

STATISTICS DIVISION

**Tenth United Nations Regional Cartographic
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Country Reports**

**Country Report of
Jamaica
2009 – 2013***

*Prepared by the National Land Agency of Jamaica

Summary

1. The National Land Agency (NLA) is an Executive Agency with responsibility for the core land information functions of Government. These functions include: Land Titling; Surveys and Mapping; Land Valuation and Estate Management. The Agency is a member of the Land Information Council of Jamaica and the International Hydrographic Organization (IHO).
2. In 2001 Jamaica changed its geodetic datum to a geocentric datum aligned to the World Geodetic Datum 1984 (WGS 84) to facilitate, inter alia, the use of the Global Positioning System (GPS) technology, and building a modern spatial data infrastructure. This has resulted in georeferencing NLA's map products in the new datum and the building of NLA's capacity to undertake GPS control surveys, hydrographic surveys and Cadastral Mapping.
3. As an Executive Agency, NLA focuses primarily on the delivery of services with a results oriented approach to governance. The Chief Executive Officer (head of the Agency) is held responsible for achieving the results stated in the Agency's Business Plan. NLA publishes a 3-year Business Plan annually. It outlines what NLA will achieve over the next three years and the level of resources required to achieve the stated results.
4. Under its institutional arrangements, NLA's mandate is provided under several Acts, including the Executive Agencies Act and other Acts associated with its core land management functions.
5. The Agency maintains a national cartographic map production programme to meet the public's mapping needs. Since the 2009 Conference the National Land Agency has published up-to-date maps of three major urban areas at large scale; an up-to-date map of the entire Island at medium scale; one road map; and four tourist-pocket maps of four different resort areas.
6. NLA provides access to its products and services via its commercial policy, The Access to Information Act, and the Geospatial Data Sharing and Access Council (GeoDSAC) in the case of international requests for Jamaica's geospatial data.
7. The Agency faces several challenges, including: the high cost of hardware and software; lack of critical training opportunities in cartography and photogrammetry in Jamaica; and lack of a geoid model for orthometric height determination from GPS data for Jamaica. However, the Agency plans to address these challenges and will continue to provide high quality services to the public whilst promoting and maintaining a positive self-image.

Acknowledgement

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**2013 Status Report on Geospatial Activities and Cartographic Production to
the United Nations Regional Cartographic Conference**

Prepared by



The National Land Agency, Jamaica

2013

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1. Introduction

1.1 The National Land Agency (NLA) is an Executive Agency, which brings together the core land information functions of Government under one roof, and includes: Land Titling; Surveys and Mapping; Land Valuation and Estate Management. This merger enables the Government to build on the synergy of these combined functions and create a modern national land (spatial) information system to support sustainable development of Jamaica.

1.2 NLA is a member of the Land Information Council of Jamaica (LICJ) and is the principal stakeholder in the national land information system.

1.3 This report provides a synopsis of the geospatial activities, developments, legal policy framework and institutional arrangements of the NLA as a result of the amalgamation of the core land information functions of Government, under its control.

2. Background

2.1 The Surveys and Mapping function of NLA covers: building and maintaining the national geodetic control framework; surveying government lands; checking and drawing of survey plans in accordance with the Land Surveyors Act; and providing cadastral, topographic, hydrographic and other mapping services. These activities coupled with a modern Information Technology (IT) Infrastructure to manage geo-databases and Internet connections, provide the foundation for a modern National Spatial Data Infrastructure (NSDI).

2.2 In 2001, Jamaica changed datum from a non-geocentric datum to a geocentric datum, “Jamaica Datum 2001 (JAD 2001)”, which is aligned to the World Geodetic System 1984 (WGS 84). This was done to facilitate safer air navigation as part of a global effort earlier initiated by the International Civil Aviation Authority (ICAO); a better local environment for the use of Global Positioning System (GPS) technology; coordination of surveys in a common datum; and the building of a modern Spatial Data Infrastructure for Jamaica.

2.3 Since the change of geodetic datum, the National Land Agency has been digitizing and geo-referencing pre-2001 maps to the new datum; geo-referencing new maps to the new datum; building GPS capacity for geodetic control surveys, hydrographic surveys, cadastral mapping

and map revision. NLA has also partnered with other government entities to establish an Island-wide Virtual Reference Station (VRS) Network. The network is managed by NLA and is operated 24 hours per day 7 days per week. See Appendix 1.

3. Legal and Policy framework – strategic plan, action plan

3.1 NLA is a government entity, which is formally designated as an Executive Agency in accordance with the provisions of Section 4 of the Executive Agencies Act 2002.

3.2 Executive Agencies focus primarily on the delivery of services with a results oriented approach to governance. The Chief Executive Officer of each Executive Agency has delegated managerial autonomy and is held responsible for achieving the results stated in the Agency’s Business Plan.

3.3 NLA’s Business Plan for Financial Year 2013-14 to Financial Year 2015-2016

3.3.1 The Business Plan outlines how and what NLA will achieve over the next three years and the level of resources required for achieving stated results economically, efficiently and effectively. It has been prepared in the context of the goals of the National Development Plan, Vision 2030. For example (Figure 1):

	Agency Level Strategies/Actions & Indicators Aligned to Vision 2030 Jamaica	2013 - 2014	2014- 2015
Delivery of Spatial Information and Infrastructure	<ul style="list-style-type: none"> ▪ Number of Horizontal Control Marks established per year 	180	180
	<ul style="list-style-type: none"> ▪ Number of Horizontal Control Marks established in the National Geodetic Database 	1,200	1,200

Figure 1: Strategies/Action & Indicators

3.4 Action Plan

3.4.1 NLA will implement a Comprehensive Customer Service Strategy, which includes staff training, building public awareness and establishing regional one-stop-shops to reach a wider customer base.

3.4.2 NLA will continue its e-Government programme to improve customer service delivery through on-line (Internet) services.

3.4.3 NLA will provide spatial information to external agencies to facilitate mutually beneficial data exchange.

4. Institutional Arrangements

4.1 NLA's mandate is provided under several Acts including, The Executive Agencies Act; Financial Administration and Audit Act; Crown Property (Vesting) Act; Land Surveyors Act; Land Valuation Act; Registration of Titles Act, Cadastral Mapping and Tenure Clarification (Special Provisions) Act, among others.

5. Data Generation/Production – Geodetic reference Frame, standards

5.1 Jamaica's geodetic reference framework comprises the National Calibration Network, the Island's Control Marks, the Virtual Reference Station (VRS) Network (Appendix 1) and a Digital Control Database (DCD) of all control marks in Jamaica.

5.1.1 The National Calibration Network consists of ten (10) accurately coordinated control marks used to calibrate survey equipment.

5.1.2 The Island's Control Marks are observed using GPS for horizontal position and spirit leveling/trigonometric heighting for orthometric height determination.

5.1.3 The VRS is an Island-wide Network of 13 GPS Stations operating 24 hours per day 7 days per week. One of the primary goals for establishing the VRS Network is to make it easy and cost effective to accurately position geographical features in the national grid system (JAD 2001).

5.1.4 The Digital Control Database is a database of the Island's Control Marks. This includes photo points.

5.2 Accuracy Standards

5.2.1 The accuracy standard for establishing control marks is + or – 3cm. The proposed positional accuracy for urban boundary survey points is + or – 10cm; the proposed positional accuracy for rural boundary survey points is + or – 0.5m. The existing positional accuracy for cadastral mapping is + or – 0.5m.

5.2.2 The accuracy standard for topographic maps are 1 mm in source document; 0.5 mm in map registration for digitizing; 0.2 mm in digitizing from geo-reference satellite images (Centerline of features are digitized) and for contours the error is usually one half contour interval value (from photogrammetric plots).

6. Progress since 2009

6.1 Jamaica's geodetic reference framework

6.1.1 The VRS Network was established through the collaborative effort of the Office of the Prime Minister (OPM), the Land Information Council of Jamaica (LICJ), the National Water Commission (NWC), NLA and others. It was commissioned into service on February 7, 2013.

6.2 Cartographic map production and maintenance

6.2.1 Tourist Pocket Maps

6.2.1.1 Jamaica depends heavily on the tourism industry. Over three million tourists visit the island each year. Because of this, the National Land Agency in partnership with the Jamaica Tourist Board, published an up-to-date All Island Tourist Road Map in 2008, which was reported on at the 2009 Conference.

6.2.1.2 Between 2009 and present, the National Land Agency has published Tourist Pocket Maps of four tourist resort areas, namely, Negril located at the western end of the Island and Montego Bay, Ocho Rios and Port Antonio located on the north coast.

6.2. 2 Master Map Project

6.2.2.1 The Agency published Master Maps of Kingston and St. Andrew (the capital city and environs); Ocho Rios and Spanish Town at scale 1:4000 between 2010 and 2011. See Appendices 2 and 3.

6.2.3 The Agency published a road map of Kingston and St. Andrew in 2010 and a single map sheet showing Portmore on one side and Kingston and St. Andrew on the other side in 2010.

6.2.4 The Agency published a new 1:50000 Topographic Map Series of the Island in 2010. See Appendix 4.

6.2.5 Global Map – Jamaica's Input

6.2.5.1 The Agency remains committed to making its contribution to the Global Map project. All the cartographic work for Jamaica's input has been completed. However, since this is an external request, clearance from the Geospatial Data Sharing and Access Council (GeoDSAC) to release the data is required. Work is being done to secure such clearance.

6.2.6 iMap Jamaica

6.2.6.1 In 2010, the National Land Agency in partnership with Globe Insurance Ltd. launched a digital web map service, iMap Jamaica. This is a free interactive web map service that allows users access to an extensive set of spatial data gathered over the years through various mapping projects, such as the National Cadastral Map (See Appendix 5). Some of the layers contained

include roads, rivers, civic features, contours, parcel boundaries and satellite imagery. iMap Jamaica can be accessed from anywhere in the world at <http://www.nla.gov.jm/map.asp>

7. Data Publishing and Sharing – access mechanism and services

7.1 Data Publishing and Sharing

7.1.1 Data is published in both hard and soft copy forms, and data sharing is done within the framework of the Agency’s commercial policy, the Access to Information Act and the mandate of the Geospatial Data Sharing and Access Council (GeoDSAC).

7.1.2 Access through commercial policy is gained through the Business Services Division of the Agency. The Agency uses a “Users Pay” model. See Appendix 6 for product/services listing.

7.1.3 The Access to Information Act is an Act to provide members of the public with a general right of access to official documents and for connected matters.

7.1.4 GeoDSAC was established by way of a Cabinet Decision to evaluate, approve and monitor the access and distribution of Jamaica’s geospatial data internationally.

8. Use of Geospatial Data – geospatial applications

8.1 The applications are Property search; Checking survey plans; Land Administration and Land Management; Urban and Rural Development Planning; Disaster Mitigation; Disaster Damage Assessment; Property Insurance Risk Assessment; Security, among other things.

9. Capacity Development – education and training, public relations, participation in international SDI/GIM bodies, technical cooperation

9.1 Education and Training

9.1.1 The National Land Agency has been steadily building up its capacity in the disciplines of surveying, Geographical Information System (GIS), Computer Science and Cadastral Map Compilation. The University of Technology, Jamaica and the University of the West Indies provide the educational programmes needed to support these disciplines. There is also inter-agency cooperation between the National Works Agency, Jamaica and the National Land Agency for the training of surveyors. However, access to training in Cartography and related specialized disciplines such as Photogrammetry and Remote Sensing continue to pose a challenge, as education and training in these disciplines are not available locally at the required level.

9.2 Public Relations

9.2.1 The National Land Agency has a well-established and functional public relations capacity that covers the following:

9.2.1.1 Promote and maintain a positive image of the Agency

9.2.1.2 The development and directing of Public Education Programmes for schools, radio, television, print media that will stimulate and sustain interest in Land management;

9.2.1.3 Organization of seminars, workshops, conferences and symposia;

9.2.1.4 Development and directing national Public Education Programmes through workshops seminars, conferences, and the public at large;

9.2.1.5 Directing, designing and producing publications, promoting, and educating the Jamaican people on land management.

9.3 Participation in international SDI/GIM bodies

9.3.1 The NLA participates in the United Nations Group of Experts on Geographical Names (UNGEGN) and the United Nations Global Geospatial Information Management (UN-GGIM) Committee of Experts.

9.4 Technical cooperation

The National Land Agency has been receiving technical training in hydrographic surveying, cadastral surveying, map production and geomatics from the Governments of Mexico, the Republic of Korea and the Government of India.

10. Challenges and Future Plans

10.1 Challenges

10.1.1 High cost of hardware and software. New software versions require higher performance computers which are more expensive.

10.1.2 Lack of training opportunities in Cartography and Photogrammetry in Jamaica. At present no tertiary institution on the island carries a fully developed programme for training of prospective practitioners. This is unsustainable, as the number of these specialist workers continue to decline.

10.1.3 Using spirit leveling/trigonometric heighting techniques to determine orthometric height in the Jamaican topography is too slow and not cost effective. Jamaica needs a Geoid model.

10.2 Future Plans

10.2.1 To upgrade iMap Jamaica to provide access via mobile devices.

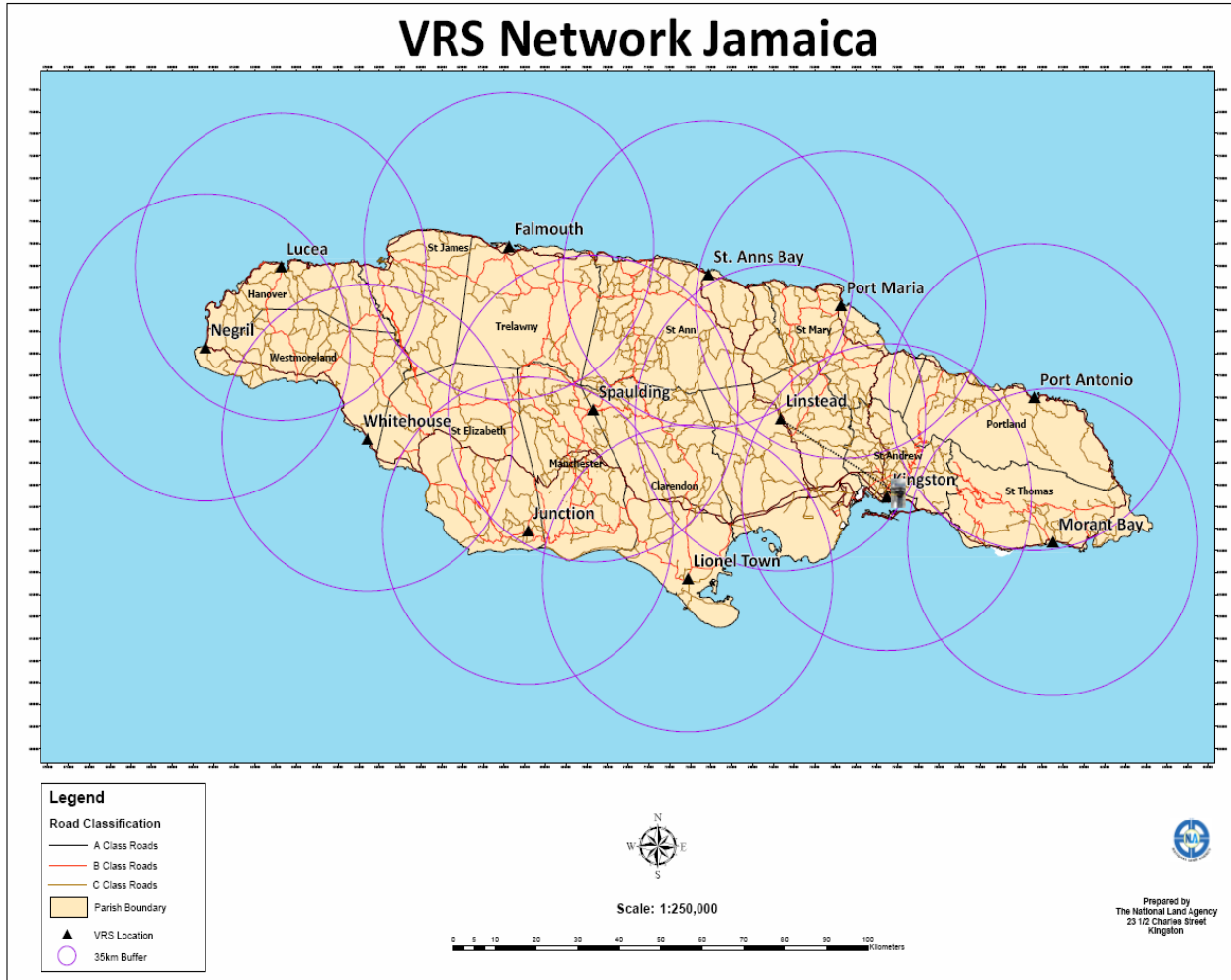
10.2.2 To continue to produce large scale maps of urban areas under the Master Map programme. Work is in progress on the Master Map of Montego Bay.

10.2.3 To complete work on a place names gazetteer of the Island. Work is in progress.

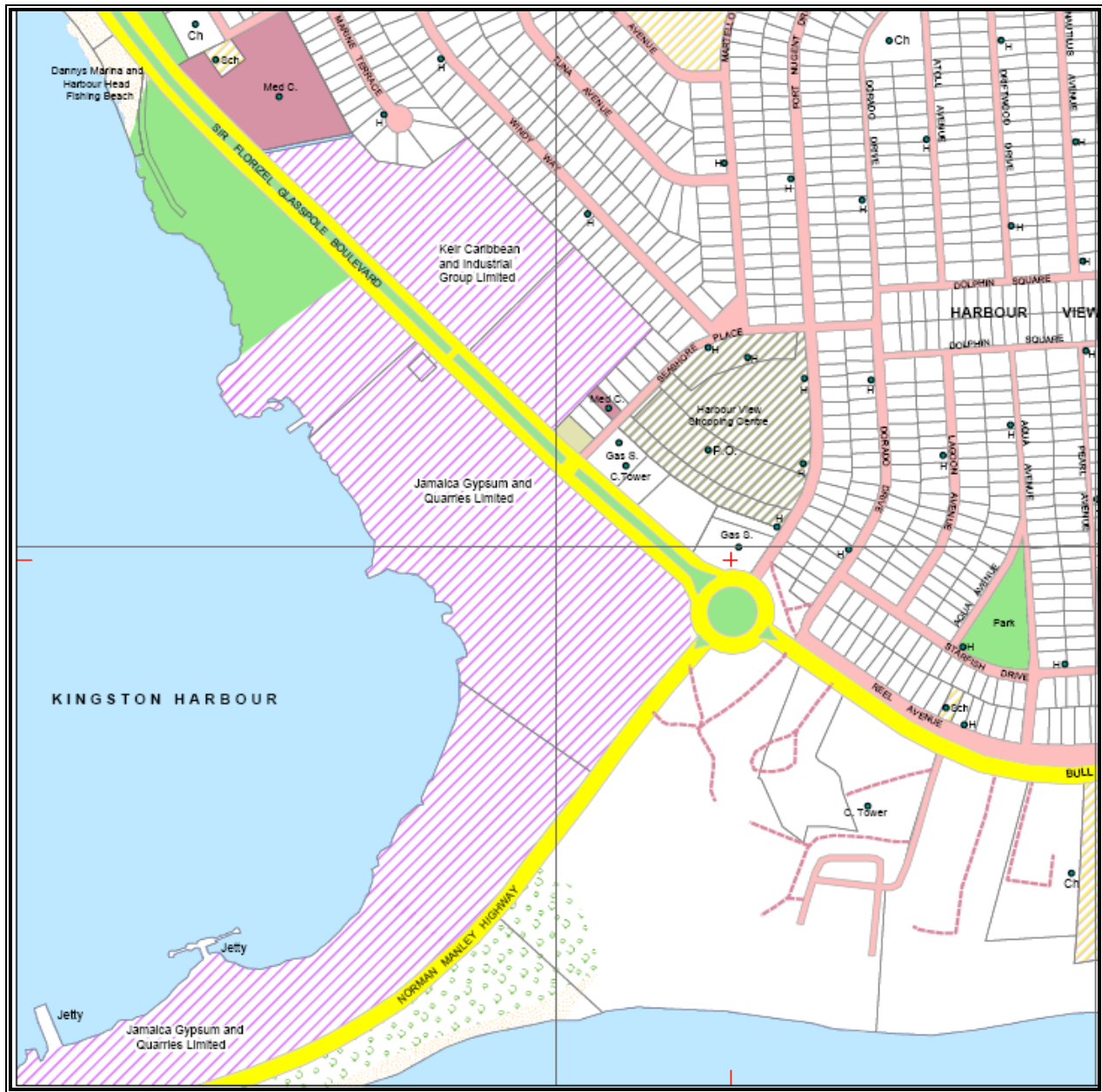
10.2.4 To explore and implement training opportunities for Cartographers and Photogrammetrists overseas.

10.2.5 To seek overseas assistance to build a Geoid model for Jamaica.

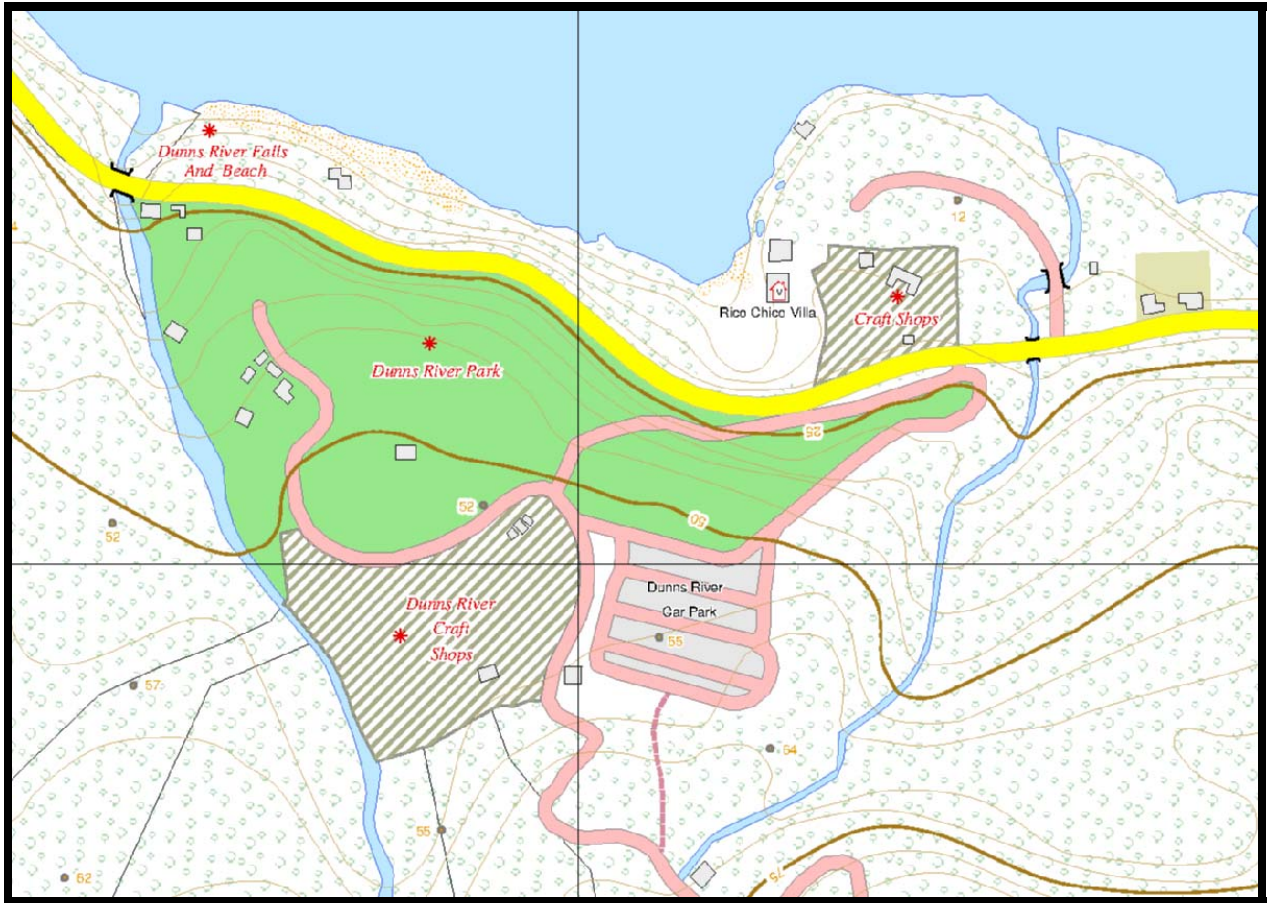
Appendices



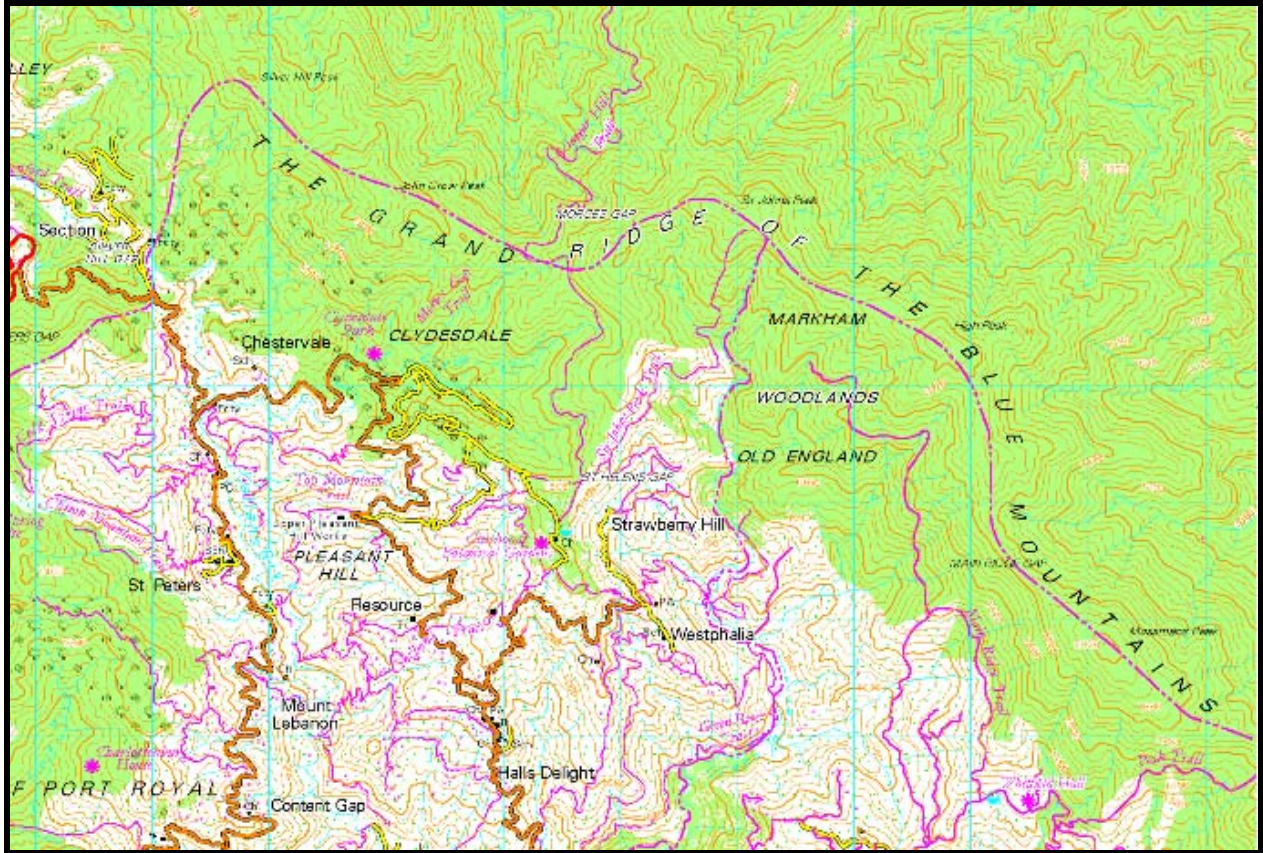
Appendix 1: VRS Network gFIX.net



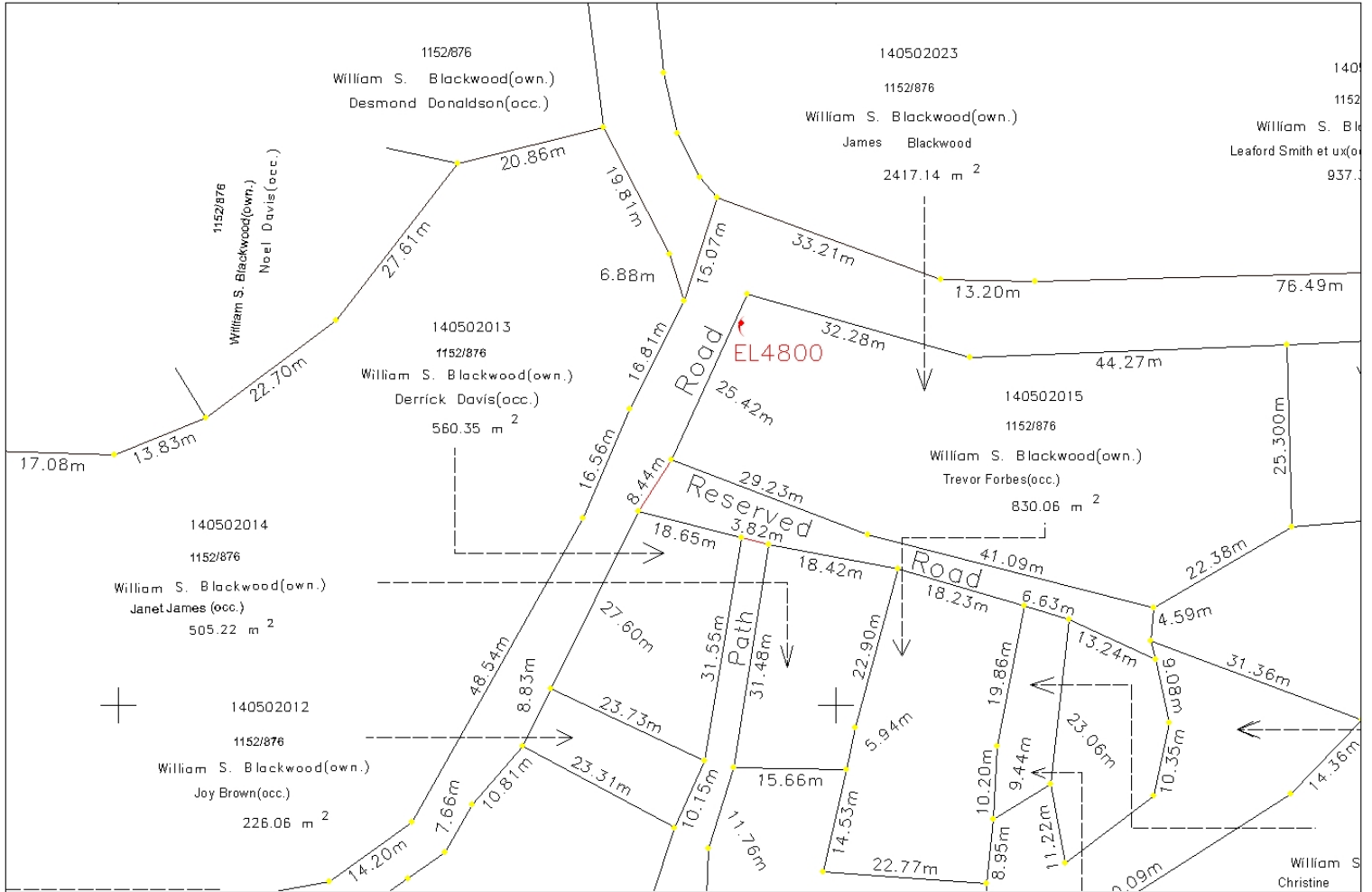
Appendix 2: Part of Kingston Master Map 1: 4000 Scale



Appendix 3: Part of Ocho Rios Master Map 1: 4000 Scale



Appendix 4: Part of Jamaica 1:50000 Scale Metric Edition



Appendix 5: Cadastral Map Extract

Service Centre	Product/Services offered to Users
Business Services Office	<ul style="list-style-type: none"> • Map purchasing (Paper based maps and digital maps) • Cadindex data • Aerial photographs • Electronic Title Searches • Electronic Valuation Roll Searches • Electronic map viewing • Hydrographic charts • Valuation Roll Information. • Scanning Services
Documentation Centre (Charles Street)	<ul style="list-style-type: none"> • Provision of Survey Control Point Data • Cadastral Maps • Planametric sheets • Microfiching • Parcel Identification • Survey Plan Searches
Mapping Services (Ardenne Road)	<ul style="list-style-type: none"> • Parcel Identification • Valuation numbers • Enclosure Plans • Blueprinting

Appendix 6: National Land Agency's Business Services