

## **TASK GROUP 2.0: DATA COLLECTION**

It cannot be stressed enough the importance, to the successful implementation of the EIA and EMP, of good data and information on the physical details of the roads and surrounding areas. We therefore propose to collect the information on the following for the area;

### Geographical and Physical Characteristics

- Land Use and Topography
- Meteorology and Climate including extreme weather events
- Geology and Geomorphology
- Surface Water Resources
- Ground Water Resources
- Marine Water Resources
- Air Quality and Noise

### Biological Resource Characteristics

- Aquatic/Marine Biological Resources including Rare and Endangered Species
- Terrestrial Biological Resources including Rare and Endangered Species

### Socioeconomic, Historic and Cultural Aspects

- Demographic patterns and occupations
- Aesthetic conditions
- Tourism, employment and community activities
- Local Infrastructure and Community Services
  - Potable Water Systems
  - Wastewater Collection, Treatment and Disposal
  - Solid Waste Disposal
  - Electricity
  - Cable and Telecommunications
  - Roads and Transport
  - Health Care and Medical Facilities
- Historic and Cultural Resources

The accuracy and completeness of this data is directly related to the accuracy and reliability of the EIA and EMP. We have therefore proposed a programme of fieldwork, as detailed in this section, aimed at ensuring a high level of reliability of the EIA and EMP.

The data collection and analysis for the existing conditions of the property will be obtained through a combination of field investigations and available published information. Various agencies will be contacted to provide knowledge of the project and it's area. Other information will be gathered from a variety of

publicly available sources including research publications, field guides, planning documents, websites, technical reports, and other assessments.

Field investigations will include data collection regarding the property's land use, geologic conditions, shoreline characteristics, water quality conditions, ground water resources, marine and terrestrial biological resources, vegetation communities, and cultural resources. The nature and extent of the field surveys will be pre-approved by the BEST Commission and conducted in accordance with the scope of services approved by the BEST Commission. The types of information to be collected and methodologies used are described in more detail in the sections below. The existing conditions information provides the baseline for the assessment of impacts and background for identifying mitigation and monitoring programs that are discussed in the following sections of this proposal.

## Meteorology

### Task 2.1: Geographical and Physical Characteristics

- Land Use and Topography

Topographic survey of the areas will be obtained from the client. A study of aerial photographs of the area and field investigation will confirm the accuracy of the topographic survey and determine the use of land (e.g. residential, agricultural, commercial, etc). Further maps will be obtained from Lands and Surveys where necessary.

- Meteorology and Climate including extreme weather events

Data on the meteorology and climate will be obtained from the Bahamas Department of Meteorology and available published information. Supplemental information will be obtained from the National Oceanic and Atmosphere Administration (NOAA) nearest weather station. Data that will be collected will include precipitation, temperatures and wind speed. Data will also be collected on tropical storms and hurricanes. Various agencies will be contacted to provide knowledge of the project and it's area. Other information will be gathered from other sources including research publications, field guides, websites, technical reports, and other assessments.

- Geology and Geomorphology

Information will be gathered from research publications, field guides, websites, technical reports, and other assessments. A study of the area and field investigation will confirm the geology and geomorphology of the area.

- Surface Water Resources

There is a nearby Lake (Lake Cunningham) which although found predominantly off property, it represents a surface water resource that will be investigated during the field surveys to assist with characterisation of the potential impacts. During the field surveys of the lake general information such as depth, substrate type, water quality, and biological resources will be recorded.

Drainage patterns will be investigated during field surveys including the means by which those portions of stormwater runoff flow naturally and where relevant stormwater runoff management systems. Areas

prone to flooding will also be identified, firstly by reference to the topographic survey and investigated on site during field surveys.

- **Ground Water Resources**

Information regarding ground water characteristics will be obtained from publications and studies carried out, in particular the most recent and comprehensive source of groundwater data for the Bahamas, the U.S. Army Corps of Engineer's (USACE) 2004 report entitled Water Resource Assessment of The Bahamas. Further information will be obtained from the Water and Sewerage Corporation regarding Water Supply. This will include details relating to the nearby well fields and piped services. Where necessary general information such as depth, substrate type, water quality, and biological resources will be recorded during field surveys.

- **Marine Water Resources**

Information obtained and reported regarding marine waters will be limited to the impacts with respect to the brackish water of Lake Cunningham due to marine waters being otherwise outside the area of influence for the project.

- **Air Quality and Noise**

Whilst there are some stationary and mobile sources of air and noise pollution other than road traffic, road traffic is the most significant source therefore most of these levels will be directly related to the level and type of traffic and can be described to some degree in these terms from traffic data. Desktop studies will be conducted to determine the level of noise and the distance affected which will be plotted on aerial photographs and reviewed during field studies.

### **Task Output**

A description (including figures, graphs, charts, maps and photographs etc.) of the existing geographical and physical characteristics for the project area.

## **Task 2.2: Biological Resource Characteristics**

### Terrestrial Biological Resources

#### Terrestrial Vegetation Communities

Data collection will consist of a survey of the terrestrial habitats in the three corridors proposed for the road expansion and realignment. Baseline information on the common vascular plant species of each, and the presence of any protected species will be recorded. Additionally the habitat types and their locations will be noted. Digital imagery through out the corridors will be taken to visually represent what is occurring along the proposed project. The methodology will consist of the following;

- 1) Literature review of biological resources.
- 2) Walking transects: this technique involved walking through the habitat recording what vascular plants species are observed. During this portion the presence of protected species will be evaluated. Species determination will be based on Correll and Correll (1982).

- 3) Terrestrial habitat: utilizing aerial imagery and on site ground truthing the terrestrial habitats (including wetlands) will be determined. Maps of the vegetation types will be produced from the aerial imagery. Vascular plant community nomenclature is based on Areces et al (1999).
- 4) Digital imagery of the terrestrial habitats will be taken through out the area surveyed and focus on what is atypical as well as variation within a habitat.

#### Terrestrial Wildlife

The terrestrial wildlife in the area will be identified and characterised through a review of existing scientific literature, field guides and wildlife observations on the site. Because field reconnaissance will be conducted over a short period of time determined by the project schedule, a literature review of published information will be carried out in order to provide a broader temporal context for understanding the potential avian use of the site.

#### Aquatic/Marine Biological Resources

The description of the aquatic/marine biological resources within the site and surrounding waters will be compiled based on a review of published information supplemented with field investigations.

### Task Output

#### Terrestrial Biological Resources

A plan indicating the locations of terrestrial biological resources. Maps of the vegetation types will be produced from the aerial imagery. A description of the terrestrial wildlife of the area including a list of terrestrial wildlife and bird species potentially occurring in the immediate vicinity of the corridors and where observed. A list of the terrestrial flora and fauna that are identified as either threatened by the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List, included on Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendices I and II or identified as protected by The Conservation and Protection of the Physical Landscape of the Bahamas Act.

#### Aquatic/Marine Biological Resources

A plan indicating the locations of aquatic/marine biological resources. Maps of the species will be produced from the aerial imagery. A description of the aquatic/marine wildlife of the area including a list of wildlife observed. A list of the aquatic/marine species that are identified as either threatened by the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List, included on Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendices I and II or identified as protected by The Conservation and Protection of the Physical Landscape of the Bahamas Act.

### Task 2.3: Socioeconomic, Historic and Cultural Aspects

- Demographic patterns and occupations

Data will be collected from existing publications and from the Department of Statistics.

- Aesthetic conditions

The aesthetic conditions will be described from findings during field surveys and will include photographs.

- Tourism, employment and community activities

Tourism is a critical component of The Bahamas' economic growth and employment. Information relating to tourism, employment and community activities will be obtained from publications as well as from the Ministry of Tourism and the Department of Statistics.

- Local Infrastructure and Community Services

Information on the existing infrastructure will be based on observations on site by the team, discussions with the relevant government agencies, and publicly available information. This information will be collected for the following utility services;

- Potable Water Systems
- Wastewater Collection, Treatment and Disposal
- Solid Waste Disposal
- Electricity
- Cable and Telecommunications

- Roads and Transport

Information on the existing Roads and Transport will be obtained from existing mapping and publications. Further information will be obtained from the Ministry of Works and Transport in particular with regards to the existing traffic flows. It is understood that a feasibility study has been carried out for the project which contains relevant traffic data. We consider the following to be necessary for the EIA, should this information not be contained in the feasibility study additional surveying to that allowed for in this proposal may be necessary.

(a) ADT 24-hour 7-day counts:

- JFK between Blake Road & South Westridge
- JFK between South Westridge & Gladstone Road
- JFK between Gladstone Road & MOWT Access
- Thompson adjacent to Davis Street
- Thompson between Davis Street & Moss Road
- Poinciana between Thompson and Blue Hill Road

(b) Turning movement counts (TMC) during peak morning and evening periods 6 – 9:00

AM and 3:00 – 6:00 PM at following intersections:

- JFK at North and South Westridge (Road to Killarney Lakes)
- JFK at Gladstone Road
- JFK at Theodora Lane
- JFK at Harrold Road
- Thompson/Nassau Street/Poinciana Roundabout
- Poinciana & Rupert Dean Lane

(c) Vehicle classification data during peak morning and afternoon periods 8 - 9:00 AM and 1:00 – 2:00

PM at following locations:

- JFK between Blake Road & South Westridge
- JFK between South Westridge & Gladstone Road

- iii. JFK between Gladstone Road & MOWT Access
- iv. Thompson adjacent to Davis Street
- v. Thompson between Davis Street & Moss Road
- vi. Poinciana between Thompson and Blue Hill Road

(d) Traffic speed and delay surveys along the corridors

Field surveys will be carried out as a review of the traffic data provided by others. Other information that will be collected includes basic road details (e.g. road alignment, surface material, shoulder type, carriageway width, drains, footpaths, etc), road furniture items (e.g. bridges, culverts, road signs, traffic lights, pedestrian crossings, bus stops, street lighting, etc). Traffic Accident data will be obtained from the RPBF Traffic Division.

- Health Care and Medical Facilities  
A desktop study will be carried out to determine the location of existing and proposed Health Care and Medical Facilities in relation to the corridors.
- Historic and Cultural Resources  
It is considered highly unlikely that known archaeological sites will be affected or previously unidentified archaeological sites to be present within the project area due to the proximity of the project to the existing heavily developed road. However, to identify these sites informant interviews will be held and field surveys carried out to identify any likelihood.

### **Task Output**

Background descriptions of the existing socioeconomic, historic and cultural aspects within or affected by the project area. Detailed information will be obtained as relates to the local infrastructure and roads and transport due to these aspects being of paramount importance being the main reason for the project. This detailed information will include plans indicating the location of infrastructure and its nature for all utilities in the area. Detailed information with regards to the roads and transportation will include tables, charts and graphs with plans to describe the amount and nature of the traffic along the corridors.