Centuries Old Addressing Challenged in the BVI

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ABSTRACT

The BVI Government is relatively modern. Through the years a system of roads have made their mark. Many roads are unnamed or ill defined and properties have gone without addresses. Being an island chain with limited population the people have been here for centuries. People locate each other by a family reference, local landmarks and fuzzy directions. A National Addressing System is being compiled with existing and new data sets to ensure proper addresses. This project once completed will contain the names and addresses of all properties as delineated by Town and Country Planning. Layers and maps will be distributed. Information will be provided to local police, emergency services, and mail services as well as the general public. This is the first step in creating a National 911 (999) system to ensure a quick response to emergencies. The NAS could also be used in sales targeting the private sector.

BACKGROUND

The British Virgin Islands (BVI) is made up of approximately 50 islands. The islands are located sixty miles east-northeast of Puerto Rico. Of the 50 islands in the BVI only four of those islands are made up of more than two thousand acres. Those islands include Anegada, Jost Van Dyke, Tortola and Virgin Gorda. Tortola is the main island and Road Town is the capital of the BVI.
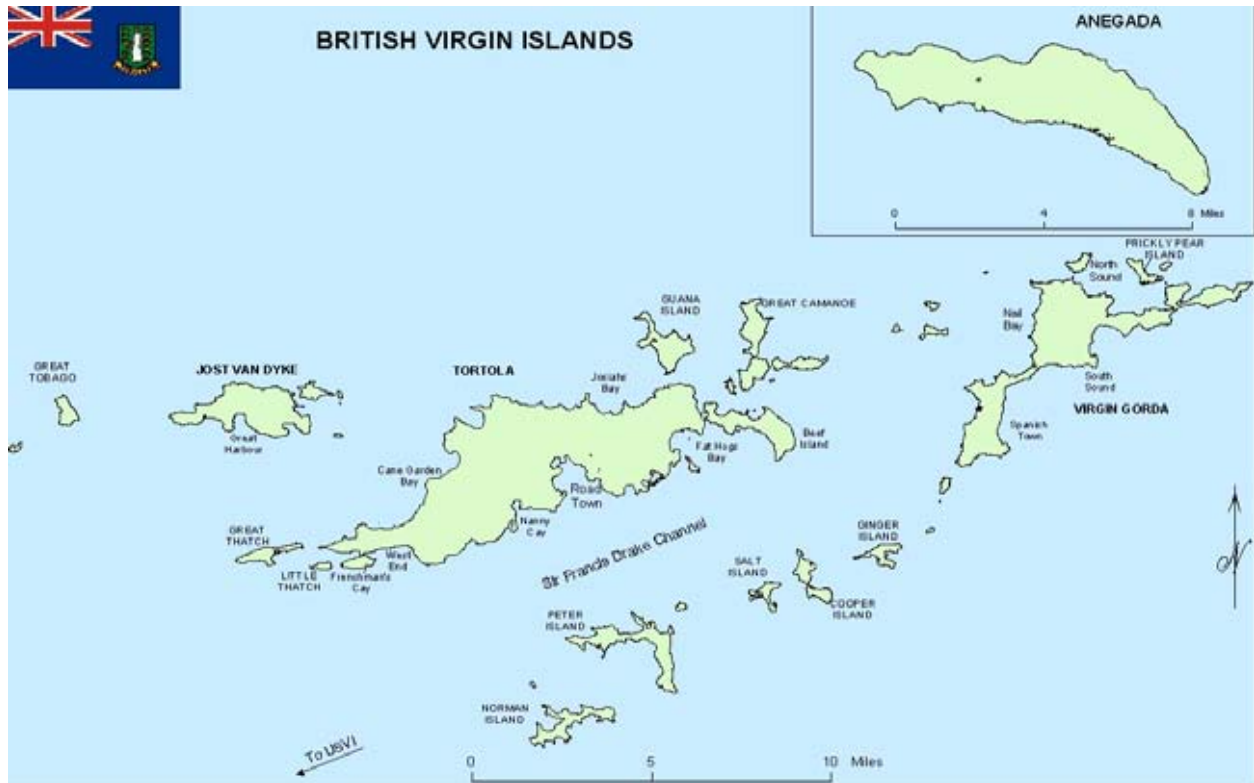

Figure 1: The British Virgin Islands

There are estimated to be over 21,000 (DPU, 1991) people within the BVI. The natives of the BVI have been here for decades. Local knowledge has made it possible for the natives to locate others and land marks. Only in the past thirty years has the BVI started to become a tourist site and the need for the National Addressing System recognized. The National Addressing System (NAS) idea came about in the early 1990's. A draft "Street Naming and Addressing Policy" document was created in 1993. The document is not legally binding, as it has not been vetted by Executive Council nor approved by Legislative Council. The goals of the NAS as defined by the afore mentioned document include:

- To quickly and easily locate people in need of emergency services.
- To create a base of information for a home mail delivery service.
- To promote local tourist sites with easy to find addresses.
- "To promote a positive and progressive image to residents, prospective residents and developers."

The process of assigning addresses within the BVI falls upon the Town and Country Planning Department. An initial pilot area was chosen and work begun in the late 1990's. The pilot area was Road Town. Approximately two hundred and fifty addresses were assigned and recorded in the initial pilot area.
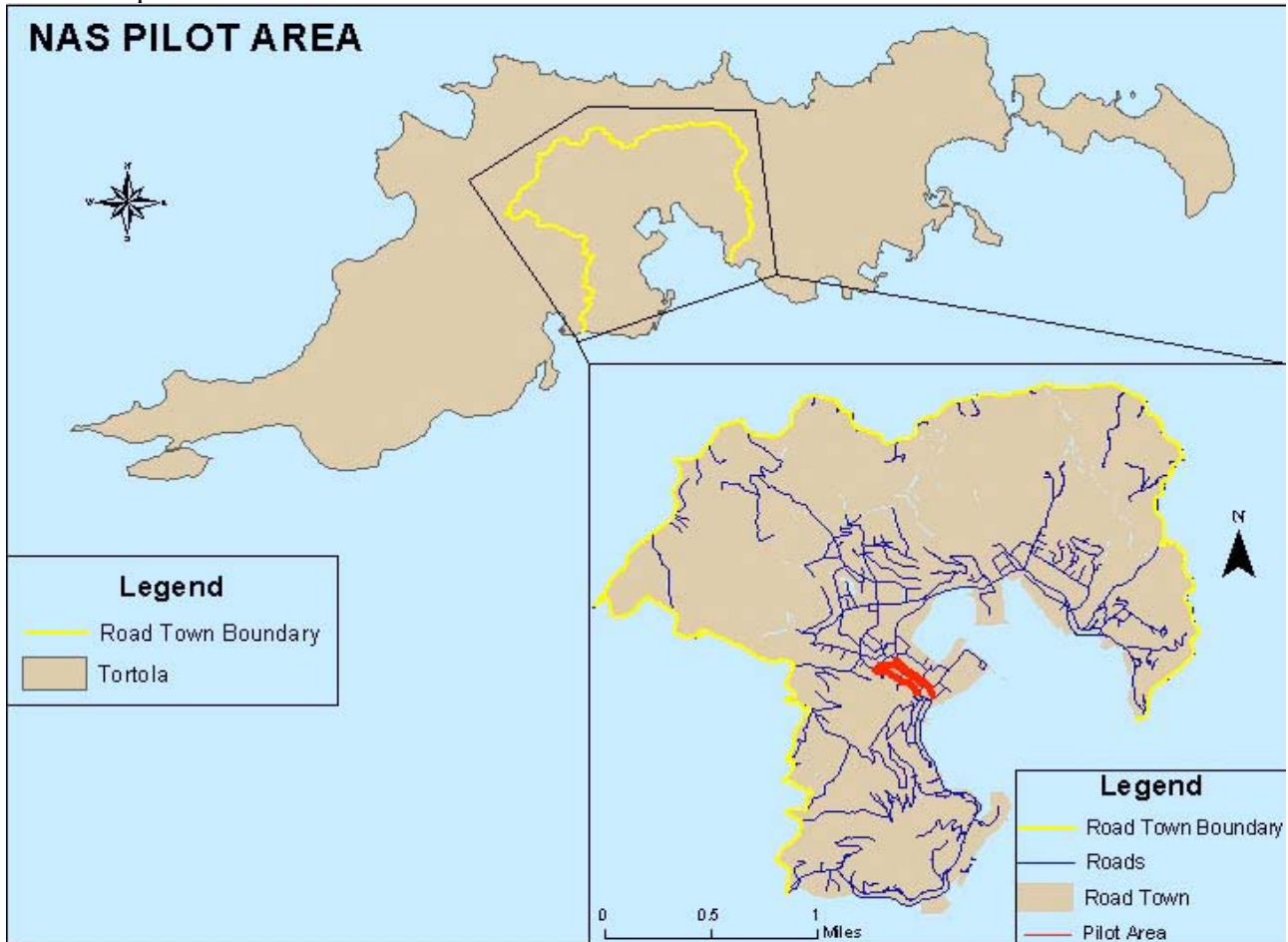

Figure 2: The initial pilot area of Road Town.

This paper defines the challenges of creating the National Addressing System and the many needs and/or uses of a national addressing system.

EXISTING AND REQUIRED DATA

Town and Country Planning Department uses data that is compiled by many different agencies through out the BVI Government. Data sharing is one way in which the BVI attempts to streamline government and improve communication (Mills et al., 2003). A National Geographic Information System (NGIS) has been devised bringing on board over half a dozen government agencies or statutory bodies. There are currently over 240 datasets listed in the NGIS. Town and Country Planning Department is responsible for updating the cadastre, roads, land use, buildings and addresses. With a staff of three individuals the work of keeping data updated falls quickly behind.

There are several different datasets that are used in the compilation of the National Addressing System. The base of the NAS is the cadastre dataset that includes all of the blocks, parcels and land ownership information. There are approximately 13,000 parcels in the territory with subdivisions occurring daily. Digitizing 1991 orthographic photos created the current cadastre base. After the digitizing was completed ownership information was acquired from the Land Registry Department, the legal entity responsible for maintaining land descriptions and proprietors of each parcel (CAP. 229, Laws of the Virgin Islands, 1970). That information was manually entered into the cadastre dataset. Periodic updates have occurred. Due to the enormous task and the limited amount of staff, updates are done a piece at the time. The current cadastre database is being updated based on the Survey Departments Cadastre Information Management System (CIMS). All plans and records of land are to be deposited with the Chief Surveyor and then become property of the BVI government (CAP 215, Laws of the Virgin Islands, 1970). CIMS uses a series of AutoCAD drawings. These drawings are given to Town and Country Planning Department (TCP) for use in creating an updated geographic information systems (GIS) cadastre base. Upon receipt of the Survey Department's data it was deemed necessary that the Town Planning match it's cadastre dataset as closely as possible to Survey's information. All boundary lines were askew from that of the survey information.

Buildings are a key aspect of the NAS data. An original building dataset was created from the 1991 orthographic photos. In 2001 Town and Country Planning Department conducted a land use survey. At that time any new buildings were identified and 45% was entered into the GIS. At present a college intern and one other member of staff are attempting to complete the data entry of the 2001 land use and building information.

A road network is another element of the NAS. This dataset was also derived from the 1991 orthographic photos. Within this dataset typical data includes the name status of the road. In the BVI not all roads have been officially named so the name status is kept within the road dataset. . It also includes the name of roads that have been officially named. There are approximately 1000 roads in the BVI and that number increases daily with new construction. Of the 1000 roads in the BVI approximately 85% of them are unnamed. 837 roads exist of which 690 are unnamed on the island of Tortola. It is the unofficial responsibility of TCP to maintain a listing of all roads although the Public Works Department is responsible for the maintenance of the roads.

Another component within the National Addressing System is an AutoCAD drawing of 30 ft. intervals. This drawing is overlaid upon the cadastre and the road network. The 30 ft. intervals were assigned to the centerline of the road and the adjacent parcel boundaries. Interval numbers were assigned with odd numbers from the point of beginning along the right edge of the road and even numbers are assigned to the left from the same point of beginning for each road (BVI TCP, 2003). The point of beginning for the numbering commences south proceeding north and west proceeding east (BVI TCP, 2003).

The final element of the NAS data is the building numbers. At present not all buildings have been assigned a number. A second phase to further develop addresses within the Road Town area has begun. Much of Road Town has been numbered, but due to the time lapse between the pilot area and the second phase field checks are being used to determine if the current data is accurate. Building numbers are assigned by determining the closest interval to the center of the building. Once the buildings are assigned numbers, letters are sent out informing the proprietor of their new address.

Once the base of the NAS is in place, future addresses will be assigned during the planning approval process.
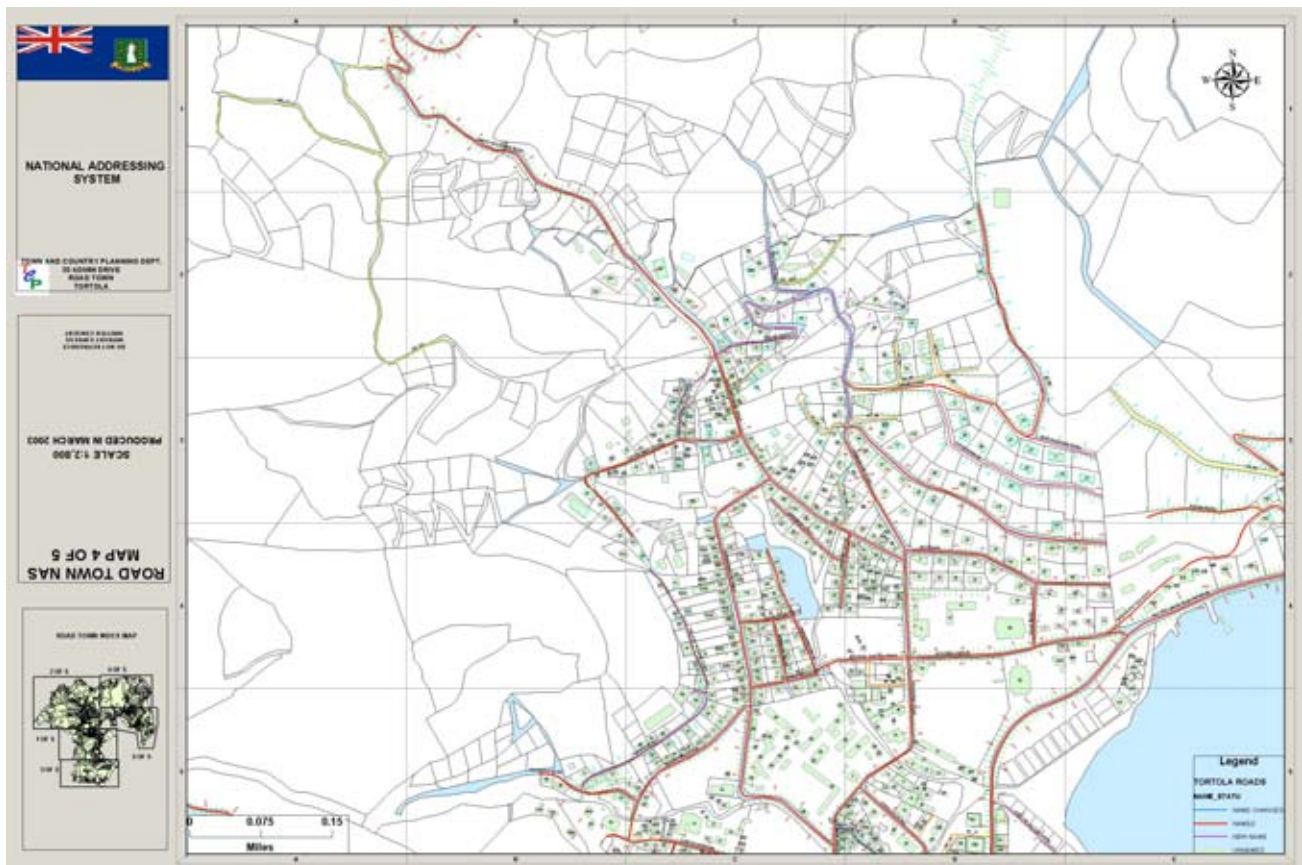

Figure 3: National Addressing System Map 4 of 5 outlining specific areas for data collection of building numbers.

NATIONAL ADDRESSING SYSTEM USES
EMERGENCY SERVICES

In the event of an emergency a 911 or 999 number may be called. The call is received at the Road Town, Tortola central fire dispatch station. The dispatcher then telephones the appropriate emergency service provider whether it is Police, Ambulance and/or Virgin Island Search and Rescue. The telephone call is treated as a conference call and is directed to the nearest emergency service provider. For example, the call received in Road Town, Tortola may be regarding an incident on Virgin Gorda. The fire department calls the necessary agents on that island. The caller identifies the problem to the nearest emergency service provider. The fire department is technologically unable to hang up until the conference call is complete, otherwise the call will be terminated. At present there are not computers at each emergency provider station in the territory. The means of communication between the base and the mobile units is via handheld and VHF radios. There are several "dark spots" on the island that prevent radio communication due to the mountainous terrain. There is a need for a networked system that will allow all emergency services to communicate. At present the emergency service providers locate victims with fuzzy directions and local landmarks. Once the NAS base has been completed, copies will be given to all emergency service providers in the BVI. One limitation for the providers is that without proper computerization, the addresses will have to be located using paper maps. One effort of the National Geographic Information System staff within the BVI is to help the emergency service providers with integrating GIS into their working environment. The need for up to date technology will deter the use of the national addressing system GIS data.

MAIL SERVICES

The BVI has a postal service. This service includes a post office on each of the four main islands and a limited amount of post office boxes that can be rented. With the national addressing system the postal service could deliver mail to each building in the territory. This would allow for increased jobs, as the need for delivery people would arise. This would also create a market for advertising in which local business competition would increase. Increased competition for customers could create a cost reduction for customers. People could more easily pay bills via the mail instead of traveling to the respective local companies.

UTILITY SERVICES

Cable And Wireless, the only telephone company in the BVI does currently use GIS to track the location of poles, lines etc. The NAS information would integrate seamlessly into Cable and Wireless and allow for more efficient use of their own GIS system.

BVI Cable TV, the only cable provider in the BVI does not have a means of tracking customer information. Upon completion of the NAS a shift to GIS for the cable company would allow them to maintain cable lines and aid in the prevention of cable theft. Many cable companies across the world track such information and it helps to eliminate costly incidents.

BVI Electricity Corporation, the only electricity provider in the BVI currently uses GIS to track the location of poles, electric lines, transformers, etc. The increased customer information would allow the company to better track the needs of individual customers.

The Water and Sewerage Department of the BVI is responsible for supplying and maintaining local water and sewerage pipes. At present current water capacity is not tracked. With NAS data the Water and Sewerage Department could track the available capacity of water and sewerage in the territory on a per household basis. This capacity information would allow the department to better plan for the needs of the BVI residents.

TOURIST SITES
The BVI has become an increasingly familiar tourist site. On average it is estimated that half a million people visit the BVI in a year (DPU, 2003). They request information about sites to visit and things to see. With physical addresses, tourists could locate many destinations with the greatest of ease.

Addresses allow companies or agencies to track customer information based on a physical location. A physical address would increase the company's efficiency in locating customers and service problems such as downed lines, cut cables or fallen poles.

CHALLENGES
The challenges in creating the NAS include out dated information, limited human resources and the lack of compliant software to all the would be stakeholders of the NAS. The uses for the NAS include: the ability of emergency services to locate victims, the ability of utility companies to reference connections to their services and the possible implementation of new services for the residents of the BVI.

LEGAL AUTHORITY
The first challenge is to overcome the legal responsibilities. Currently TCP does not have legal responsibility for the road names or addresses in the BVI. The draft "Street Naming and Addressing Policy created in 1993 has yet to be approved and made into a policy document that gives the department the authority to make the decisions necessary for completion of the NAS.

TRAINED STAFF
The second challenge is the lack of trained technical staff. The cost for small countries to travel to available training sites can create an enormous financial burden. It has been recommended by the NGIS that a training course be devised for the Caribbean countries. Several agencies have been consulted. Currently a training program is not available in the BVI. It has also been suggested at the NGIS level that such a program be created in order to train locals for technical GIS positions within the government.

NGIS PARTICIPATION
The NGIS is comprised of a few select people that choose to participate. Awareness has been and will continue to be raised regarding the benefits of the NGIS. A series of seminars were given to Heads of Departments in February of this year. More awareness is needed for the NGIS to acquire support and technical help.

DATA COLLECTION

The process of updating data used within the NAS is a daunting task. Easy to follow procedures for data updating would help to complete the many data updates that are needed. The NGIS is currently working on a procedural manual for all datasets. This would allow quick reference to procedures and ensure that the same methods are used each time. This will create better data integrity.

HARDWARE AND SOFTWARE ISSUES

Currently not all necessary NAS stakeholders have access to a computer or GIS software. The BVI purchased many new computers and software in 2002. This trend is continuing into 2003. The NGIS staff helps any other department or agency that requires help in establishing a link with the NGIS. While the process is slow progress is being made. Many nonparticipating agencies request information from participating NGIS agencies. Data sharing is the practice of the NGIS is an attempt to create a more unified government. The need for further data sharing practices is evident and must be acknowledge from the top down.

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