

# CHAPTER 1 INTRODUCTION

---

## 1.1 GENERAL

The British Virgin Islands= (BVI), Hazard and Risk Assessment Project (HRAP), is a major part of the Hazard Mitigation Programme being conducted by the Office of Disaster Preparedness (ODP). The HRAP was conceived by Jennifer Worrell whilst National Disaster Coordinator in 1993 as a means of establishing the nature of hazards both natural and manmade to which the BVI is exposed.

Funding for the management of the Project was provided by the British Government through the Overseas Development Agency (ODA) and the Government of the BVI provided funds for the project activities. The duration of the project was twenty three months from April 1995 to March 1997 and the total budget was US\$90,000. The project was coordinated by Aedan Earle, a consultant recruited from Jamaica.

The main objective of the project was to characterise the natural and man-made hazards to which the BVI is exposed with an emphasis on natural hazards since they were perceived to be, based on past experience, the greatest threat. The idea then was to systematically determine the nature of the hazardous phenomena that have the potential of affecting the BVI and to evaluate the possible impacts that might result. In this respect the project could be seen to consist of three broad aspects, hazard assessment, impact evaluation and the development of loss reduction recommendations. The project was designed to consist of four main activities;

- 1) Hazard Mapping
- 2) Production of an inventory of the elements at risk
- 3) Vulnerability Analysis and Loss estimation
- 4) Development of Mitigation or loss reduction strategies.

The hazard mapping component included an assessment of the following hazards:- Hurricanes, Land-borne flooding, Seismicity, and Landslides.

In this report, the term **HAZARD** represents the latent danger associated with a physical phenomenon of natural or technological origin that may occur in a specific place and at a given time producing adverse effects on people, property, and the environment.

**RISK** is defined as the damage, destruction or expected loss resulting from a combination of the probability of hazardous events occurring and the vulnerability of elements to those hazards. The term **VULNERABILITY** is used to indicate the intrinsic predisposition of elements to suffer damage from possible hazardous phenomena.

The project as conceived was therefore multifaceted as it sought to evaluate all aspects of hazards as an integrated whole. In addition the project also aimed at addressing the full range of natural hazards which maintained the natural interconnection and interaction between natural phenomena which pose a threat to the BVI. Therefore the project as designed, aimed at providing a comprehensive picture of the hazards of the BVI.

## 1.2 APPROACH

The HRAP was conducted as a series of sub-projects consisting of the four main activities outlined above. Each sub-project involved scientific studies which were conducted by experts in that particular area. These activities were coordinated by the project manager who was also responsible for the compilation of the final reports and products of the various studies.

The hazard mapping studies were carried out by local and overseas consultants in collaboration with government agencies. These studies involved fieldwork, utilized existing reports, and baseline data, aerial photographs, topographic and bathymetric maps and existing baseline data and digital databases.

The project manager determined that an appropriate framework for the project was the Geographic Information System (GIS) platform. This system consists of a combination of computer software and hardware capable of capturing, storing, manipulating and presenting spatial information in the digital domain. In this system therefore all information is converted and transformed into digital maps. Once in this digital domain analysis can be carried out by the software which is designed to establish relationships between layers of digital maps. The system is also capable of producing high quality hard copy maps.

In this respect the adaption of the GIS framework for the project would result in the creation of a digital database of spatial information. The presence of a central GIS in the Town and Country Planning Department (TCPD) of the BVI Government, meant that the data produced by the project could be easily used, stored, maintained and updated. The digital data also allowed for ease of electronic transfer via such media as the Internet. Therefore the GIS framework shifted the project toward the production of information as a dynamic database of spatial data in digital format.

The GIS database was developed with the industry standard ArcInfo GIS package. Data was digitized in AutoCad and the final datasets were finished and presented in ArcView. This software is also used by the TCPD. The TCPD GIS which has been operational for the past four years provided many essential datasets. The HRAP therefore also produced a GIS and a database which can be utilized for disaster management and long term development planning by the TCPD.

The ultimate aim of the project was to provide information which could be used to mitigate the losses which might result from the occurrence of hazardous events. This report is therefore specifically geared towards supplying the agencies responsible for development planning and disaster management with information that can assist in decision making that will contribute to a reduction of losses from potential hazards . ***The overall format and pitch of the report is therefore of a technical nature and in some respects may not be a layman=s document.***

The project was guided by a Technical Advisory Committee (TAC), which consisted of Jennifer Worrell, Jeremy Collymore, Keith Ford and the Project Manager. The National Disaster Coordinator of the ODP, Donovan Gentles served as secretary to the Committee. The TAC met once and was kept up to date through regular telephone contacts and through two interim progress reports which were produced. Throughout the course of the project a concerted effort was made to involve local agencies. The project benefitted from considerable assistance from the Departments of Town and Country Planning, Conservation and Fisheries, Public Works, Water and Sewerage, Agriculture and Survey.

### 1.3 LIMITATIONS

The science contained in this report represents the state of the art in the respective areas of study and the results of the scientific studies conducted in the course of the project can

stand alone as reliable bodies of scientific work. In those areas of the project where this was achieved I believe the project was very successful. In this respect the hazard mapping component was most successful within the limits of time and resources. However there were many unexpected and prolonged delays in carrying out these studies.

As a result of these delays and the inventory of the elements at risk, the vulnerability/cost estimation analysis and the development of Mitigation strategies components were carried out by the project manager who also undertook the development of the GIS. The vulnerability of structures in the BVI to hurricane force winds was carried out by an expert in the field.

## **1.4 REPORT FORMAT**

This final report has been compiled after a lengthy review by government and non government concerns of the draft report. In addition the findings contained in this report were presented at a public forum to allow for additional feedback and discussion of issues.

The findings of the various component studies have been extracted and compiled here from the final reports submitted to the project manager by the consultants. The complete reports are available at the Office of Disaster preparedness.