

**Subsurface geology** – Give a detailed description of the stratigraphy of rocks or unconsolidated materials within the project site, including depths for the protection of the water table. This must be done using core sampling, (mechanical or manual), by means of a pre-determined borehole grid. Cross sections of the rock types or unconsolidated materials should also be presented. The physical properties of the rocks and/or unconsolidated materials must be tested (particularly the permeability and percolation rates) to determine the suitability for the proposed development

- ◆ **Soils:** soil profile, permeability, classification, fertility, and the potential for erosion of the soils on the project site;
- ◆ **Vegetation Type(s)** within the project area
- ◆ **Current land** use of project site and adjacent properties;
- ◆ Physical description of surrounding receiving water bodies including rivers, lagoon and sea front.

2.02 Determine the projected number of buildings to be constructed, including residential dwellings, hotels, condominiums, townhouses/villas or other similar complexes. A scaled layout of all complexes and other infrastructure to be built and the proximity to each other should be shown.

2.03 Provide technical justification for the number of buildings, number of persons residing and visiting the project site/resort. This should be described in such a way as to determine the physical carrying capacity and density proposed for the area.

### **3.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

This section will identify operation standards, which the project must address to be environmentally acceptable. This will include, for example effluent discharge limitations, air emission standards, effluent receiving water quality standards, building codes, and occupational health and safety requirements.

3.01 Describe the pertinent regulations, standards and policies, at the local and national levels governing environmental quality, health and safety, protection of sensitive

areas, including cultural resources, protection of endangered or threatened species, infrastructure development, land use control (Ambergris Master Plan if applicable) and tourism that may have an impact on the proposed development. Provide and discuss policy, legal or administrative issues as they relate to this proposed development.

## **B. ENVIRONMENTAL ISSUES**

This section of the document primarily targets the environmental issues of critical concerns based on information provided in section A. The following are the critical issues a high quality EIA will need to address for this development. The EIA will need to address:

### **4.0 IMPACTS TO FLORA AND FAUNA**

For the project site and the zone of influence:

- 4.01 Collect baseline data (field study) on the terrestrial and aquatic fauna and flora; rare or endangered species or commercially valuable species within or in areas adjacent to the project site with special emphasis on effluent receiving water bodies, source of potable water supply and immediate areas to be used for recreational activities. This should provide a baseline from which to detect any changes in the abundance and vigor of the species due to this development.
- 4.02 Provide a general description of the methodology used to collect baseline data this is to include the date, time, area surveyed and methodology used.
- 4.03 Estimate the acreage and type of vegetation within the development site designated for removal as well as the percent of vegetation to be removed, taking into consideration the establishment of appropriate buffer zones along all permanent water bodies on site.
- 4.04 Identify any species of conservation significance (threatened and endangered species), such as manatees, crocodiles, turtles, etc., and specify detailed measures for their protection, which may include the establishment of reserves within the project site.
- 4.05 Highlight, where appropriate, measures that could be taken to enhance the habitat value of the project area.
- 4.06 Map terrestrial habitats at 1:15,000, including mangrove and vegetation cover, natural drains, etc. This should incorporate clear indicators of percent cover and habitat composition and health.

### **5.0 IMPACTS TO WATER RESOURCES**

- 5.1 Determine the projected water needs for the entire development (including drinking water supplies, domestic/household supply, irrigation of landscape, pool/spa, etc.)

- 5.2 Assess all sources of water supply, quality and quantity, paying special attention to determining the safe maximum sustainable yield it can provide. If surface or ground water sources are intended for potable use, water quality assessments of the intended sources should be conducted, as follows:
- 5.3 For the establishment of baseline data, collect a minimum of three (3) different water quality data sets (preferably three separate months) on the water sources identified above. This data should include GPS Coordinates for sample sites and the following parameters:
- |  |                               |
|--|-------------------------------|
| i. Temperature,                                | viii. Alkalinity              |
| ii. Dissolved Oxygen (surface & below surface) | ix. Ammonia                   |
| iii. Salinity                                  | x. Total Phosphates           |
| iv. Total Coliform Count                       | xi. Total suspended solids    |
| v. <i>Escherichia coli</i> Count               | xii. Total Nitrates           |
| vi. Chemical Oxygen Demand                     | xiii. Sulphates               |
| vii. pH  | xiv. Biological Oxygen Demand |
|  | xv. Conductivity              |
- (Assays i, ii & iii, to be conducted in the field and the remainder to be conducted preferably by an independent water quality consultant. The water quality analyses should contain the official stamp of the laboratory (if any) and the signature of the technician).
- 5.4 Given the results from above, evaluate alternatives for the provision of water supply for the entire development.
- 5.5 Identify the preferred option for water supply required for project development, based on environmental grounds. Specify any residual impacts of meeting water needs through this option, their significance, and any mitigation measures to be undertaken. Where the recommended water supply source is ground water, a proper pump test on the aquifer must be conducted. Provide detailed information for any water treatment processes that may be employed to obtain the required volumes of potable water for the entire development.
- 5.6 Provide an inventory of other users in the zone of influence with respect to the selected water supply source and identify any impacts thereon and mitigation measures to be undertaken.
- 5.7 Identify and develop a water quality monitoring program able to detect any change in groundwater or surface water quality that will be of significant detriment to:
- i. Public health; and
  - ii. Wetlands and adjacent habitats, including water bodies
  - iii. Endangered or threatened species in the project area and zone of influence.

## **6.0 LIQUID WASTE/ SURFACE RUNOFF**

- 6.01 Determine the nature, composition, source(s) and volume of liquid waste to be generated by the entire project, inclusive of sewage, greywater, pool and RO system (if any).
- 6.02 Evaluate options for the collection, treatment, recycling (if appropriate), and disposal of these liquid wastes, identifying any chemicals planned for use in the treatment or management of these wastes.
- 6.03 Identify the preferred option(s) for liquid waste management, based on environmental grounds, including necessary infrastructure and land requirements. Specify any residual impacts of liquid waste management, their significance, and any mitigation measures to be undertaken.
- 6.04 Estimate volumes of surface run off at project location.
- 6.05 Identify preferred option for surface drainage system for project area including drains, culverts, and sedimentation structures and run off ponds (if applicable).

## **7.0 SOLID WASTE**

- 7.01 Determine the projected types and volumes of solid waste to be produced by the entire development both during construction and operation. This should include organic, inorganic and construction waste. It will also need to include solid wastes from boats and other transportation vehicles. If composting of organic wastes is to be conducted, provide specifications on the location of the site and procedures to be followed for the composting.
- 7.02 Evaluate options for the collection, storage, treatment, recycling if possible and final disposal of these wastes, including hazardous wastes.
- 7.03 Select the preferred option(s) for the disposal of these materials. This should be based on environmental grounds and public health grounds, and should specify residual impacts and their significance and the mitigation measures, which are to be undertaken.
- 7.04 If the EIA suggests the use of an existing landfill, assess the ability of the community or local government to provide the necessary infrastructure, resources and management for the collection, storage, treatment and final disposal of solid waste generated by the project and provide appropriate recommendations for these, in the event that they are inadequate.

## **8.0 GEOLOGY AND EXTRACTION OF MATERIALS**

- 8.01 Provide a detailed elevation map of the project area.

- 8.02 Provide information on the specific soil type and submit results of analysis carried out to determine soil permeability/profile in the proposed project area.
- 8.03 Provide the soil profile of at least three bores of a diagonal transect of the property.
- 8.04 Conduct a geotechnical study/assessment to determine the load bearing capacity of the project site.
- 8.05 Determine the type and volume of construction materials required for the entire development, including road construction and infrastructure needs.
- 8.06 Determine the following for the dredging/excavation requirements for the project. (If Applicable)
  - 8.06.1 Disposal/use of dredged materials;
  - 8.06.2 Physical character of materials to be dredged;
  - 8.06.3 Type of dredging equipment/method of dredging;
  - 8.06.4 Need for shoreline protection;
- 8.07 Determine the need for mining and impacts associated with the construction of the docking facility (if any).
- 8.08 Evaluate options for meeting the requirements of the Geology and Petroleum Department with respect to mining/quarry licenses/permits including reviewing the sources, volume, extraction methods and transportation as well as identifying:
  - 8.08.1 Direct and indirect biological impacts on flora and fauna, marine and terrestrial with emphasis on the sea grass beds, and mangroves.
  - 8.08.2 Direct and indirect physical impacts (e.g. forest processes);
  - 8.08.3 Impact on receiving water bodies, Caribbean Sea, lagoon, and mangrove wetlands.
  - 8.08.4 Specific mitigation measures for the above mentioned.
- 8.09 Identify the preferred option for the extraction methods, source and transportation of materials, specifying the necessary mitigation measures, their residual impacts and significance. (If Applicable)

## **9.0 TRANSPORTATION**

### **9.01 Road Transportation**

- 9.01.1 Provide a layout of the existing access road(s)/walkways to the development site. Identify whether any new roads/walkways will be required for the development.
- 9.01.2 Evaluate options for the provision of suitable roads/walkways for the development, taking into account proper access and egress to the project site,

buffers, etc.

- 9.01.3 Select preferred option for the provision of suitable roads/walkways for the development. This will need to examine construction materials (types, sources, volumes, transportation) and methods in relation to their environmental impacts.
- 9.01.4 Recommend mitigation measures for the proper management of vehicular and boat traffic close and within the project area. These measures should include recommendations for protection features against siltation, erosion, and other potential pollution to the environment.

## **9.02 Water Transportation**

- 9.02.1 Determine the projected number and types of boats likely to be associated with the entire development.
- 9.02.2 Evaluate options for boat storage, i.e. docking facility and the size of such facility. (If applicable) and proposed routes to the docking facility.
- 9.02.3 Provide the design and siting of docking facility (with dimensions), including access channel (if applicable).
- 9.02.4 Provide the bathymetry of the boat docking area.
- 9.02.5 Evaluate and justify options for the construction of beach protection structures/devices and identify the preferred option (if applicable).

## **10.0 ENERGY GENERATION**

- 10.01 Determine the projected energy requirements for the entire development.
- 10.02 Evaluate alternative options for meeting these needs, using fossil fuel, solar, wind resources (and others if appropriate). For each of these options, it will be necessary to investigate:
  - 10.02.1 Fuel storage (where relevant);
  - 10.02.2 Transportation (where relevant);
  - 10.02.3 Health and safety;
  - 10.02.4 Pollution sources, volumes, and types;
  - 10.02.5 Significance of any pollution that may result from energy generation; and
  - 10.02.6 Mitigation measures to be implemented.
- 10.03 Select the preferred option(s) for energy generation. This should be based on environmental grounds and should specify the residual impacts of generation of the preferred option, its significance and the mitigation measures to be undertaken.

## **11.0 ARCHAEOLOGY**

- 11.1 Consult with NICH-Institute of Archaeology to determine the Archaeological importance of the area, moreover provide a copy of the Institute's recommendations (if any).

## **12.0 SOCIAL FACTORS**

- 12.01 Conduct an investigation to determine the potential social impacts of the proposed development.
- 12.02 Identify potential impacts of the project to the traditional use of the resources.
- 12.03 Labor; - employment opportunities for skilled and unskilled workers for example in the hotel industry; and provision of basic health care and hygiene, the provision of recreational spaces, sanitary facilities for all workers, during construction and operation of the project.
- 12.04 An analysis of the requirements of areas for public services should be incorporated into this study. Issues such as the following should be addressed;
- i. Fire protection
  - ii. Police/Security services
  - iii. Educational institutions
  - iv. Recreational centers
  - v. Medical emergency evacuations

## **13 NGO AND PUBLIC INTEREST**

- 13.01 The EIA team will report on the views and concerns of local NGOs, public interest groups and relevant government departments/agencies regarding the development of the project.
- 13.02 Provide a copy of the questions/answers used for the report including the name and organization of all the interviewees and the date of the interview.

## **14.0 DISASTER MANAGEMENT AND CLIMATE CHANGE ISSUES**

- 14.01 Identify emergency preparation, response and applicable management measures for the proposed development (e.g. hurricane, floods, fires etc.). This should include evacuation and hazard management plans inclusive of climate change adaptation measures (such as sea level rise and structural/building design conducive with the climatic conditions of project site).

## **C. MITIGATION/MONITORING PLAN and ALTERNATIVES TO DEVELOPMENT**

**This section discusses the potential impacts (both positive and negative) and proposes alternatives to the execution of the project based on the information generated by Section B.**

### **1.0 DETERMINATION OF POTENTIAL IMPACTS**

- 1.01 Identify all significant changes that may result from the implementation of the project. This should include, but not be limited to, changes in the quality of any permanent water body on or near the project site, land use, noise, potential land use conflicts, traffic, infrastructure, employment opportunities, socio-cultural behaviour, abundance and vigor of flora and fauna, changes in abundance of pests and vectors, effects of the development on aesthetics and visual quality.
- 1.02 The analysis should distinguish between significant positive and negative impacts; direct and indirect impacts; immediate, medium and long-term impacts; irreversible or unavoidable impacts including the magnitude of these impacts (low medium, high); identify impacts that may result from accidental events (i.e. spills of hazardous waste, accidental release of untreated effluent discharges, etc.). The analysis should be divided into construction, operational and maintenance activities.
- 1.03 Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with the prediction of impacts. This section proposes alternatives to the execution of the project based on the information generated by Section B.

### **2.0 ALTERNATIVES FOR DEVELOPMENT**

- 2.01.1 Present all reasonable alternatives for development in comparative form, exploring each alternative. Include the 'no-action' alternative and the reason why certain alternatives were recommended or eliminated. These alternatives should look at the following components:
  - 2.01.2 Siting of the necessary support infrastructure and all facilities;
  - 2.01.3 Earth Movement Activities: evaluate the different extraction/dredging methodologies, extraction/dredging points (burrow sites), extraction/dredging volumes, material fill sites etc. (if applicable)
  - 2.01.4 Liquid and solid waste treatment and disposal options (evaluate the different treatment technologies and methodologies).
  - 2.01.5 Boat Storage and docking facilities (siting, design, etc.).

## **2.02 MITIGATION AND MONITORING PLANS**

- 2.02.1 Based on the investigations, develop a mitigation matrix outlining mitigation measures for all potential negative environmental impacts including, but not limited to, construction activities, waste treatment and disposal, habitat alteration and erosion control, and management of pests and vectors (rodents, mosquitoes, flies, etc.),.
- 2.02.2 Provide a detailed monitoring plan to be implemented for the entire operation, identifying any agency/body responsible for its implementation and any training that may be necessary for the implementation of the plan. The plan should include monitoring of wastewater discharge characteristics (if any), water abstraction levels changes in ecological species (including endangered species), contingency measures to emergency response to accidental events (fire, flood, hurricane, leakages, spillages, etc.).
- 2.02.3 Provide a detailed plan for the decommissioning and rehabilitation of the site to other uses in the event that the project is discontinued.