



ARCHAEOLOGICAL IMPACT ASSESSMENT

Proposed Bauxite Mining Operation

Special Mining Lease (SML 173)

Saint Ann/Trelawny

Noranda Jamaica Bauxite Partners II

*Archaeology Division
Jamaica National Heritage Trust
79 Duke Street, Kingston*

October 2019



ARCHAEOLOGICAL IMPACT ASSESSMENT

Proposed Bauxite Mining Operation Special Mining Lease (SML 173) Saint Ann/Trelawny

Prepared for

***Noranda Jamaica Bauxite Partners II
(Noranda)***

Prepared by

***Archaeology Division
Jamaica National Heritage Trust
79 Duke Street, Kingston***

October 2019



Broadleaf, St. Ann

SOURCE: JNHT Sites and Monuments Record - 2019

TABLE OF CONTENTS

List of Abbreviations and Acronyms	vi
List of Maps	vii
List of Plans	vii
List of Plates	vii
List of Tables	viii
 S. NON-TECHNICAL SUMMARY	 X
 1. INTRODUCTION	 1
1.1 Purpose	1
1.2 Background	2
1.3 Terms of Reference	4
1.4 Study Team	6
1.5 Methodology	7
 2. POLICY AND LEGISLATIVE FRAMEWORK	 11
2.1 Background	11
2.2 Development Control	11
2.3 Environmental Conservation	16
2.4 Public Health and Waste Management	18
2.5 International Legislative And Regulatory Considerations	22
 3. PROJECT DESCRIPTION	 26
 4. DESCRIPTION OF STUDY AREA	 29
4.1 Location	29
4.2 Topography	30
4.3 Vegetation	31
4.4 Land Use	33
4.5 Historical/Archaeological Background	33
 5. ARCHAEOLOGICAL RESOURCE IDENTIFICATION	 57
5.1 Introduction	57
5.2 Resource	57
 6. IMPACT IDENTIFICATION AND MITIGATION MEASURES	 95
6.1 Introduction	95

6.2	Analysis of Impact	96
6.3	Cumulative Impact	114
6.4	Mitigation	115
6.5	Recommendation	117
7.	ANALYSIS OF ALTERNATIVES	119
7.1	Alternative Sites	119
7.2	Alternative Design	119
7.3	No-Action Alternative	120
8.	MONITORING PROGRAMME	122
9.	BIBLIOGRAPHY	124
10.	APPENDICES	129
	Glossary of Terms	129

List of Abbreviations and Acronyms

AIA	Archaeological Impact Assessment
CCPA	Cockpit Country Protected Area
EIA	Environmental Impact Assessment
GOJ	Government of Jamaica
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
IOJ	Institute of Jamaica
JNHT	Jamaica National Heritage Trust
MCGES	Ministry of Culture, Gender, Entertainment and Sports
NEPA	National Environmental Planning Agency
NGO	Non-Governmental Organisations
Noranda	Noranda Jamaica Bauxite Partners II
OUV	Outstanding Universal Value
TOR	Terms of Reference
TPDCo	Tourism Product Development Company
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHC	World Heritage Centre

List of Maps

Map 1	Area of Special Mining Licence 173 (SML 173)
Map 2	Shows size and delimitation of SML 173
Map 3	Spatial Distribution of Archaeological Resources
Map 4	Location of SML 173
Map 5	SML 173 Karst Topography and Bauxite Ore Deposits
Map 6	Spatial Distribution of Archaeological Resources in SML 173
Map 7	Spatial Distribution of Archaeological Resources by Category of Significance
Map 8	Spatial Distribution of Archaeological Resources in Alps
Map 9	Spatial Distribution of Archaeological Resources in Barnstaple Mountain
Map 10	Spatial Distribution of Archaeological Resources in Broadleaf
Map 11	Spatial Distribution of Archaeological Resources in Endeavour
Map 12	Spatial Distribution of Archaeological Resources in Gibraltar
Map 13	Spatial Distribution of Archaeological Resources in Hyde Hall Mountain
Map 14	Spatial Distribution of Archaeological Resources in Jackland
Map 15	Spatial Distribution of Archaeological Resources in Madras
Map 16	Spatial Distribution of Archaeological Resources in Mahogany Hall
Map 17	Spatial Distribution of Archaeological Resources in Sawyers

List of Plans

Plan 1	A Survey Plan of Lindale Pen, 1860
Plan 2	Survey Plan of Retreat Pen by Morris and Cunningham, 1830

List of Plates

Plate 1	Image of land at Hyde Hall Mountain being prepared for yam cultivation.
Plate 2	Photo illustrates the use of wood from forest in the construction of vernacular nog wall house.
Plate 3	Yam cultivation in depression.
Plate 4	Highlights corn cultivation in small depression
Plate 5	Captures the condition of Lindale Great House
Plate 6	Cultivated depression at Lindale
Plate 7	Image of Retreat Pen Great House site.
Plate 8	A small historical nog wall house in Gibraltar is portrayed in this photo.
Plate 9	A historical grave yard in Gibraltar.
Plate 10	Some historical nog wall and cutstone building are shown in the district of Endeavour.
Plate 11	Endeavour Anglican Church and cemetery.
Plate 12	A large depression cultivated in corn at Endeavour.
Plate 13	A panoramic view of Madras from the ruins of Madras Grate House Site (Madras Yard)

Plate 14	Photograph of a large depression at Hyde Hall Mountain.
Plate 15	The image captures the scenic limestone morphology at Alps.
Plate 16	A frontal view of Alps Baptist Church.
Plate 17	A panoramic view of Alps Baptist Church perched on a limestone hillock.
Plate 18	The plate depicts JNHT archaeology staff speaking with farmers at the Old Sawyers Village site.
Plates 19-20	Richmond Pen Great House and a panoramic view of the Great House overlooking the grazing lands
Plates 21- 22	Images of small but beautiful vernacular houses in Jackland
Plates 23 - 24	Images of Covey Mountain majestic hillocks and Great House
Plates 25 - 27	Images of Barnstaple Baptist Church, vernacular house and historic nog graves
Plate 28	Image depicting vernacular house, cut stone tank and nog walled outdoor kitchen
Plates 29-30	Depression and cut stone tank
Plate 31	The Belmont House: A two-storey cut stone and nog wall structure with sash windows and hip roof
Plate 32	Image of First Hill United Church
Plate 33	Former Westwood High School Ruins on the Manchester Property

List of Tables

Table 1	Inventory of Identified Archaeological Resources
Table 2	Impact Analysis
Table 3	Inventory and Classification of Archaeological Assets
Table 4	Potential Impact and Mitigation Measures



Hyde Hall Mountain - Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

S. NON-TECHNICAL SUMMARY

- S.1** The Jamaica National Heritage Trust (JNHT) has concluded an Archaeological Impact Assessment (AIA) on Proposed Bauxite Mining Area designated SML 173 in the parishes of Saint Ann and Trelawny and covers approximately 8,335 hectares. The study was conducted over ten days, in two phases. Phase 1, from June 24-28, 2019 and Phase 2, from September 9-18, 2019.
- S.2** The Prime Minister of Jamaica, the Most Honorable Andrew Holness instructed the Jamaica National Heritage Trust (JNHT) through the Ministry of Culture, Gender, Entertainment and Sport (MCGES) to have Cockpit Country Protected Area placed on the UNESCO World Heritage List. The State Party's first step towards this process, is to have the site added to the country's Tentative List and then preparation and submission of a Nomination File to the World Heritage Centre. The site then goes before the World Heritage Committee (21 members) for its decision on inscription of the site to the World Heritage List.
- S.3** SML 173 falls immediately outside the eastern delimitation of the Cockpit Country Protected Area. The area is rich in heritage resources: archaeological, historical, architectural and ethnographical. There is a large number of Anglo-Jamaican (English) and Afro-Jamaican (African) sites within the SML 173 designation. Some sites that are identified as English have an African component, for example, estates, whether as discreet entities such as enslaved settlements, or free villages. English sites include sugar and coffee works, pens, plantation houses, churches, forts and batteries, and lime kilns. The Afro-Jamaican places include Maroon sites and

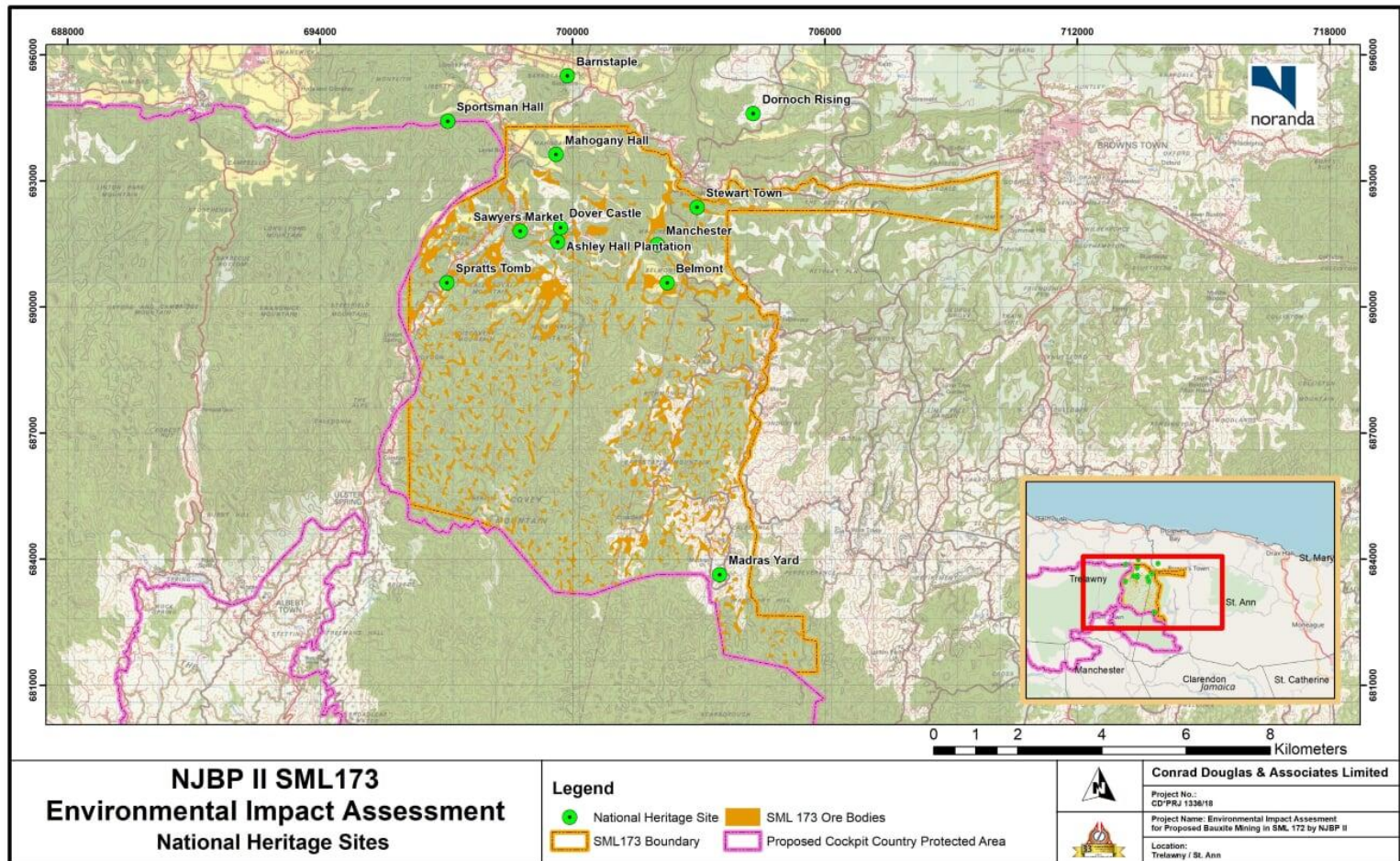


BACKRA YARD – Barbecue (Alps), Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

enslaved African villages. The post-emancipation period saw a flourishing of the peasantry hence a number of 'free' and other historic villages. The area contains vernacular houses, local craft industries and heritage trails.

PROPOSED BAUXITE MINING AREA SML 173

MAP 1



Map 1: Shows the SML 173 proposed bauxite mining area in sections of Saint Ann and Trelawny
Source: Conrad Douglas and Associates Limited 2019

S.4 The Archaeological Impact Assessment (AIA) was done in accordance with the JNHT's stipulated standards and guidelines for Archaeological Impact Assessment and the International Council On Monuments & Sites' (ICOMOS) Guidance on Heritage Impact Assessments (HIA) for Cultural World Heritage Properties. The study was commissioned by Noranda Jamaica Bauxite Partners II (Noranda); and is in partial fulfilment of an Environmental Impact Assessment (EIA) required by the National Environmental Planning Agency (NEPA).

- S.5** Its objective was to ascertain the presence of significant archaeological assets, and describe and appraise their worth in context of the proposed development and present the findings for legislative and regulatory considerations by the relevant national authorities and the World Heritage Centre (WHC). The study aims to identify and predict any potential positive, negative, reversible, irreversible, short and long term impacts on archaeological resources and indicate possible mitigation to negative impacts, as well as recommendations to enhance positive impacts. It also outlines possible alternatives to the project or aspects of it, and where necessary indicate suitable management and monitoring plan during the project's implementation.
- S.6** According to data accessed by the JNHT from the developer, only about fifteen percent (15%) to seventeen percent (17%) of the total landmass contained in SML 173 is targeted for bauxite ore extraction. The majority of the land constitutes rugged limestone hillocks which is of no mining interest to the developer and is to be preserved along with its forest vegetation cover. Ore extraction will be concentrated in those depressions with viable bauxite ore deposits.
- S.7** The inventory of archaeological assets captured by the field survey is by no means exhaustive. The survey captures, as far as was possible, the above-ground resources readily detectable in the absence of geophysical survey techniques, planned archaeological excavation, or being accidentally unearthed during the tilling of soil for developmental purposes or agricultural endeavours. Consequently, this report is unable to give an inventory or account, in large part, of buried vestiges. However, as observed by Historian, Professor James Robertson, *"The absence of evidence is not the evidence of absence"*. The presence of buried archaeological assets therefore has not been ruled out. The study's site inventory and spatial reference shows that most of the archaeological assets such as caves, house ruins, barbecues and other plantation ruins, graves, water catchment and cutstone water tanks, settlement sites and trails, are located on the rugged limestone hillocks and foothills. Nonetheless, some significant assets like historical graveyards are to be found in some depressions; often times at the rear of homes. As a first course of action, every effort should be made to protect and preserve all significant cultural heritage assets and the natural assets on which the communities rely as a means to provide their livelihood. Though an archaeological survey of the wider Cockpit Country was conducted in 2009 and identified some resources in the area designated SML 173, it was not

comprehensive enough to provide the level of detail required by this study.





- S.8** There are a number of pertinent policies, legislation, regulations and environmental standards of the Government of Jamaica (GOJ) relating to environmental protection that are applicable to any development and that a developer will need to consider when embarking on a particular scale and type of development. There are several government agencies mandated with the authority to control certain types of development that may have potentially negative impacts on the natural and cultural environment. The powers of control and regulation are typically exercised through a system of permits that include checks and balances on what kind and form of development can occur.
- S.9** The following table (Table 1) presents the resources identified in the study area that may be impacted by the bauxite mining operation. The table gives a cursory description of the sites identified, images and their location.



HYDE HALL MOUNTAIN, Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019





Table 1.

INVENTORY OF IDENTIFIED ARCHAEOLOGICAL RESOURCES

No	IMAGE	SITE	DISTRICT	X-coord	Y-coord	COMMENTS
1		Alps cut-stone ruin	Alps	773047.1	182024.7	Two storey cut-stone ruin dated 1878. Several historical graves are also present in the vicinity.
2		Alps historical graves	Alps	773049.1	182016.8	A series of historical graves constructed with nog material. According to one resident some of the deceased were Scottish.
3		Dunn's family graveyard	Alps	773020.6	182018.9	A defined graveyard with three visible historical graves constructed with nog wall material. The site also contains a large barbecue complex, stone walls and house foundations.
4		Cut-stone house foundations	Alps	773019.5	182013.7	A series of barbecues and cut-stone house foundations along the Old Sawyers Road.

5		Graveyard 2 in cornfields	Alps	773020.7	182008.3	Approximately seven historical graves were witnessed at this location. Large artefact assemblages observed which serves as an indication that the area supported a settlement.
6		Graveyard 3 after cornfields	Alps	773022.4	182004.3	There are three historical graves constructed with nog material, one of which has a unique design.
7		Heritage trail campsite 1	Alps	773022.7	182002.7	A modern complex containing kitchen, toilet, fire pit and water tank. The site was recently a part of a heritage trail. The area is referred to as camp site 1.
8		Two cut-stone house foundations	Alps	773021.3	181956.1	According to the tour guide, one foundation was occupied by the Cordell family and the other owned by Brisset and Houghton (Part of heritage trail).





9		Historical packed stone bridge	Alps	773021.3	181949.8	This packed stone bridge is found on the Old Alps road. It was used to connect two large hillocks.
10		Heritage site campsite 2	Alps	773006.1	181936.2	Graves (Mckoy/Fergon family), toilet, shed and tank are present. The area is referred as camp site 2. It was part of the heritage trail.
11		Backra house graves	Alps	772950.1	181954.4	Two historical graves belonging to a member of the Campbell family. A great house once stood at this site.
12		Backra House Barbecues	Alps	772951.3	181958.1	An assemblage of artefacts consisting of historical metal tools, ceramics, olive green wine bottle sherds were observed on a large barbecue.

13		Rocky Fort Historical structures	Alps	772954.5	182001.1	Historical graves, cut-stone house foundations and tank are present.
14		Thorny Hill/Thorny Bottom Village	Alps	772956.6	182020.2	Remnants of a bakery and other house foundations observed.
15		Old Mountain, Village	Alps	773006.3	182029.1	Bakery and numerous cut-stone ruins along with a small cave were identified.
16		Cut-stone structure	Barnstaple Mountain	772718.5	181913.2	Located on property at the intersection of Barnstaple Mountain and Broadleaf.

17		Vernacular house	Barnstaple Mountain	772715.2	181913.6	House with cut-stone foundation, sash windows, nog walling and hip roof. A barbecue is also attached to the structure.
18		Graves	Barnstaple Mountain	772713.4	181920.9	There are four graves, two of which are historical nog graves.
19		Historical graves	Barnstaple Mountain	772713.4	181920.9	An extant grave site with a total of fourteen graves. Eight of these are historical and includes nog and stone graves.
20		Barnstaple Baptist Church	Barnstaple Mountain	772712.5	181922.8	Aside from the church, there is also the Barnstaple Basic School, a belfry and the first church which was converted into a prayer house. This is made from nog-walling, it displays a cut-stone foundation with double steps and a gable roof.





21		Vernacular structure	Barnstaple Mountain	772712.2	181923.7	Nog wall shop with piazza and gable roof. It is adorned with large wooden doors and windows. Behind this shop are cut stone foundations and a vernacular structure and historical graves.
22		Historical Graves	Barnstaple Mountain	772712.3	181925.8	A family plot of historical graves some of which are made of nog and cut-stone and the remaining ones with packed stones.
23		Cut stone foundation ruin	Barnstaple Mountain	772712.8	181924.3	Vernacular house foundation constructed with cut-stone.
24		Vernacular structure	Barnstaple Mountain	772712.2	181923.7	Outdoor nog wall kitchen which boasts a hip roof located behind vernacular shop.

25		Vernacular structures	Barnstaple Mountain	772711.3	181923.6	Two historical structures at this location which includes a shop with gable roof and a vernacular house with sash windows and a hip roof.
26		Barnstaple Postal Agency	Barnstaple Mountain	772710.6	181923.7	This is a dilapidated vernacular house with cut-stone foundation, nog walls and hip roof. A cut-stone foundation ruin is also on premises. Twelve graves are located behind the house.
27		Historical graves	Barnstaple Mountain	772711.6	181929.2	Seven historical graves, some of which are stone graves.
28		Cut-stone foundation	Barnstaple Mountain	772711.8	181929.9	Cut-stone house foundation with steps. A cut-stone water tank is also on the premises.

29		Cut-stone foundation	Barnstaple Mountain	772709.8	181929.1	Cut-stone foundation ruin.
30		Historical graves	Barnstaple Mountain	772709.1	182930.7	Ten historical graves.
31		Historical graves	Barnstaple Mountain	772708.2	181929.8	Four historical graves.
32		Nog house	Barnstaple Mountain	772706.3	181928.8	House with nog walls and cut-stone foundations, gable roof and fretwork around sash window and a wooden verandah. A nog walled shop with cut-stone foundation and overhanging gable roof also present.


33			Water Tank	Barnstaple Mountain	772707.1	181926.4	Historical cut-stone water tank.
34			Vernacular House	Barnstaple Mountain	772708.5	181925.8	House with cut-stone foundation, lentils and cut-stone water tank. A number of historical graves are located behind the house.
35			Historical Graves	Barnstaple Mountain	772708.3	181924.4	An extant cemetery with twenty-four graves. Eleven of these are historical.
36			Grave Site	Barnstaple Mountain	772705.9	181944	Four graves situated on small gradient leading to a depression cultivated with yams. Three of these graves are historical.

37		Nog walled kitchen	Barnstaple Mountain	772703.5	181938.2	A small outdoor kitchen with shingled gable roofing attached to a vernacular house which has been modified. The original cut-stone foundation, however, bears evidence to its historic value.
38		Vernacular House	Barnstaple Mountain	772704.7	181935.9	Vernacular house which displays high cut-stone foundation, gable roof with shingle and jalousie windows. A barbecue is also a feature of this house area. A cut-stone foundation ruin is also situated on the property.
39		Historical Graves	Barnstaple Mountain	772706.3	181935.5	Six graves which include two historical ones. A cut-stone wall divides two separate grave sites at this location.
40		Historical Graves	Barnstaple Mountain	772706.2	181934.8	Grave site with five historical graves and a cut-stone ruin.

41		Vernacular structures	Barnstaple Mountain	772706.2	181932.7	An ensemble of historical structures which include a nog-walled outdoor kitchen and two houses one displaying a gable roof and a cut-stone foundation and historical graves.
42		Historical graves	Barnstaple Mountain	772706.6	181932.7	Five graves which includes two historical graves.
43		Historical Graves	Barnstaple Mountain	772659.1	181937.1	A total of twelve graves with six being historic.
44		Vernacular house	Barnstaple Mountain	772701.1	181937.2	House with nog-walling, gable roof and wooden windows. A cluster of historical graves is located on the premises.

45		Two-storey vernacular house	Belmont	772655.9	182157.6	The vernacular house is made of cut-stone and displays sash windows and French doors. A cut-stone water tank is also adjacent to the structure.
46		Drip Cave	Belmont	772717.4	182154.3	Large cave which has stalactites and stalagmites. A number of bats and shells were observed in the cave.
47		Sinkhole	Belmont	772718.5	182153.9	This sinkhole is in close proximity to the above mentioned cave.
48		Historical Georgian house	Belmont	772652.2	182215.1	Nog-walled structure with high cut-stone foundation and hip roofing. There is a modern addition to the right of the nog structure and a cut-stone water tank to the rear.

49		Cut-stone tank and catchment	Broadleaf	772720.4	181910.7	Historical structures which includes catchment and cut-stone tank.
50		Vernacular house	Broadleaf	772720.3	181910.7	House with nog walling, sash windows and high cut-stone foundation with cellar
51		Nog house	Broadleaf	772720.1	181908.8	Blue nog-walled house which displays jalousie windows and shingle roofing and a cellar.
52		Vernacular house	Broadleaf	772720.3	181907.1	Yellow and brown structure constructed with nog walling and outdoor nog kitchen.





53		Vernacular house	Broadleaf	772719.1	181901.1	Cluster of nog wall structures. Blue house with brown cut-stone foundation, lentils above door. A cut-stone tank is located on the property. Small nog structure with gable roof, wooden doors and windows. Pink house with cut-stone foundation with decorative elements around windows and above the door.
54		Cut-stone foundation	Broadleaf	772719.6	181900.2	Cut-stone foundation ruin with steps leading to a verandah which has terrazzo tiles.
55		Vernacular house	Broadleaf	772725.1	181844.7	This vernacular house displays sash windows and lentils above the wooden doors. There is also a catchment tank at this location. A nog-walled storeroom with gable roof and two doors. There are also barbecues on the property.
56		Vernacular House	Broadleaf	772725.8	181837.2	This vernacular house has sash windows with decorative elements. To the rear of this structure is a nog-walled store house with gable roof, barbecue, water tank and catchment.

57		Vernacular house	Broadleaf	772725.8	181837.2	Blue house with nog walling and sash windows decorated with fretwork. A nog wall store house is to the rear and displays cut-stone steps and gable roofing. A cut-stone water tank and catchment along with a barbecue is also located on premises.
58		Vernacular nog structure	Broadleaf	772737.7	181835.4	A nog wall store house/buttery with gable roofing. A barbecue also situated on the premises.
59		Vernacular house	Broadleaf	772732.1	181835.7	Blue house with both hip and gable roofing with sash windows and cut-stone foundation. A barbecue is located to the rear of the building. A cut stone water tank with a catchment is in close proximity to the house.
60		Vernacular houses	Broadleaf	772733.1	181836.9	An ensemble of historical structures which includes, catchment and cut-stone tank, three vernacular houses, a shop and outdoor kitchens. All these structures are made of nog walling some of which are complimented by sash windows, French doors, cut-stone foundation and a barbecue.

61		Nog house	Broadleaf	772743.9	181839.2	Small nog structure with wooden flooring and gable roof. Located in field with corn and yam
62		Vernacular House	Broadleaf	772738.2	181830.8	House adorned with sash windows and outdoor kitchen with nog walling. This structure also displays gable roofing. A few graves are in the vicinity
63		Vernacular House	Broadleaf	772737.7	181826.7	A small blue house with sash windows and nog walling.
64		Vernacular house	Broadleaf	772738.7	181826.2	A small blue nog house which is over 100 years old.

65		Vernacular house	Broadleaf	772735.1	181824.6	Nog house with cut-stone foundation, hip roof, wooden flooring and a cellar.
66		Vernacular house	Broadleaf	772736.6	181825.2	An ensemble of historical structures which includes a cut-stone water tank with catchment, a nog wall outdoor kitchen and a vernacular house which has cut-stone foundation, sash windows decorated by fret work and a hip roof.
67		House ruin	Bryan Castle	772600.3	181900.5	Two vernacular ruins made of nog and cut-stone walling. Foundations of a cut-stone structure and a nog wall ruin.
68		Bryan Castle ruin	Bryan Castle	772703.4	181854.9	Remnants of a structure made from nog and cut-stone base. A trough is also in the vicinity. A number of fruit trees are present.

69		Bryan Castle house ruin	Bryan Castle	772708.4	181857.8	Remnants of a house made of nog walling and cut-stone base. A cut-stone water tank is also in the vicinity.
70		Vernacular House Ruins	Bryan Castle	772703.7	181912.7	Cut-stone foundation with steps.
71		Graves	Bryan Castle	772707.2	181913.1	Two historical graves.
72		Covey Mountain Great House	Covey Mountain	772936.2	181868.8	A two storey cut-stone great house ruin, barbecue and water tank





73		Cut-stone tank	Endeavour (Trelawny)	773009.8	181938.2	The Mckoy family settled at this location. There are remnants of house foundation and graves.
74		Vernacular structure	Endeavour	772602.9	182154.2	Nog walled building which comprises a storehouse/buttery and outdoor kitchen. Two wagon wheels are also positioned close to the storehouse. A horseshoe was attached to the door.
75		Vernacular house	Endeavour	772606.2	182156.9	House in depression/valley made with French windows, nog walls, cut-stone foundation, hip roof and cellar. Cut-stone water tank and remnants of cut-stone foundation. The house is located amidst the yam fields.
76		Vernacular house	Endeavour	772613.6	182154.8	Vernacular house with a small nog structure to the left of main house. The house displays sash windows and hip roofing. A small barbecue also forms part of architectural design.

77		Endeavour Anglican Church	Endeavour	772539.3	182114.3	Church was built from cut-stone and a cemetery was observed in the church yard.
78		First Hill United Church in Jamaica and the Cayman Islands	First Hill	772941.5	182460	Extant historical church with bell tower, grave yard and cemetery. There is also a large historical manse in ruin, cut-stone water tank and small aqueduct.
79		Vernacular houses	Gibraltar	772623.4	182047.3	Vernacular nog wall house with fret work and gable roof. The second is a nog house with gable roof and jalousie windows.
80		Baptist Church	Gibraltar	772551.8	182031.7	Church is constructed with cut-stone. A manse is also located on the property with a cut-stone water tank.


81		Cut-stone tank and ruin	Gibraltar	772551.8	182031.7	Cut-stone water tank with brick and cut-stone foundation.
82		Nog-walled shops	Gibraltar	772552.1	182031.8	Nog-walled shops in the community square with gable roofing. A prominent two storey vernacular structure is also located within the square which is used as a dwelling place and shop.
83		Historical graves	Gibraltar	772550.1	182032	Two historical graves located at the rear of house in the community square.
84		Historical graves	Gibraltar	772551.9	182034.2	There are seven graves two of which are historical.

85		Historical graves	Gibraltar	772551	182034.9	Eight graves are at this location with three historic al graves.
86		Historical graves	Gibraltar	772551.3	182035.9	Five historical graves.
87		Vernacular structures	Gibraltar	772549.8	182035.9	Cluster of nog wall shops/ structures in the lane.
88		Historical graves	Gibraltar	772557.5	182046.2	Seven graves which include Three historic graves.

89		Historical graves	Gibraltar	772557.1	182046.5	Five graves which include four historical graves.
90		Cut-stone ruin foundation with steps	Gibraltar	772557.8	182046.7	Besides the cut-stone foundation is a water tank adjacent to the ruin.
91		Historical graves	Gibraltar	772556.3	182045.8	Five historical graves.
92		Vernacular House	Gibraltar	772556.8	182045.5	Nog house with cut-stone foundation and gable roof. Several historical graves are located in the vicinity.

93		Cut-stone foundation ruin	Gibraltar	772553.7	182047.9	Cut-stone foundation with steps.
94		Historical graves	Gibraltar	772553.4	182048.4	A total of seven graves with five historical ones.
95		Historical graves	Gibraltar	772553.6	182049.8	A total of seven graves with four historical graves.
96		Barbecue/Graves	Gibraltar	772553.4	182052.1	Packed stone graves covered by a barbecue.

97			Historical graves	Gibraltar	772551.2	182047.4	A total of eight graves with five historical.
98			Nog house	Gibraltar	772553.2	182046.5	House with nog walling, cut-stone foundation and hip roof.
99			Historical graves	Gibraltar	772553.1	182045.7	A total of three graves one of which is historical.
100			Historical graves	Gibraltar	772553.1	182044.6	A total of three graves one historical components.

101		Vernacular house	Gibraltar	772549.9	182044.5	House with nog wall, hip roof, cut-stone foundation and French windows.
102		Cut stone foundation	Gibraltar	772549.9	182045.8	Historical Ruin
103		Vernacular house	Gibraltar	772549.4	182045.2	Modified vernacular house with modern window and a cellar.
104		Vernacular house	Gibraltar	772547.5	182046.1	Vernacular house with cut-stone foundation, sash windows decorated with fretwork. There are several cut-stone steps and a barbecue. Original columns from the missing verandah remain.

105		Historical graves	Gibraltar	772552.2	182042.6	Fifteen graves with four historical graves.
106		Vernacular house	Gibraltar			Large cream coloured house with hip roof, jalousie windows and cellar.
107		Nog shop	Gibraltar	772551.4	182040.5	Blue and yellow nog-walled shop with small steps and small piazza modified with cement.
108		Historical graves	Gibraltar	772551.5	182040.1	A total of ten graves, eight of which are historical.

109		Historical graves	Gibraltar	772551.1	182041.8	A total of ten graves, eight of which are historical.
110		Historical Graves	Gibraltar	772550.9	182039.1	A total of ten graves, seven of which are historic.
111		Nog house	Gibraltar	772552.1	182038.8	Nog house with small sash windows, cut-stone foundation and gable roof.
112		Cut-stone tank	Gibraltar	772549.1	182038.2	Water tank associated with historical graves and house foundation.

113		Historical grave	Gibraltar	772548.8	182037.8	Historical grave made of nog material.
114		Historical graves	Gibraltar	772548.5	182038.3	Two historical graves.
115		Cut-stone foundation	Gibraltar	772548.2	182038.4	Cut-stone foundation of residence associated with graves and water tank on property.
116		Vernacular house	Gibraltar	772549.5	182037.4	Blue house within close proximity to small nog shops.

117		Nog house	Gibraltar	772549.5	182036.7	Dilapidated nog house with roof and verandah missing. It also has a frame for what was a gable roofing. It is in the old square with the small shops.
118		Nog structures	Gibraltar	772533.3	182014.3	One orange and black vernacular house with nog walling, hip roof sash windows and cut-stone foundation. A nog kitchen with gable roofing is also located beside the house.
119		Nog house	Gibraltar	772534.4	182014.1	A vernacular house with nog walling, gable roof and sash windows.
120		Nog house	Gibraltar	772534.2	182015.4	Vernacular house with nog walling, gable roof, French and sash windows. A nog outhouse is used as a furniture shop.





121		Historical grave	Gibraltar	772534.8	182015.8	Four graves with One historic grave
122		Historical graves	Gibraltar	772537.9	182015.8	There are fourteen graves with six historical graves.
123		Vernacular house	Gibraltar	772537.9	182014.7	Pink and green house with verandah, hip roof and nog walling.
124		Vernacular house	Gibraltar	772538.9	182013.8	Two-storey vernacular house with gable roofing. A number of ackee trees are present in the yard, which may suggest a former slave village.

125		Historical graves	Gibraltar	772539.9	182014.4	Twelve graves which include eleven historical graves.
126		Vernacular house	Gibraltar	772540.1	182013.9	Nog house with hip roof and French windows.
127		Vernacular house	Gibraltar	772541.1	182013.6	Nog house with gable roof, cut-stone foundation. House is decorated with fretwork and there is a cut-stone water tank in yard.
128		Vernacular house	Gibraltar	772540.8	182012.8	Orange house with hip roof, sash windows and cellar.

129		Historical graves	Gibraltar	772541.1	182012.7	Extant grave site with nine historical graves and four modern graves.
130		Vernacular House	Gibraltar	772541.7	182013.2	Vernacular pink house with cut-stone foundation, hip roof and French windows with fretwork.
131		Historical Graves	Gibraltar	772542.4	182014.2	Extant grave site in yard. There are thirty-one graves with nineteen of them historical. A cut-stone water tank is also located on the property.
132		Cluster of vernacular houses	Gibraltar	772543.5	182011.3	Ensemble of houses on land. Three vernacular houses with two nog structures on the hill. Another nog-walled house with cut-stone foundation and sash windows with a modern addition to right is located on the lower ground.





133		Vernacular house	Gibraltar	772545.6	182011.1	A derelict nog structure with cut-stone foundation with verandah missing. The columns for the verandah remain. Cut-stone steps are present with the sash windows, jalousie windows and hip roof.
134		Two-storey vernacular house	Gibraltar	772546.4	182010.9	Vernacular house with upper and lower verandahs. A wooden flooring complements the verandah with wooden railings, hip roof and cut stone foundation. A cut-stone water tank is located adjacent to the house.
135		Vernacular house	Gibraltar	772548.4	182009.9	Blue vernacular house on hill above the two-storey house. It displays sash windows with fretwork around them. The house is also built on a cut-stone foundation.
136		Vernacular house	Gibraltar	772548.9	182011.3	House with hip roof fretwork and cellar.

137		Modified nog house	Gibraltar	772550.6	182010.8	Vernacular structure with modern addition to the right.
138		Rock shelter	Hyde Hall Mountain	772857.4	182146.1	Historical limestone pit
139		Water Tank	Hyde Hall Mountain	772833.7	182129.9	Two cut-stone water tanks with troughs located in the vicinity of two small vernacular house ruins. Also, a graveyard with numerous graves. Graves are represented by packed stone. Some are parallel to each other. Fourteen graves were clearly identified. The size of the graveyard would suggest that the community was a fairly large one. There are several nutmeg and mango trees on the property.

140		Ruinate	Hyde Hall Mountain	772831.5	182109.2	Area being reforested by planting of cedar and Blue Mahoe trees. The area is a very long depression, and sections of it are cultivated in yam.
141		Cut-stone water tank and aqueduct	Hyde Hall Mountain	772820.5	182060.4	At this site an aqueduct about twenty meters long and four feet deep is used to channel water emerging from rocks into the cut-stone tank.
142		Vernacular Structures	Jackland	772634.6	182109.4	Two structures which consist of a small blue house with a nog-walled kitchen with gable roofing.
143		Nog walled Ruin	Jackland	772636.6	182101.5	Remnants of a nog-walled structure with cut stone foundation.





144		Historical Graves	Jackland	772637.7	182101	A total of twelve graves with four historic graves. A few artefacts could be seen on the ground in close proximity to the graves.
145		Cut-stone foundation	Jackland	772636.2	182100.7	Historical building foundation with steps.
146		Cut-stone tank with catchment	Jackland	772626.7	182059.8	Small tank and catchment for domestic purposes.
147		Vernacular house	Jackland	772638.1	182058.8	House with nog walls, cut-stone foundations and French windows which are decorated with fretwork. The roofing is gable and it has a cellar. A nog kitchen with cut stone foundation is also in close proximity to the house with a cut stone foundation ruin.

148		Historic graves	Jackland	772629	182050.2	A total of twelve graves situated in the meadow/depression. Of this total are six historical graves.
149		Vernacular house	Jackland	772630.4	182046.8	Nog walled house with hip roof. The house is adorned with French windows. Remnants of a cutstone kiln is also situated on the premises.
150		Vernacular house	Jackland	772627.3	182050.8	A cream coloured nog structure with French windows. The house is decorated with fretwork and displays a hip roof. A cut-stone foundation is also in close proximity to this house.
151		Vernacular house	Jackland	772627.1	182051.2	Nog walled house with cut stone foundation, sash windows and hip roof.




152		Historical graves	Jackland	772626.9	182052.7	This is an extant grave site with eleven graves which includes a total of eight historical graves.
153		Lawrence Village	Lawrence	770301.8	182046.8	Old village site and several stone foundations of houses situated on a limestone hillock.
154		Small village site with water tank	Lawrence	772981.8	182043.2	Small depressions with cut-stone water tank. Measurement is 4x4 metres. Hillocks surrounding depression has several cut-stone foundations. Depression cultivated with yams and potatoes with two small plots of yam and potato between them.
155		Lawrence Great House Trelawny	Lawrence	772974.3	182044.6	Cut-stone Great House foundation ruins situated on very high conical limestone hillock. Site is inundated with ferns and few trees. A feature alleged to be graves were observed.

156		Lindale Great House Ruin	Lindale	772328.6	182305.2	This wooden structure is badly deteriorated and is at the stage of collapsing. According to the property owner the lot on which the ruin is situated was recently sold.
157		Nog House	Madras	772618.4	181900.7	House constructed with nog wall material.on old foundation
158		Nog House	Madras	772617.5	181843.9	Historical vernacular nog wall house with shingle roof.
159		Cut-stone Shop and historical grave	Madras	772618.7	181844.2	Historical shop constructed with cut stone, demonstrates huge cracks in the walls caused by dynamite blasts from bauxite mining. Several graves were identified on the property two of which were historically constructed with nog-walled materials.



160		Vernacular House	Madras	772618.6	181845.7	Nog wall vernacular house with cut-stone foundation. The house has cracks to the front, side and rear as a result of dynamite blasts. Also has nog wall kitchen at the back of the house in addition to a cut stone perimeter wall, foundations and graves.
161		Vernacular House	Madras	772619.9	181846.9	Historical nog wall house with gable roof and jalousie windows. It also displays cracks resulting from dynamite blasts. Foundations of other structure were observed.
162		Vernacular House	Madras	772617.1	181842.2	This structure has sash windows on verandah with French doors. There is a cut-stone foundation and barbecue. A small nog walled building is to the rear of the house.
163		Nog Shop	Madras	772617.6	181841.4	Restored nog wall building associated with other foundations.


164		Vernacular House	Madras	772617.6	181841.4	Two storey vernacular house with fretwork and latticework, French windows and a wooden verandah.
165		Nog Wall vernacular House	Madras	772616.3	181839.6	This nog shop site has cut stone steps and foundation made from nog materials.
166		Shop ruins	Madras	772616.7	181834.8	Cut-stone ruins with two entrances One supposedly for a grocery shop and One for bar. Based on certain features the shop had a timber upper floor.
167		Water catchment and reservoir tank	Madras	772617.1	181833.3	National Water Commission (NWC) catchment and reservoir provides water for the entire community.

168		Historical Graves	Madras	772623.8	181822.7	Approximately Seven historical graves most of which were children. It is also the home of Carmen Scott.
169		Vernacular House	Madras	772623.8	181820.8	Nicely preserved nog wall house with modern addition. Historic house has gable roofing, and fretwork to windows.
170		Ebenezer Baptist Church and Manse	Madras	772617.1	181820.8	Church built with cut-stone. Also used as the community health centre. There were Two historical graves said to be that of the first pastor and his wife. The manse associated with the church has fretwork with a cut-stone foundation.
171		Postal Agency and bar	Madras	772617.3	181820.8	Structure displays a cut-stone foundation.

172		Shop and cluster of houses	Madras	772617.5	181820.8	Wooden structure with cut-stone foundation and beautiful fretwork. Lattice work, shingle roofing and wooden flooring were observed.
173		Saint Barnabas Anglican Church	Madras	772618.7	181816.9	This structure displays gable roof, cruciform design and cut-stone foundation.
174		Madras Great House graves	Madras	772622.1	181814.3	Two historical graves and Three modern ones are on the property.
175		Madras Great House	Madras	772622.6	181813.1	This includes cut-stone remnants of pantry, barbecue, house, animal mill, coffee pulper etc. A wide array of artefacts was observed on the property and samples were collected.

176		Historical graves	Madras	772622.8	181813.8	Six graves were observed in the depression with cut-stone water tanks nearby.
177		Modern/historical ruins	Mahogany Hall	772848.6	182354.5	Abandoned, modern house built on historic cut-stone foundation.
178		Pink Concrete block house	Mahogany Hall	772840.2	182354.3	House partially built on cut-stone foundation of historic building. Structure is also abandoned.
179		Modern / historical ruin	Mahogany Hall	772836.8	182354.7	An ensemble of structures including a small modern concrete house. A historical nog-walled house, flat zinc roof, a slaughterhouse, a zinc out house and Three graves. The property is abandoned.

180		Modern/ historical ruin	Mahogany Hall	772812.8	182359.4	Small concrete building erected on the foundation of a historical building ruin.
181	 	Modern / historical ruin	Mahogany Hall	774680.5	183951.1	Ensemble of modern and historical structures. An incomplete modern concrete block church and a historical nog-walled house. In the yard there are several cut stone foundations. There are also Two graves at the back of the yard (abandoned).
182		Sink Hole	Manchester Pen	772659.1	182258.6	Large cinote (doline) which appears to have water. The doline is approximately 80 meters in diameter and 80 meters in depth from its highest point.
183		Westwood High School Ruins	Manchester Pen	772707.9	182241.7	The first location of the Westwood High School for girls. Several cut-stone foundations are located on the property.


184		Owl Mountain Great House Trelawny	Owl Mountain	773020.3	182065	Cut-stone Great House ruin on top of high conical limestone hillock. Property is owned by the Currie family. Site is covered predominantly by ferns and few trees. There is no topsoil present.
185		Plantain Walk Grave Yard 1	Plantain walk	772601.6	182041.4	A combination of historical and modern graves was recorded. Twenty-Two graves were counted.
186		Plantain Walk Graveyard 2	Plantain walk	772601.9	182040.5	A combination of historic and modern graves was recorded. Twenty-One graves were counted. A cut stone tank was also identified on the property.
187		Plantain Walk Graveyard 3	Plantain walk	772600.9	182040.5	Four graves were identified behind the remnants of the St. Paul Baptist church foundations. Two were babies.

188		Two vernacular nog houses	Plantain walk	772558.4	182034.2	Extant historical nog-walled vernacular dwelling.
189		Historical graves	Plantain Walk	772601.7	182030.6	A total of Eleven graves, Six of which are historical.
190		Retreat Great House Ruins	Retreat	772444.2	182300.5	Only the foundations of the Great House remain. The animal mill has been converted into a water tank. Pimento barbecue is being used as a water catchment.
191		Cut-stone ruin (shop) vernacular structure	Richmond Pen	772634.7	182039.1	This ruin is One of several abandoned buildings observed at the T-junction in Richmond Pen.

192		Richmond Pen intersection Vernacular structures	Richmond Pen	772648.9	182031.1	These Four historical structures have been abandoned and have fallen into a state of disrepair.
193		Historical Graves	Richmond Pen	772651.4	182002.5	Grave of Benjamin Walcott.
194		Historical Graves	Richmond Pen	772651.4	182015.7	Grave with a cut-stone foundation in the vicinity.
195		Vernacular house	Richmond Pen	772642.1	182017.3	House with nog-walling, cut-stone foundation and French windows. The house also has a gable roof with shingle covered with zinc. A large yam field is in close proximity to this house.

196		Cut-stone foundation	Richmond Pen	772645	182026.7	This is on the same property as the vernacular house and yam field.
197		Historical Pond	Richmond Pen	772645.5	182027.4	This historical pond is also attached to the yam field and is related to the watering of cows witnessed on the property.
198		Vernacular House	Richmond Pen	772650	182030.3	Very old house with nog wall with sections of the roof being gable and hip with French windows. The roof has shingle with a horseshoe used for locking the door.
199		Water catchment and tank	Richmond Pen	772648.1	182022.1	Historical Parish Catchment with cut-stone tank augment water supply to the area.

200		Richmond Pen Great House	Richmond Pen	772748.8	182023.5	This Georgian style Great House exemplifies the preferred Great House architecture found in the area. It is constructed with cut-stone, gable roof and sash windows. A few artefacts were recovered from this location.
201		Vernacular House	Richmond Pen	772655.3	182017.4	House with cut-stone foundation, French windows, gable roof and cellar.
202		Sawyers Old Village	Sawyers	772835.2	182232.1	Remnants of several house foundations with a scatter of artefact assemblages including cut nails, barrel straps, metal pot fragments, olive green wine bottle fragments, pearlware sherds were identified. A historical cut-stone tank was also observed in the vicinity.
203		Sawyers Old Village	Sawyers	772856.1	182227.6	Several historical graves made with nog (Spanish Wall) material were observed in this location. The grave styles are typical European some of which maybe Jewish or German.

204		Sawyers (Cudjoe Cave)	Sawyers	772853.1	182254.7	The cave is approximately 30m long and averages about 40m high. Contents include pot and glass bottle fragments dating from about the 1940's were observed. According to One resident the cave was used as a refuge by Cudjoe the great Maroon leader. It also contains a large population of bats and birds.
-----	---	-----------------------	---------	----------	----------	---

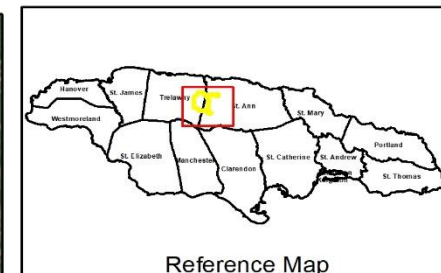
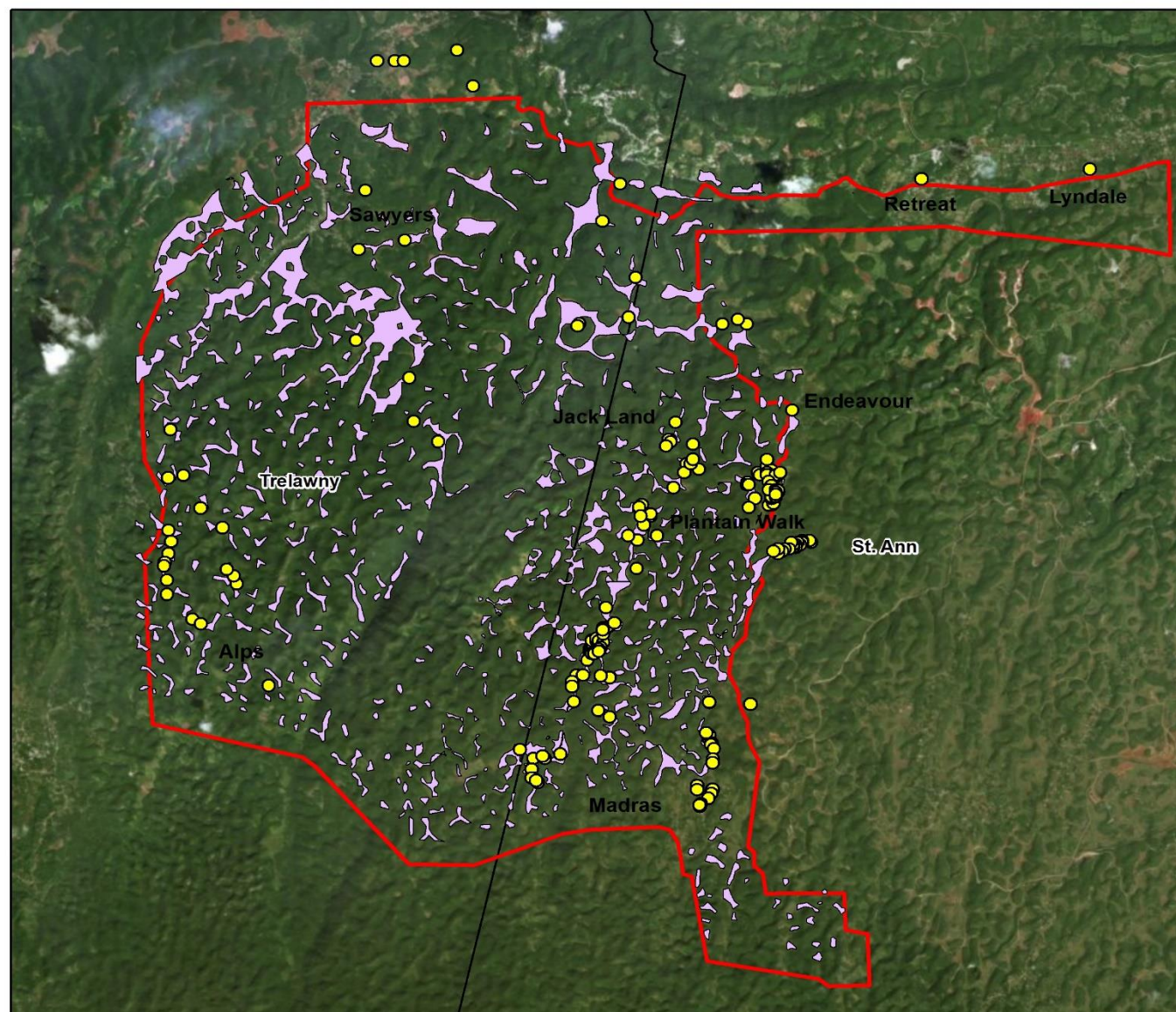


BARNSTAPLE MOUNTAIN, St. Ann

SOURCE: JNHT Sites and Monuments Record - 2019

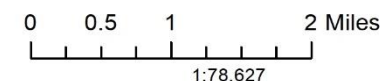
MAP 2

Spatial Distribution of Archaeological Resources



Legend

- Sites
- SML173 Ore Bodies
- Proposed Mining Area



Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 25/10/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Map 2. Illustrates the spatial distribution of identified archaeological assets in relation to the spread of bauxite ore deposits.
SOURCE: JNHT Sites and Monuments Record((prepared by Winston Abrahams)/

S.10 The archaeological assets identified in this study are by no means exhaustive, but those captured in the field survey paints the picture of the potential impact posed by the proposed mining project. The following table (Table 2) presents a summary of the magnitude of potential impact on the identified archaeological resources. It also presents recommendations that could mitigate negative impacts.

Table 2: IMPACT ANALYSIS								
Resource ID	Potential Impact	Duration		Magnitude		Form		Mitigation
		Long	Short	Major	Minor	Reversible	Irreversible	
<u>Sawyers</u>	Negative Impact							
	Numerous historical grave sites, historical structures and ruins, the Old Village site with its associated artefact assemblages could suffer direct adverse effects by the proposed development. Other significant archaeological assets that may be adversely impacted are Cudjoe Cave, the Old Sawyers Village and the cholera cemetery.	√		√			√	<ul style="list-style-type: none"> • Delineate the community along with Cudjo Cave, the abandon village site that contains the cholera burial ground, historical graves, foundations of structures along the abandoned old Sawyers road that leads to Stuart Town and protect them by designating them Protected National Heritage under the JNHT Act.
	Potential dust and noise pollution	√		√		√		<ul style="list-style-type: none"> • Compensation for damages inflicted on private property as a result of bauxite mining operation

	Potential damage to structures caused by dynamite blasting from bauxite mining infrastructural development	√		√		√		
	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√		√	√	
	Temporary employment		√	√	√	√		
	Improved vehicular access to the community	√		√			√	
	Improved heritage tourism in the area	√		√		√		
<u>Alps</u>	Potential Negative Impact							
	Although numerous archaeological assets identified are located on limestone hillocks and may be safe from potential direct impact; those found in the depressions are	√		√			√	<ul style="list-style-type: none"> Delineate a boundary around the community, including the Old Village area, Lawrence, Backra Yard, Owl Mountain and Rocky Fortt and protect them by designating the area Protected National Heritage under the JNHT Act.

	<p>potentially threatened by direct deleterious impact. Those found in adjunct depressions and hillocks to the community and which were part of an heritage trail in recent times are exposed to greater potential of destruction. These archaeological assemblages, graves, house foundations, barbecues, water tanks, of abandon settlement and plantation sites are still a critical part of the community's historical and archaeological heritage.</p> <p>Dust and noise pollution</p> <p>Damage to structures caused by dynamite blasting from bauxite mining</p> <p>Potential Positive Impact</p> <p>Relocation of those property owners who are desirous</p> <p>Temporary employment</p>							<ul style="list-style-type: none"> • Compensation for damages inflicted on private property including archaeological sites
		√	√	√	√	√	√	
		√	√	√	√	√	√	
		√		√			√	
			√	√	√	√	√	

	Improved vehicular access to the community	√		√				
	Improved heritage tourism in the area	√		√		√		
<u>Madras</u>	Potential Negative Impact Along with Gibraltar this community possesses perhaps the largest number of well-preserved historical vernacular houses, shops, graves and plantation ruins, all of which have the potential to be negatively impacted by the mining project. Madras Yard exemplifies the outstanding archaeological assets to be found in the community. Dust and noise pollution Damage to structures caused by dynamite blasting from bauxite mining	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around the village and protect the area by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property.

	Potential Positive Impact Relocation of those property owners who are desirous Temporary employment Improved heritage tourism in the area	√		√			√	
			√		√	√		
		√		√		√		
<u>Gibraltar, Plantain Walk</u>	Potential Negative Impact The community is one of the larger communities that are essentially linear in pattern but sprawl into several small contiguous depressions and on the steep slopes of hillocks. The proposed bauxite mining has the potential to negatively affect significant archaeological resources including numerous historical graveyards, water tanks, nog-walled vernacular houses and plantation ruins. The community has the best	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around the village and protect the area by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property.

	preserved assemblage of historical shops.							
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√	√	√	√		

<u>Bryan Castle</u>	<p>Negative Impact</p> <p>Not many archaeological assets were identified in Bryan Castle. Nonetheless, those historical graves and foundations of ruins have the potential of being negatively impacted by the development. The area is a predominantly small scale yam farming area. The small population live primarily on the limestone hillock.</p> <p>Dust and noise pollution</p> <p>Positive Impact</p> <p>Improved infrastructure such as light, water and road.</p> <p>Temporary employment</p>	<p>√</p>	<p>√</p>	<p>√</p>	<p>√</p>	<p>√</p>	<p>√</p>	<ul style="list-style-type: none"> Place boundary around the significant archaeological assets and protect them by designating them Protected National Heritage under the JNHT Act. Compensation for damages inflicted on private property
Broadleaf	<p>Potential Negative Impact</p> <p>A small farming community where ninety-</p>							<ul style="list-style-type: none"> Delineate a boundary around the village and protect the area by

five percent of the people are engaged in farming. They traditionally prepare the land using mule and plough technique. The small nog-walled vernacular house and historical graveyards are well preserved. Proposed bauxite mining has the potential to negatively affect the significant archaeological resources.	√		√			√	designating it Protected National Heritage under the JNHT Act.
Dust and noise pollution		√	√	√	√		
Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
Potential Positive Impact							
Relocation of those property owners who are desirous.	√		√			√	
Temporary employment		√		√	√		
							<ul style="list-style-type: none"> • Compensation for damages inflicted on private property

Barnstaple Mountain	Negative Impact							
	This community is another example of preserved historical vernacular houses, shops, graves, barbecues and churches; all of which have the potential to be negatively impacted by the mining project.	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around the village and protect the area by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property
	Dust and noise pollution	√		√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√		√		√	√	
	Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√		√	√		
	Improved heritage tourism in the area	√	√	√	√	√		

Belmont	Potential Negative Impact							<ul style="list-style-type: none"> • Delineate an area around the cave , sinkhole and Great House and protect them by designating them Protected National Heritage under the JNHT Act. • Clearly flag with clour code those low significant features that are schedule for relocation of alteration.
	Bauxite mining activities has the potential to destroy the few historic vernacular structures recorded in this area. A large cave referred to as Drip Cave found in a large depression may also be adversely impacted	√		√			√	
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√	√	√	√		

Covey Mountain	Potential Negative Impact The most prominent feature identified in this area is the degenerated Covey Mountain Great House and associated features. The house appeared to have been abandoned in recent times and be easily restored. This sturdy two-storey structure may be severely affected by the proposed mining activities.	√		√			√	<ul style="list-style-type: none"> Delineate the Great House premises along with its associated vestiges and protect it by designating it Protected National Heritage under the JNHT Act. Clearly flag with clour code to indicate this site is of high significant and is to be protected
	Potential Positive Impact Development and use of the property in the promotion of heritage tourism in the area	√	√	√	√	√		
Endeavour	Potential Negative Impact This is essentially a small linear pattern community that has a mixture of historical nog-walled structures and 1960s concrete houses. Farming is the main source of	√		√			√	<ul style="list-style-type: none"> Delineate the community and protect it by designating it Protected National Heritage under the JNHT Act.

	livelihood. The district may be negatively impacted by the proposed mining activities							<ul style="list-style-type: none"> • Compensation for damages inflicted on private property
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√	√	√	√		

First Hill	Potential Negative Impact							<ul style="list-style-type: none"> • Compensation for damages inflicted on private property .
	The most prominent features of this community are the historical church and degenerated manse. A number of well-preserved small nog-walled houses are present. The community is located on a limestone hillock. It is anticipated that this community may not be directly impacted.							
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Potential Positive Impact							
	Temporary employment		√	√	√	√		

Owl Mountain	Potential Negative Impact The most significant archaeological asset observed on this site is the Owl Mountain Great House and barbecue ruins located at the apex of a very large conical limestone hillock. Construction of mining service road may negative impact the site	√		√			√	<ul style="list-style-type: none">• Include this site in a delineated boundary with the Alps community and protect the area by designating it as Protected National Heritage under the JNHT Act.• Clearly flag with clour code to indicate this site is of high significant and is to be protected
---------------------	--	---	--	---	--	--	---	---

Jackland	Potential Negative Impact							<ul style="list-style-type: none"> • Delineate the community and protect it by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property
	The proposed mining activities could affect several historical graves, vernacular structures which include nog-walled houses, remnants of a kiln and cut stone water tanks.	√		√			√	
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
Lawrence	Temporary employment		√	√	√	√		<ul style="list-style-type: none"> • Include this site in a delineated boundary with the Alps community and protect the area by designating it as Protected National Heritage under the
	Potential Negative Impact							
	The Lawrence Great House ruin and graves are the prominent archaeological	√		√			√	

<p>Manchester Pen</p>	<p>resources found perched on the top of a large conical limestone hillock. Construction of service roads may adversely impact the site</p> <p>Potential Negative Impact</p> <p>The cut-stone ruins of the first Westwood High School may be destroyed by the proposed mining activities in this area.</p>	√		√			√	<p>JNHT Act.</p> <ul style="list-style-type: none"> Clearly flag with clour code to indicate this site is of high significant and is to be protected Delineate a boundary around this site and protect it by designating it Protected National Heritage under the JNHT Act. Clearly flag with clour code to indicate this site is of high significant and is to be protected
------------------------------	---	---	--	---	--	--	---	---

Mahogany Hall	Potential Negative Impact All homes are abandoned and are in ruin within this area. Some farming of yam was observed. The mining proposal has the potential of demolishing these ruins,	√		√			√	<ul style="list-style-type: none"> Clearly flag with clour code those low significant features that are schedule for relocation of alteration
Richmond Pen	Potential Negative Impact This small community boasts one of the few Great Houses within the proposed mining license area for St. Ann. A few smaller vernacular houses were recorded most of which have been abandoned. These could be negatively impacted by the proposed mining activities. Dust and noise pollution Damage to structures caused by dynamite blasting from bauxite mining	√		√			√	<ul style="list-style-type: none"> Compensation for damages inflicted on private property Delineate the community and protect it by designating it Protected National Heritage under the JNHT Act.
			√	√	√	√		
		√	√	√	√	√	√	

	Potential Positive Impact							
	<ul style="list-style-type: none">• Relocation of those property owners who are desirous	√		√			√	
	<ul style="list-style-type: none">• Temporary employment		√	√	√	√		



SAWYERS (Old Sawyers Village Site), Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

S.11 Cumulative Impact

Outstanding Universal Value (OUV)

Cumulative impacts have been taken into consideration especially in light of the fact that the Prime Minister has charged the JNHT with the task of taking the necessary steps to have the site designated a World Heritage Site. This proposed development will present challenges for the site in terms of establishing an appropriate Buffer Zone that is integral for preserving the property's OUV. Open-pit Bauxite Mining has the potential to inflict direct and indirect adverse impact on communities in the target areas. Tangible assets, both cultural and natural, may be damaged during the pre-mining and mining phases. One of the fundamental objectives of World Heritage inscription is to improve the quality of life of people who live within and around the property and who may be the owners of the cultural heritage deemed to possess OUV. In this instance, the character of SML 173 may be altered and as such, alteration of the natural environment has the potential to reciprocate change in the cultural environment.

Archaeological Research Value

The material remains of past generations often are the only surviving records that links the past to the present. Understanding the achievements of our progenitors is sometimes attained by studying the tangible evidence they left behind. Linkages between Taino, Maroons, Free Villages and plantation societies are best realized by analyzing the archaeological assets. Historical architecture and construction materials, grave designs and inscriptions, for example, are valuable primary record sources in reconstructing past events and associated filial linkages. They are also significant in establishing socio-economic, racial, ethnic and religious profiles. It is incumbent upon the developer to ensure that significant archaeological resources are safeguarded. The cumulative impact of mining in this regard has the potential to threaten the archaeological and cultural heritage research value of SML 173.

Authenticity

Though communities in the area have experienced significant changes throughout the centuries, their fundamental character

has withstood the test of time. Over an estimated 75% of the existing buildings are historical vernacular nog-wall structures. They vary from a single-room dwelling to two-storey shops, butteries, kitchens and outhouses. The clusters of vernacular nog-wall structures, including houses and graves, exemplify this indigenous type of architecture. It constitutes the largest and best-preserved ensemble of its nature in the island.

These deep rural communities are historically agrarian with about 80% of residents making their livelihood from agriculture, cultivating mainly yam and corn. Ninety percent (90%) of the traditional farming takes place in the adjunct bauxite-rich valleys. Across their multi-century interaction with the land, the ancestor has created a pleasant and uniquely sustainable cultural landscape. Their authentically sedentary way of life and the character of their settlement, handed down by generations, may be irreversibly disrupted by the proposed mining project. Some of the potential negative changes to their authentic cultural environment may include:

- Changes to their original community layout, location and traditional farming practice;
- Potential destruction of their progenitor's legacy which is oftentimes manifested in the historical and archaeological assets;
- Exposing the communities to incursion and adverse behavioural influences that result in increased crime and violence;
- Changes in cultural or traditional way of life.

The potential impacts aforementioned may be negative, major, long-term and irreversible.

Mitigation

The main mitigation measures to address potential negative impacts are as follows:

- Group Communities and insular archaeological sites into three clusters and place boundary delimitations around

them and have them designated Protected National Heritage by the JNHT.

- Where an isolated archaeological asset of high significance is located too far from a cluster, it must be delineated and protected under the JNHT Act.
- All archaeological resources outside communities must be clearly flagged and colour-coded indicating whether it is to be preserved or relocated.
- Where the declaration process of a site or an area is entrain no mining activity is allowed in that space as a Preservation Notice will be placed there by the JNHT.
- Under the JNHT Act, 1985, a Stop Order shall be placed on any work that is in breach the Act to protect and preserve heritage assets as National Monument or National Heritage.
- Where there are unreported accidental find of significant archaeological resources, the JNHT will place a Stop Order on development on the site in order to conduct its own investigation and recording of the find and a determination reached to preserved that find in-situ or ex-situ.
- A detailed recording of all sites determined to be altered or relocated must be done before work commences.
- Construction of service roads and other bauxite mining facilities are to be monitored by the JNHT.
- A schedule of construction works should be prepared and presented to the JNHT.
- The use of explosives is prohibited in the vicinity of sensitive archaeological assets designated protected National Heritage or in the process of being designated Protected National Heritage.



MADRAS, St. Ann

SOURCE: JNHT Sites and Monuments Record - 2019

1. INTRODUCTION

1.1 PURPOSE

The Jamaica National Heritage Trust (JNHT) has concluded an Archaeological Impact Assessment (AIA) on Proposed Bauxite Mining Area designated SML 173 in the parishes of Saint Ann and Trelawny which covers approximately 8400 hectares of land. Field Survey of the study area was done over a ten day period in two phases from June 24-28, 2019 and September 9-13, 2019 and entailed field walk and windshield survey; recording as far as possible the significant archaeological assets to be potentially impacted by proposed development. The study was commissioned by Noranda Jamaica Bauxite Partner II (Noranda); through Conrad Douglas and Associates Limited and is partial fulfilment of an Environmental Impact Assessment (EIA) for the project area.

On November 21, 2017, the Prime Minister, the Most Honourable Andrew Holness announced in Parliament, the areas to be designated as the preproposed boundary for the Cockpit Country Protected Area (CCPA). The Prime Minister indicated that Cabinet has adopted the Parris Lyew-Ayee Jr. (2005) boundary as the proposed boundary of the Cockpit Country. The proposed protected area includes the existing forest reserves, significant hydrological and ecological features and cultural and heritage sites. The area comprises approximately 74,726 hectares and will be referred to as the Cockpit Country Protected Area. The Prime Minister in his address, also requested that the portfolio Ministry with responsibility for Culture seek the nomination of the Cockpit Country Protected Area as a UNESCO World Heritage site. It is important to note that the proposed Special Mining Lease Area (SML 173) falls immediately outside the proposed Cockpit Country Protected Area.

The purpose of this report, therefore, is to present the findings of the AIA; to inform the pertinent decision makers, such as the State Party, The National Environment Planning Agency, The JNHT Board of Trustees, World Heritage Committee, other permitting agencies and departments, non-governmental organisations and the Cockpit Country Communities. The section on cumulated impact provides a summary of the potential impact on the property's OUV, authenticity and integrity.

1.2 BACKGROUND

In an effort to improve annual bauxite production from approximately 3.5 million dry metric tonnes to 5.2 million tonnes, the Noranda Jamaica Bauxite Partners II (Noranda) is proposing to establish a new mining area and operations in an adjunct location to the proposed protected site. The project area spans a Special Mining License area of approximately 8,400 hectares, contiguous with the proposed Cockpit Country Protected Area in eastern Trelawny/western St. Ann.

The areas in and around the Cockpit Country are rich in heritage assets: archaeological, historical, architectural, and ethnographical. These resources include a number of Taíno sites that date from circa 900 AD; as well as sites that cover significant periods of Jamaica's history. The varied ethnic groups that domiciled in the area, including the Europeans and African, helped to create a unique Jamaican culture. No significant Spanish period site, however, has not been identified, except with the possibility of the Spanish road leading from Martha Brae to Oristan passing through the region. There are a large number and assortment of Anglo-Jamaican (English) and Afro-Jamaican (African) sites. It should be remembered that some sites identified as English had African components, such as estates, whether as discreet entities like enslaved settlements. Sites relating to German and East Indian groups have been identified as well. The English sites however, include sugar and coffee works, pens, plantation houses, churches, forts and batteries, and lime kilns. The Afro-Jamaican sites include Maroon settlements and enslaved African Villages. During the post emancipation period peasantry flourished; hence a number of 'free' and other historic villages emerged. The area contains a plethora of interesting nog wall vernacular houses, grave yards and water tanks.

1.2.1 Site and Location

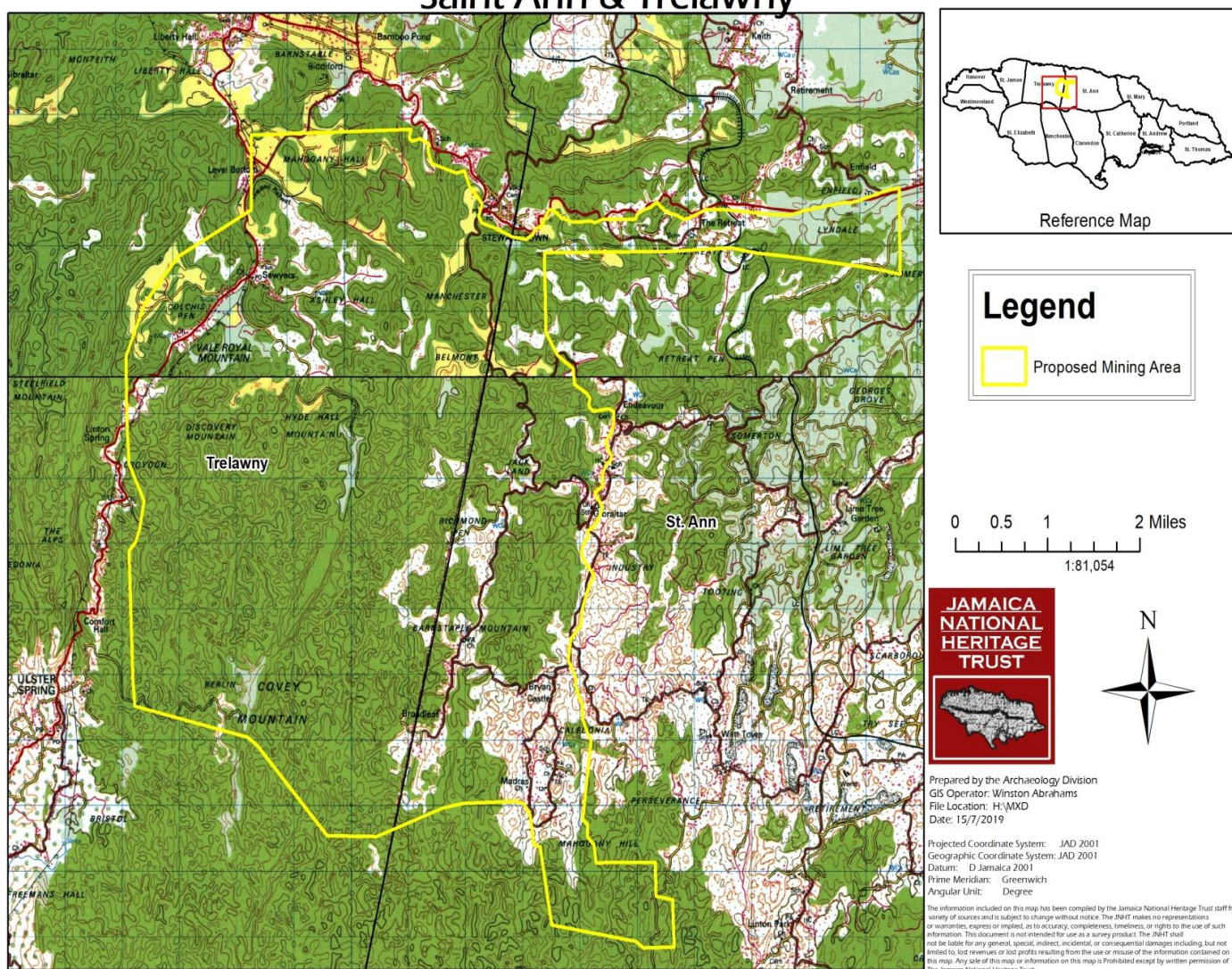
The proposed bauxite mining area (SML 173) is contiguous with the proposed Cockpit Country Protected Area to the east. It constitutes about 8,400 hectares of *karst* limestone landscape with a cornucopia of bauxite laden depressions varying in size and depth. Although, the site falls outside the proposed Protected Area the property appears to contain areas of Forest Reserve. SML 173

is bordered by Browns Town, Stewart Town and Liberty Hall to the north; Watt Town, Somerton and Industry to the east; Scarborough Mountain, Bristol and Ulster Spring to the south; Comfort Hall and Steelfield Mountain to the west. The property has an average elevation of 650 meters above sea level and occupies the eastern section of Trelawny and the western limits of St. Ann.

SIZE AND DELIMITATION OF SML 173

MAP 3.

Proposed Mining Saint Ann & Trelawny



Map 3: shows the SML 173 proposed bauxite mining area in sections of Saint Ann and Trelawny
Source: JNHT Sites and Monuments Record 2019

1.3 TERMS OF REFERENCE

In a meeting convened at the Office of Prime Minister (OPM), chaired by Minister Daryl Vaz, on June 26, 2018, with all key government agencies and departments to discuss the proposal, the JNHT was mandated to prepare a Terms of Reference (TOR) for a AIA. This TOR provides the framework for this study.

The formulation of this Terms of Reference for the Archaeology Impact Assessment is guided by ICOMOS's Guidance on Heritage Impact Assessments for Cultural World Heritage Properties and JNHT's Guideline for AIA.

1. **Introduction** – Identify the development project to be assessed and explain the executing arrangements for the AIA.
2. **Background Information** – Briefly describe the major components of the proposed project, the implementing agent and a brief history of the project.
3. **Study Area** – Specify the boundaries of the study area for the assessment as well as, any adjacent areas within the area of influence of the project and also briefly describe its OUV and or the preservation status.
4. **AIA Team** – Identify the individuals responsible for collecting the data and carrying out the Archaeological Impact Assessment and their respective skills.
- 5 **Scope of Work** – The following tasks will be undertaken:
 - Task 1. Desk-Based Assessment – (a) Research relevant historical documentations: maps, plans, estate accounts, correspondence, titles, and deeds; (b) Research published and unpublished narratives, studies and data sets of the study area, adjoining areas and associated projects; (c) Analysis of satellite images and aerial photographs.
 - Task 2. Site Survey – Conduct non-intrusive archaeological field survey in pursuit of base data collection. Artefact collection and analysis,

archaeological contexts interpretation and analysis and recording.

- Task 3. Description of the Proposed Project – Provide a full description of the project and its existing setting, using plans, maps and graphics. This is to include: location, general layout, pre-construction and construction activities, project lifespan, plans for providing utilities, waste disposal and other necessary services.
- Task 4. Description of the Project Area – Assembles, evaluates and presents baseline data on the relevant cultural heritage characteristics of the study area, including (a) Physical environment: geology, topography, soils and drainage system; (b) Biological environment: flora and fauna that have cultural implications; (c) land-use and community perception and attitudes towards the proposed project.
- Task 5. Legislative and Regulatory Considerations – Describe the pertinent regulations and standards governing land-use control, environmental quality, health and safety, protection of heritage assets, protection of endangered species, and tourism facilities, and the Town and Country Development Order.
- Task 6. Determination of Potential Impacts – identify the major issues of cultural heritage concerns and indicate their relative worth and weigh them against the importance of the proposed development. Distinguish construction and post-construction phase impacts, significant positive and negative impacts, and direct and indirect impacts. Identify impacts that are cumulative, unavoidable or irreversible.
- Task 7. Mitigation and Management of Negative Impacts – Recommend feasible and cost effective measures to prevent or reduce the significant negative impacts to acceptable levels.

- Task 8. Development of a Monitoring Plan – Present a plan for monitoring the implementation of mitigating measures during mining.
- Task 9. Determination of Project Alternatives – Examine alternatives to the project including the no-action option and alternatives involving reductions in the scale of the production.
- Task 10. Report - The Heritage Impact Assessment Report (HIA) is a concise collation of significant cultural environmental issues. Its main text focuses on the impact, mitigation and monitoring of the management plans. The report is organized into ten (10) sections as outlined below:
- Executive Summary
 - Introduction
 - Policy, Legal and Administrative Framework
 - Methodology
 - Description of Proposed Project
 - Description of Project Area
 - Impact Identification/Mitigation Strategies
 - Project Alternatives
 - Bibliography
 - Appendices

1.4 STUDY TEAM

A multidisciplinary team of specialists conducted this Heritage Impact Assessment (HIA) study and are enumerated as follows:

Selvenious Walters, M.A.- Principal Investigator – Specialist in Field and Analytical Techniques in Archaeology with over 25 years experience conducting Archaeological and Heritage Impact Assessments (AIA and HIA) on development projects ranging from highways, housing, hotel and power plant constructions. He is the co-author and investigator of the Blue and John Crow Mountains World Heritage Site Nomination Dossier (2015). Also he is the author of the Jamaica National Heritage Trust's Archaeological Code of Conduct, guidelines for (1) Archaeological Impact

Assessments; (2) Evaluation and Statement of Significance; and (3) Archaeological Evaluation.

Michelle Topping, M.A. – Historical and Pre-Historical Archaeology, specializing in intrusive evaluation and artefact analysis. She has managed one of the most comprehensive Taino archaeological evaluation projects (White Marl, St. Catherine) in Jamaica.

Winston Abrahams, M.Sc – Geographic Information System (GIS) and Disaster Management specialist who is responsible for spatial analysis, inventory and the mapping of identified heritage assets.

Deandre Dobson Wolfe, B.A. – Specializes in Field Archaeology and field survey.

Edward Coore - Artist / Illustrator

Darrington Ferguson – Conservation Lab Assistant

Richard O'Connor – Archaeological Field Assistant

Ryan Murphy – Archaeological Field Assistant

Clive Brooks – Archaeological Field Assistant

Ferdie Wright – Archaeological Field Assistant

1.5 METHODOLOGY

It is anticipated that a number of historical, archaeological and other cultural heritage assets will be impacted by the proposed development. To this end, a multi-faceted approach was employed to identify, inventorize and predict levels of impact.

1.5.1 Identification of Assets

1. Archival Research

This is a thorough review of all available written and graphic primary and secondary information relating to the area. It helps to identify the likely character, extent and relative quality and or quantity of actual or potential archaeological, architectural and ethnographic resources present. It includes relevant historical documents, journals and books, maps, plans, wills, deeds, ledgers, correspondence and other

contemporary data found in the nation's repositories such as the Island Records Office, National Archives, National Library of Jamaica, University of Technology (UTECH), University of the West Indies (UWI) and private collections. Websites were also consulted.

2. **Aerial Photograph / Satellite Image Analysis**

Both types of aerial images were analyzed with the view of detecting soil or vegetation anomalies or marks that may be indicative of buried archaeological features.

3. **Field Walk Survey**

In this technique, the investigating team spread across the site, combing the property from end to end in search of artefacts assemblages and other small features not identified by the previous techniques. Artefact assemblages are sometimes indicators of buried assets. The technique is very useful in identifying the location and presence of graves, undocumented Taino and enslaved African settlement and burial grounds.

4. **Interviews**

Interviews were conducted as another strategy employed to bridge the cultural heritage elements data gap. Community members were subjectively selected, in particular the older (senior) citizens, and asked about their recollection of the site's spatial attributes. This method was particularly helpful in identifying the locations of grave sites, desuetude vernacular buildings and plantation vestiges inundated by dense vegetation cover. It was also helpful in ascertaining the function and past adoptive reuse of some ruins; essentially it was useful to the researchers in understanding the diverse and complex cultural heritage profile of the property.

1.5.2 Base Data Recording

Archaeological assets in the various districts within SML 173 were identified and recorded using several methods. Sites and artefact assemblages were enumerated and described in the Field Survey Note Books and photographs and video were utilized to capture their status. Global Positioning System (GPS) was used to capture the location and a spatial distribution map was later generated. Members of the communities were interviewed to ascertain a historical and archaeological profile of each site. The information

collected will form part of the Cockpit Country Heritage Asset Inventory and subsequently incorporated into the National Inventory of Heritage Sites.

The areas where artefact assemblages were identified, samples were collected, studied, conserved, stored for future reference, and where necessary, displayed as part of the site's heritage assets.



PLANTAIN WALK (Gibraltar), St. Ann
SOURCE: JNHT Sites and Monuments Record - 2019



Broadleaf, St. Ann , Traditional method of preparing land for yam cultivation
SOURCE: JNHT Sites and Monuments Record - 2019

2. POLICY AND LEGISLATIVE FRAMEWORK

2.1 BACKGROUND

There are a number of pertinent policies, legislations, regulations and environmental standards of the Government of Jamaica (GOJ) relating to environmental protection that are applicable to any development and that a developer will need to consider when embarking on a particular scale and type of development. There are several government agencies mandated with the authority to control certain types of development that may have potential negative impact on the natural and cultural environment. The powers of control and regulation are typically exercised through a system of permits that include checks and balances on what kind and form of development can occur. A developer therefore, must be prepared to present, explain, and in some cases alter aspects of a development proposal in order to comply with the permitting requirements. This section therefore, highlights the relevant authorities, legislations and regulations that must be considered in order to acquire the necessary permit applicable to the development.

2.2 DEVELOPMENT CONTROL

2.3.1 **Building Act (2016)**

This act repeals to the Kingston and St. Andrew Building Act and the Parish Council Building Act and makes provision for the regulation of the building industry. This act facilitates the adoption and efficient application of national building standards to be called the National Building Code of Jamaica for ensuring safety in the building environment, enhancing amenities and promoting sustainable development and for connected matters.

The objectives of this Act are to:

- a) regulate the design, construction, maintenance, demolition, removal, alteration, repair and use of buildings and building works so as to protect the public's safety and health;

- b) give effect to the National Building Code of Jamaica;
- c) facilitate:
 - i. The adaptation and efficient application of internationally recognized building standards; and
 - ii. The accreditation of building products, construction, methods, building components and building systems;
- d) enhance amenities in general and require the construction of buildings that provide easy access and adequate amenities for persons with disabilities in particular;
- e) promote cost effectiveness in construction of buildings;
- f) promote the construction of environmentally and energy efficient buildings;
- g) establish an efficient and effective system for issuing building permits and certificates of occupancy and for resolving building disputes through alternative dispute resolution;
- h) regulate the standard of training and certification and provide for licensing of building practitioners and the recognition of building professionals who are regulated under other Acts; and
- i) establish a building and an appeal process.

2.2.2 Jamaica National Heritage Trust Act (1985)

The Jamaica National Heritage Trust Act of 1985 established the Jamaica National Heritage Trust (JNHT). The JNHT's functions outlined in Section 4 include the following responsibilities:

- To promote the preservation of National Monuments and anything designated as Protected National Heritage for the benefit of the Island;
- To carry out such development as it considers necessary for the preservation of any National Monument or anything designated as Protected National Heritage;
- To record any precious objects or works of art to be preserved and to identify and record any species of botanical or animal

life to be protected. Section 17 further states that it is an offence for any individual to:

- i. wilfully deface, damage or destroy any national monument or protected national heritage or to deface, damage, destroy, conceal or remove any mark affixed to a National Monument or Protected National Heritage;
- ii. alter any National Monument or mark without the written permission of the Trust;
- iii. remove or cause to be removed any National Monument or Protected National Heritage to a place outside of Jamaica.

2.2.3 Land Acquisition Act (1947)

Section 3 of the Land Acquisition Act (1947) empowers any officer authorized by the Minister to enter and survey land in any locality that may be needed for any public purpose. This may also involve:

- Digging or boring into the sub-soil;
- Cutting down and clearing away any standing crop, fence, bush or woodland;
- Carrying out other acts necessary to ascertain that the land is suitable for the required purpose.

The Minister is authorized under Section 5 of the Act to make a public declaration under his signature if land is required for a public purpose provided that the compensation to be awarded for the land is to be paid out of the:

- Consolidated Fund or loan funds of the Government;
- Funds of any Parish Council, the Kingston and St. Andrew Corporation or the National Water Commission.

Once the Commissioner enters into possession of any land under the provisions of this Act, the land is vested in the Commissioner of Lands and is held in trust for the Government of Jamaica in keeping with the details outlined in Section 16. The Commissioner

shall provide the Registrar of Titles with a copy of every notice published as well as a plan of the land. The Commissioner will also make an application to the Registrar of Titles in order to bring the title of the land under the operation of the Registration of Titles Act.

2.2.4 Land Development and Utilization Act (1966)

Under Section 3 of the Land Development and Utilization Act (1966), the Land Development and Utilization Commission is authorized to designate as agricultural land, any land which because of its "situation, character and other relevant circumstances" should be brought into use for agriculture. However, this order is not applicable to land, which has been approved under the Town and Country Planning Act for development purposes other than that of agriculture. Among the duties of the Commission outlined in Section 14 of the Act is its responsibility to ensure that agricultural land is "as far as possible, properly developed and utilized".

2.2.5 Main Road Act

The Main Road Act of 1932 details the legal basis for main roads and specifically looks at management, laying out of road, taking of lands, encroachment, offenses, lights and carriages, power to arrest and other legalities. In section 5 of this Act, it states that the Minister has the power to declare other roads or parts thereof to be main roads and to also declare that a main road is no longer such. The Chief Technical Director under the Minister's directive is responsible for the laying out, making, repairing, widening, altering, deviating, maintaining, superintending and managing main roads, and controlling the expenditure of allotted moneys.

2.2.6 Municipal Corporation Act

Under the Municipal Corporation Act each Local Planning Authority may revoke or alter regulation concerning the construction and restriction as to the elevation, size and design of buildings, built with the approval of the relevant Minister. It may also make regulations concerning the installation of sewers on premises.

2.2.7 Quarries Control Act (1983)

The Quarries Control Act of 1983 established the Quarries Advisory Committee, which advises the Minister on general policy relating to quarries as well as an application for licenses. The Act provides for the establishment of quarry zones, controls licensing and operations of all quarries. The Minister may on the recommendation of the Quarries Advisory Committee declare as a specified area, any area in which quarry zones are to be established and establish quarry zones within any such specified area.

Section 5 of the Act states that a license is required for establishing or operating a quarry though this requirement may be waived by the Minister, if the mineral to be extracted is less than 100 cubic metres. Application procedures are outlined in Section 8. The prescribed form is to be filed with the Minister along with the prescribed fee and relevant particulars. The applicant is also required to place a notice in a prominent place at the proposed site for a period of at least 21 days starting from the date on which it was filed.

2.2.8 Registration of Titles Act (1989)

The Registration of Titles Act of 1989 is the legal basis for land registration in Jamaica, which is carried out using a modified Torrens System (Centre for Property Studies, 1998). Under this system, land registration is not compulsory, although once a property is entered in the registry system the title is continued through any transfer of ownership.

2.2.9 Town and Country Planning Act

The Town and Country Planning Act provide the statutory requirements for the orderly development of land as well as guidelines for the preparation of Development Orders, stipulation for Advertisement Control Regulations, Petrol Filling Stations and Tree Preservation Orders. It establishes the Town and Country Planning Authority, which in conjunction with the Local Planning Authority are responsible for the land use zoning and planning regulations as described in their local Development Orders. The Town and Country Planning Act is administered by the National Environment and Planning Agency (NEPA).

2.3 ENVIRONMENTAL CONSERVATION

2.3.1 **Endangered Species (Protection, Conservation and Regulation of Trade) Act (2000)**

The Endangered Species Act deals with restriction on trade in endangered species, regulation of trade in species specified in the schedule, suspension and revocation of permits or certificates, offences and penalties, and enforcement. Many species of reptiles, amphibians and birds that are endemic to Jamaica but not previously listed under national protective legislation, or under international legislation, are listed in the Appendices of this Act.

2.3.2 **Flood Water Control Act (1958)**

The Flood Control Act of 1958 is administered by the National Works Agency and designates specific personnel with the responsibility of and the required power to ensure compliance with the legislation.

Any government department/agency or statutory body or authority appointed by the Minister may enter land in the flood-water control area to:

- Survey, measure, alter or regulate water courses, maintain or build tools required to undertake works;
- Clean watercourse or banks of such deposit where required;
- Construct, improve, repair or maintain floodwater works.

Wilfully or maliciously blocking, obstructing, encroaching on or damaging any watercourse, pipe or appliances used to execute works under the Act is an offence.

2.3.3 **Natural Resources Conservation Authority Act (1991)**

The Natural Resources Conservation Authority Act was passed in the Jamaican Parliament in 1991. This provided the basis for the establishment of the Natural Resources Conservation Authority (NRCA) with primary responsibility for ensuring sustainable development in Jamaica, through the protection and management of Jamaica's natural resources and the control of pollution. Sections 9 and 10 of the NRCA Act stipulates that an Environmental Impact Assessment (EIA) is required for new projects and existing projects undergoing expansion. The body is also responsible for investigating the effect on the environment of

any activity that may cause pollution or which involves waste management. Sections of the Act that relate specifically to pollution control state that:

- (i) No person shall discharge on or cause or permit the entry into waters, on the ground or into the ground, of any sewage or trade effluent or any poisonous noxious or polluting matter.
- (ii) No person is allowed to construct or reconstruct or alter any works designed for the discharge of any effluent.

The Act also empowers the authority to require of any owner or operator of a pollution control facility to provide information on the performance of the facility, the quantity and condition of effluent discharged and the area affected by the discharge of such effluent. The Authority has the right to consult with any agency or department of Government having functions in relation to water or water resources to carry out operations to:

- (a) Prevent pollutants from reaching water bodies.
- (b) Remove and dispose of any polluting matter or remedy or mitigate any polluted water body in order to restore it.

2.3.4 **The Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order (1996)**

The island of Jamaica and the Territorial Sea of Jamaica have been declared a Prescribed Areas. No person can undertake any enterprise, construction or development of a prescribed description or category except under and in accordance with a permit. The Natural Resources Conservation (Permits and Licenses) Regulations (1996) give effect to the provisions of the Prescribed Areas.

2.3.5 **Water Resources Act (1995)**

The Water Resources Act of 1995 established the Water Resources Authority (WRA). This Authority is authorized to regulate, allocate, conserve and manage the water resources of the island. The Authority is also responsible for water quality control and is required under Section 4 of the Act to provide upon request to any department or agency of Government, technical assistance for any

projects, programmes or activities relating to development, conservation and the use of water resources. It is the responsibility of the WRA as outlined in Section 16 to prepare, for the approval of the Minister, a draft National Water Resources Master Plan for Jamaica. Areas to be covered in this Draft Master Plan of 1990 included objectives for the development, conservation and use of water resources in Jamaica with consideration being given to the protection and encouragement of economic activity, and the protection of the environment and the enhancement of environmental values. Section 25 advises that the proposed user will still have to obtain planning permission, if this is a requirement, under the Town and Country Planning Act. In addition, Section 21 of the Act stipulates that if the water to be used will result in the discharge of effluents, an application for a license to discharge effluents will have to be made to the Natural Resources Conservation Authority (NRCA) or any other relevant body as indicated by the Minister. With regard to underground water, Section 37 states that it is unlawful to allow this water to go to waste. However, if the underground water "interferes or threatens to interfere with the execution or operation of any underground works", it will not be unlawful to allow the water to go to waste in order to carry out the required works provided that there is no other reasonable method of disposing of the water. The Authority also has the power to determine the safe yield of aquifers (Section 38).

2.3.6 Wildlife Protection Act (1945)

The Wildlife Protection Act of 1945 prohibits removal, sale or possession of protected animals, use of dynamite, poisons or other noxious material to kill or injure fish, prohibits discharge of trade effluent or industrial waste into harbours, lagoons, estuaries and streams, and authorizes the establishment of Game Sanctuaries and Reserves. Protected under the Wildlife Protection Act are six species of sea turtle, one land mammal, one butterfly, three reptiles and several species of birds including rare and endangered species and game birds.

2.4 PUBLIC HEALTH AND WASTE MANAGEMENT

2.4.1 Clean Air Act (1964)

This act refers to premises on which there are industrial works, the operation of which is in the opinion of an inspector likely to

result in the discharge of smoke or fumes or gases or dust in the air. An inspector may enter any affected premise to examine, make enquiries, make tests and take samples of any substance, smoke, fumes, gas or dust as he considers necessary or proper for the performance of his duties.

2.4.2 **Country Fires Act (1942)**

Section 4 of the Country Fires Act of 1942 prohibits the setting of fire to trash without prior notice being given to the nearest police station and the occupiers of all adjoining lands. In addition, a space of at least 4.5 metres (15 feet) in width must be cleared around all trash to be burnt and all inflammable material removed from the area. Section 6 of the Act empowers the Minister to prohibit, as may be necessary, the setting of fire to trash without a permit. Offences against this Act include:

- Setting fire to trash between the hours of 6.00 p.m. and 6.00 a.m. (Section 5a);
- Leaving open-air fires unattended before they have been completely extinguished (Section 5b);
- Setting fires without a permit and contrary to the provisions outlined in Section 6 (Section 8);
- Negligent use or management of a fire which could result in damage to property (Section 13a);
- Smoking a pipe, cigar or cigarette on the grounds of a plantation which could result in damage to property (Section 13b).

2.4.3 **Natural Resources Conservation Authority (Air Quality) Regulations, 2002.**

Part I of this Act stipulates license requirements and states that every owner of a major facility or a significant facility shall apply for an air pollutant discharge license. Part II speaks to the stack emission targets, standards and guidelines.

The Act states that no person shall emit or cause to be emitted from any air pollutant source at a new facility, any visible air pollutants the opacity or pollutant amount of which exceeds the

standards. Every owner of a facility with one or more air pollutant source or activity shall employ such control measures and operating procedures as are necessary to minimise fugitive emissions into the atmosphere, and such owner shall use available practical methods which are technologically feasible and economically reasonable and which reduce, prevent or control fugitive emissions so as to facilitate the achievement of the maximum practical degree of air purity. Under this Act a "major facility" is described as any facility having an air pollutant source with the potential to emit:

- (a) One hundred or more tonnes of any one of total suspended particulate matter (TSP);
- (b) Particulate matter with a diameter less than ten micrometres (PM10);
- (c) Sulphur oxides measured as sulphur dioxide (SO₂);
- (d) Carbon monoxide (CO);
- (e) Nitrogen oxides (NO_x) measured as equivalent nitrogen dioxide;
- (f) Five or more tonnes lead;
- (g) Ten or more tonnes per year of any single priority air pollutant; or
- (h) Twenty-five or more tonnes per year of any combination of priority air pollutants;

2.4.4 **The National Solid Waste Management Authority Act (2001)**

The National Solid Waste Management Authority Act (2001) is “an act to provide for the regulation and management of solid waste; to establish a body to be called the National Solid Waste Management Authority and for matters connected therewith or incidental thereto”. The Solid Waste Management Authority (SWMA) is to take all steps as necessary for the effective management of solid waste in Jamaica in order to safeguard public health, ensure that waste is collected, sorted, transported, recycled, reused or disposed of, in an environmentally sound manner and to promote safety standards in relation to such waste. The SWMA also has responsibility for the promotion of public awareness of the

importance of efficient solid waste management, to advise the Minister on matters of general policy and to perform other functions pertaining to solid waste management.

2.4.5 **Noise Abatement Act (1997)**

The Noise Abatement Act of 1997 was created in order to regulate noise caused by amplified sound and other specific equipment. This act has been said to address “some concern but is too narrow in scope and relies on subjective criterion” (McTavish). Given this, McTavish conducted a study to recommend wider and more objective criteria in accordance with international trend and standards, but tailored to Jamaica’s conditions and culture. To date, apart from the Noise Abatement Act (1997) Jamaica has no other national legislation for noise.

2.4.6 **Noise Standards**

Jamaica has no national legislation for noise, but World Bank guidelines have been adopted by the National Environment and Planning Agency (NEPA), and are used for benchmarking purposes along with the draft National Noise Standard that is being prepared. The guidelines for daytime perimeter noise are 75 decibels and 70 decibels for night time noise.

2.4.7 **Pesticides (Amendment) Act (1996)**

The Pesticides (Amendment) Act of 1996 amended sections of the principal act, which came into effect in 1975 and established the Pesticides Control Authority. This Act gives the Authority the responsibility of controlling the importation, manufacture, packaging, sale, use and disposal of pesticides. Section 11 states that the Authority is required to keep a register or record of all relevant information such as registered pesticides, restricted pesticides, pest control operators and persons licensed to import or manufacture pesticides. Under Section 16 of the Act, the Authority may also, with the approval of the Minister, make regulations which relate to areas such as:

- Aerial application of pesticides;
- Supervision required for the use of pesticides, the prescribed protective clothing to be worn and other precautionary measures;

- The permissible levels of pesticides to be used;
- The periods during which particular pesticides may or may not be used on certain agricultural crops;
- The disposal of pesticides and packages.

2.4.8 **Public Health Act (1976)**

The Public Health (Air, Soil and Water Pollution) Regulations 1976, aim at controlling, reducing, removing or preventing air, soil and water pollution in all possible forms. Under the regulations given:

- No individual or corporation is allowed to emit, deposit, issue or discharge into the environment from any source.
- Whoever is responsible for the accidental presence in the environment of a contaminant must advise the Environmental Control Division of the Ministry of Health and Environmental Control, without delay.
- Any person or organization that conducts activities which release air contaminants such as dust and other particulates is required to institute measures to reduce or eliminate the presence of such contaminants.
- No industrial waste should be discharged into any water body which will result in the deterioration of the quality of the water.

2.5 INTERNATIONAL LEGISLATIVE AND REGULATORY CONSIDERATIONS

2.3.2 **UNESCO World Heritage Convention 1972**

The World Heritage Convention was adopted by the General Conference of the United Nations Education, Scientific and Cultural Organization (UNESCO) in 1972 to protect internationally outstanding natural and cultural heritage from a number of threats; many of which not only persist, but have intensified to date.

Article 5 of the convention states that: To ensure that effective and active measures are taken for the protection, conservation and preservation of the culture and natural heritage situated on its territory, each State Party to this convention shall endeavour, in so far as possible, and as appropriate for each country:

1. To adopt a general policy which aims to give the cultural and natural heritage a function in the life of the community and to integrate the protection of the heritage into a comprehensive planning programme;
2. To set up within its territories, where such services do not exist, one or more services for the protection, conservation and presentation of the cultural and natural with an appropriate staff and possesses the means to discharge their function;
3. To develop scientific and technical studies and research and to work out such operating method that will make the State capable of counteracting the changes that threaten its cultural and natural heritage;
4. To take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage, and
5. To foster the establishment or development of national or regional centres for the training in the protection, conservation and presentation of the cultural and natural heritage and to encourage scientific research in this field.

Article 6 further states:

1. Whilst fully respecting the sovereignty of the State on whose territory the cultural and natural heritage is situated, and without prejudice to property rights provided by national legislation, the State Parties to this Convention recognize that such heritage constitutes a World Heritage for whose protection it is the duty of the international community as a whole to co-operate.

2. The State Parties undertake, in accordance with the provision of this convention, to give their help in the identification, protection, conservation and presentation of the cultural and natural heritage, if the States on whose territory it is situated so request.
3. Each State Party to this Convention undertakes not to take any deliberate measure which might damage directly or indirectly the cultural and natural heritage situated on the territory of other State Parties to this Convention.

2.5.2 **Convention on Biological Diversity**

The objectives of the Convention on Biological Diversity are "the conservation of biological diversity, sustainable use of its components and the fair equitable sharing of the benefits arising out of the utilization of genetic resources". This is the first global, comprehensive agreement which as its focus, all aspects of biological diversity: genetic resources, species and ecosystems. The Convention acknowledges that the "conservation of biological diversity is a common concern of humankind and an integral part of the development process". In order to achieve its goals, the signatories are required to:

- develop plans for protecting habitat and species.
- provide funds and technology to help developing countries provide protection.
- ensure commercial access to biological resources for development.
- share revenues fairly among source countries and developers.
- establish safe regulations and liability for risks associated with biotechnology development.

Jamaica's Green Paper Number 3/01, entitled *Towards a National Strategy and Action Plan on Biological Diversity in Jamaica*, and speaks to Jamaica's continuing commitment to its obligations as a signatory to the Convention.



CUDJOE CAVE, Sawyers, Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

3. PROJECT DESCRIPTION

The proposed project is concerned with the mining and transportation of bauxite ore and will consist of three fundamental phases:

1. Land clearing for ore access and to access road construction.
2. The mining of bauxite from the ore bodies and transportation of bauxite to already existing loading areas.
3. The reclamation of the mined-out lands.

In Phase 1, vegetation cover from bauxite-laden depressions will be removed and roads constructed to access each depression. The vegetation cover constitutes secondary plant growth such as grass, shrubs and exiguous trees. Most of these are remnants of pen or plantation ruins. According to the developer's proposal, the vegetation cover on the limestone hillocks will remain undisturbed. Access roads will be carefully cut and constructed through gaps to



Plate 1: The image shows a bauxite ore rich valley at Hyde Hall Mountain in SML 173. In the background, dense vegetation covered isolated conical limestone hills are visible. A series of these hills surrounds the depression. The depression is currently used by farmers to plant large acreage of yam and corn with some animal rearing.

ensure as far as possible the preservation of the primary vegetation cover.

During road construction, bore holes will be drilled in the limestone rocks and stuffed with explosives and detonated to clear highly resistant limestone rock barriers. Where necessary the limestone debris will be utilized as foundation material in the road construction.

In Phase 2, mining and transportation entails open-pit excavation of bauxite from identified ore bodies found in numerous depressions varying in size and depth throughout the area. Heavy duty tractors, excavators and trucks will be employed to remove ore deposits from the depressions.

A programme of land reclamation is planned for mined-out lands in Phase 3. A prescribed depth of fertile soil is scheduled to replace the displaced ore. The objective of this action is to facilitate and encourage cultivation of crops and the rapid regeneration of natural vegetation.



Dunn's family graves, (Alps), Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

ALPS Great House ruin, Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019



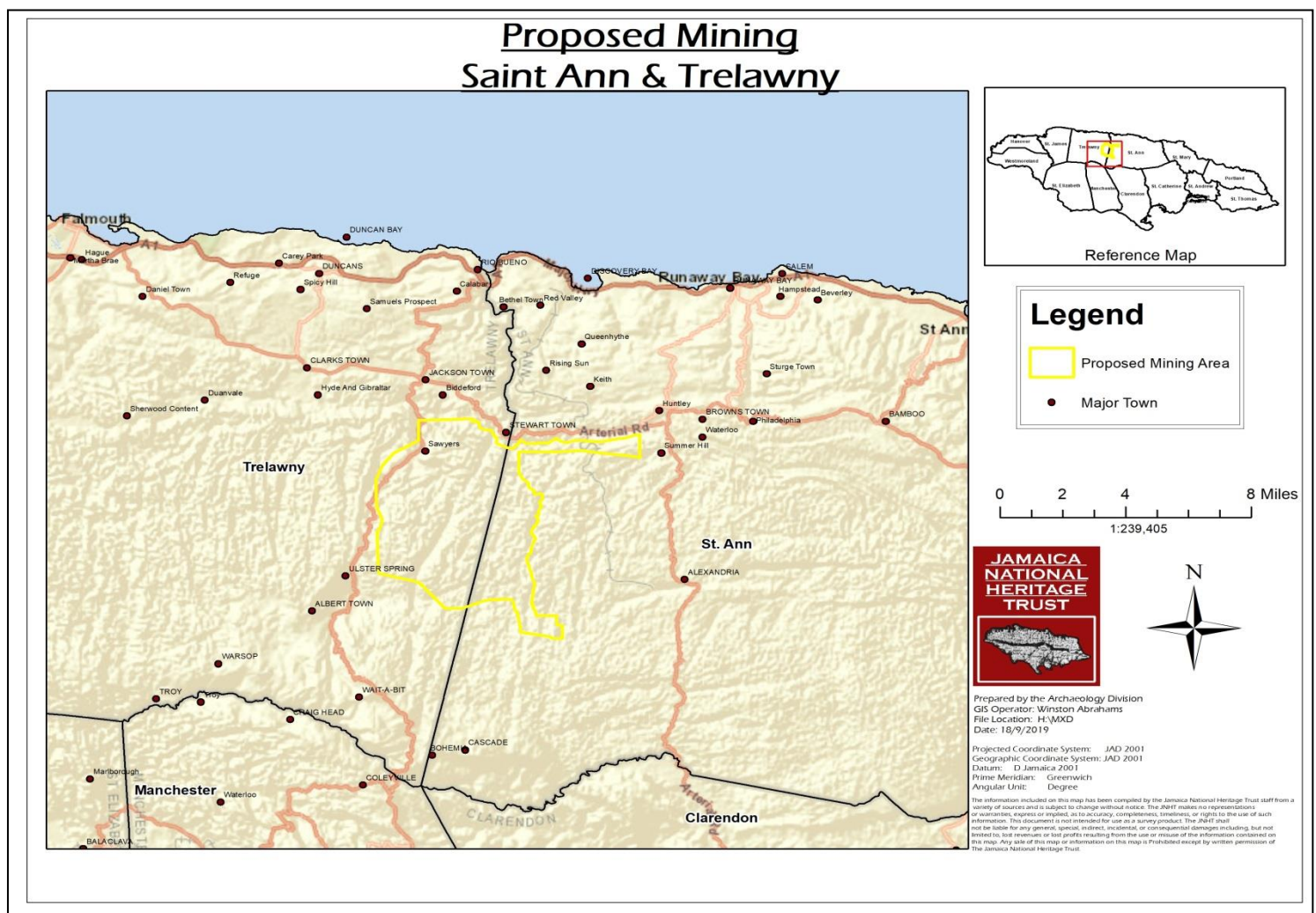
4. DESCRIPTION OF STUDY AREA

4.1 LOCATION

The proposed bauxite mining area SML 173 is located in the north western part of the island approximately 22 kilometers southeast of Falmouth, 3 kilometers southwest of Brown's Town, 8 kilometers west of Alexandria and Discovery Bay is about 12 km to the north. It is situated immediately northeast of the proposed Cockpit Country Protected Area in western Trelawny and east St. Ann. The Parish boundary obliquely divides the proposed mining area in two from north to south.

SML 173 LOCATION

MAP 4.



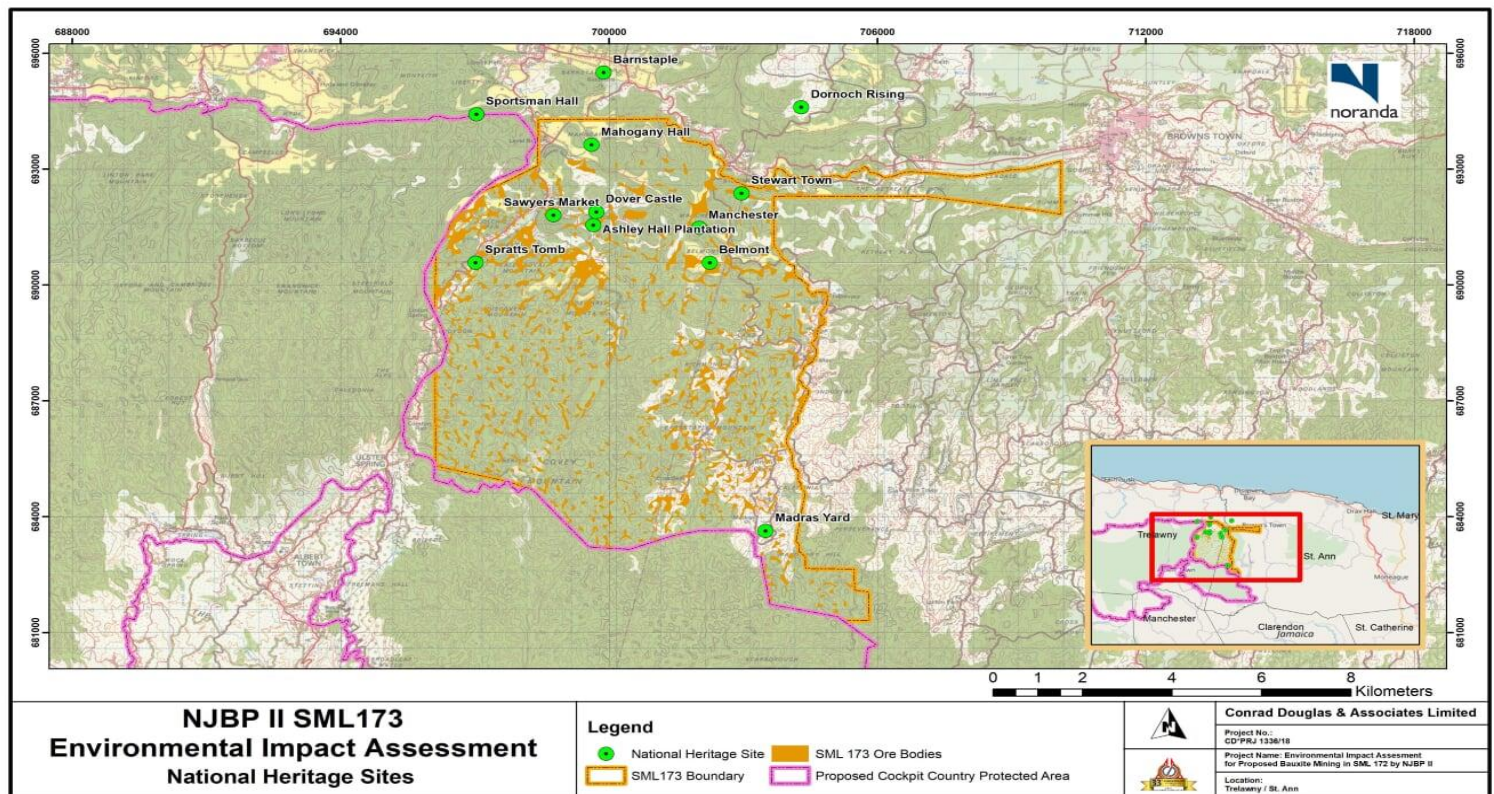
Map 4: Proposed mining Area (SML 173), St. Ann & Trelawny
Source: JNHT Sites and Monument Records, 2019

4.2 TOPOGRAPHY

The site is about 8,700 hectares in dimension; occupying a section of the peculiar geomorphological landform of the Cockpit Country. The natural beautifully carved karst limestone topography is rife with juxtaposed depressions and rugged limestone crests amid exiguous caves, caverns, sinkholes and all the other morphological features associated with karstification.

SML 173 Karst Topography and Bauxite Ore Deposits

MAP 5.



Map 4: Proposed mining area, karst topography & bauxite ore deposits
Source: JNHT Sites and Monument Records, 2019

Map 4 above highlights the proposed mining area SML 173 on a topographic, contour map which demonstrates the rugged terrain of the area. It also identifies the myriad pockets of bauxite ore deposits throughout the site; which, by JNHT estimate, accounts for approximately 25% of the total designation.

4.3 VEGETATION

For the most part, vegetation cover may be described as mixed natural and cultural growth. Nearly all the rugged limestone crests are covered with natural Tropical Marine Limestone Forest vegetation. It provides the numerous communities with the necessary resources that sustain them for centuries. Timber is fundamental for the construction of houses and other structures. Harvesting 'Yam Sticks' is a cottage industry in itself; as most farmers purchase these sticks wholesale from venders. 'Yam Stick' is critical for the cultivation of yam, which is the main staple and

crop grown. Traditional to the area, some plants are highly valued for their medicinal properties which also sustains a cottage industry.



Plate 2: A recently constructed nog wall house using wood from the forest as supporting frame and fabrication of doors and windows. The structure was built on the foundation of a similar type of historical house. The stone steps and foundation are testimony to the former historical structure.

In the bauxite ore laden depressions, the vegetation supported there is, for the most part, a variety of grass punctuated by isolated trees or small cluster of trees which are the remnants of ruinate pastures. Where water tables appear close to the surface, bamboo plants thrive. Traditionally, these grasslands are used for the cultivation of cash crops, mainly yam and corn.



Plates 3 and 4: The image above (Plate 3) shows a depression in Sawyers cultivated with yam and banana. Sticks are widely used to support yam vines. The uncultivated area in the foreground dominated by grass while the hillocks in the background is covered by forest vegetation. Plate 4 however, highlights a small depression in Alps that is cultivated with corn and banana. The hillock in the background is inundated by a wide variety of forest plants.

4.4 LAND USE

Over several centuries of occupation, a peculiar land-use pattern emerged throughout the area. Settlers used the less fertile limestone hillocks for the establishment of villages, plantation domaciles and works facilities. The arable depressions were reserved for crop cultivation and animal grazing. Today, this general land-use pattern prevails.

After emancipation, villages developed and population in the area increased, some villages sprawled into small contiguous depressions and hillocks where families interred their deceased relatives to the front, back or side of their homes. Nearly all historical graveyards in villages are extant. They are sheltered by a grove of fruit trees and sometimes adjunct to small yam, corn, vegetable or banana fields.

Harvesting of sticks from the hillock forests to support yam vines is so widespread that it has evolved into a cottage industry. In addition, the diverse plant population found in the area has also supported a vibrant herbal medicine industry.

4.5 HISTORICAL/ARCHAEOLOGICAL BACKGROUND

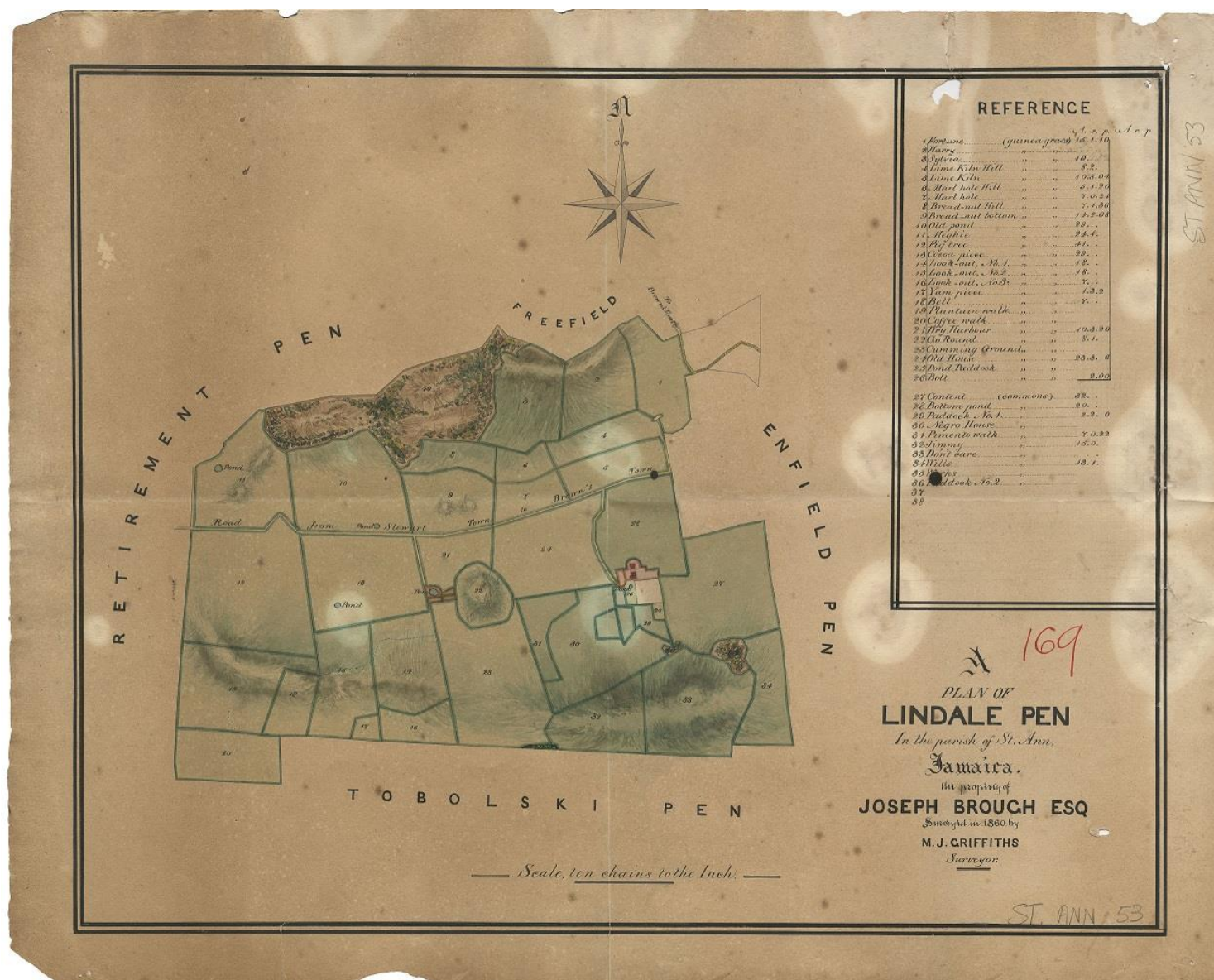
4.5.1 Lindale/ Lyndale

Lindale was one of the many pens located within close proximity to the lands now known as Brown's Town, the major commercial district in that area. James Robertson's 1804 map shows the Brown's Town area as being 'Mr. Alexander's land'. By 1811, the Property changed hands and ownership was passed on to John Bainbridge whose assets amounted



Plates 5 and 6: Plate 5 at top captures the dilapidated edifice of Lindale Great House and plate 6 below it shows an adjoining field of corn and grass. A conical hillock in the background towers over the depression.

to 72 slaves and 231 stock. In 1817, the slaves and stock increased to 106 slaves and 252 stock and the heirs of Bainbridge inherited the property in 1824 showing an increase in the slaves and stock to 121 and 304 respectively. An 1807 survey by Bell and Weightman indicates that coffee and pimento were products of this Pen. Guinea Grass and provisions were also produced. An 1860 survey conducted by M.J. Griffiths indicated that Lindale was owned by Joseph Brough Esquire (See plan 1 below). The 1912 List of properties indicates Lindale Pen constituted 611 acres and owned by L. Simons; valuing at £2200 and in 1920 the acreage remained at 611 valuing £2500 and now owned by Alfred T. Simons. In 1930, the same indicates that Lindale was 610 acres and continued to be owned by Alfred T. Simons with the value increasing to £2700. The general use of the pen was that of cattle rearing.



Plan 1: Plan of Lindale Pen, St. Ann in 1860
Source, The National Library of Jamaica.

4.5.2 Retreat

The Retreat Pen is located west of the Lindale Estate in St. Ann. There are several known Taino sites located within this area. Taino kitchen middens situated on over an acre of land were reported at Cacique's Ridge on this property as early as 1897 by James Edwin Duerden, who was a Curator of the Natural History Museum at the Institute of Jamaica (IOJ) from 1895-1901. According to Duerden, this was reported by Miss Moulton Barrett. The middens, when excavated revealed bones of the Indian coney (*Geocapromys brownii*), fish bones, broken land and marine shells, and coarse earthenware pottery. In 1913, Dutch-born American Archaeologist Theodoor Hendrik Nikolaas de Booy mapped 16 middens in Retreat four of which he excavated and studied. Additionally, he found earthenware; boat-shaped pots with banded edges and decorated handles, griddles and celts. Another of the middens was excavated by Marian de Wolf in 1933 and she recovered an ornament made from a crocodile (*Crocodilus acutus*) tooth. Mr. Francis Osborne SJ OD, also conducted excavations at this location. The coordinates given for the Taino site is 206600 E and 190000 N Series 1 Sheet 7 (77° 25' 40 and 18° 22' 40).



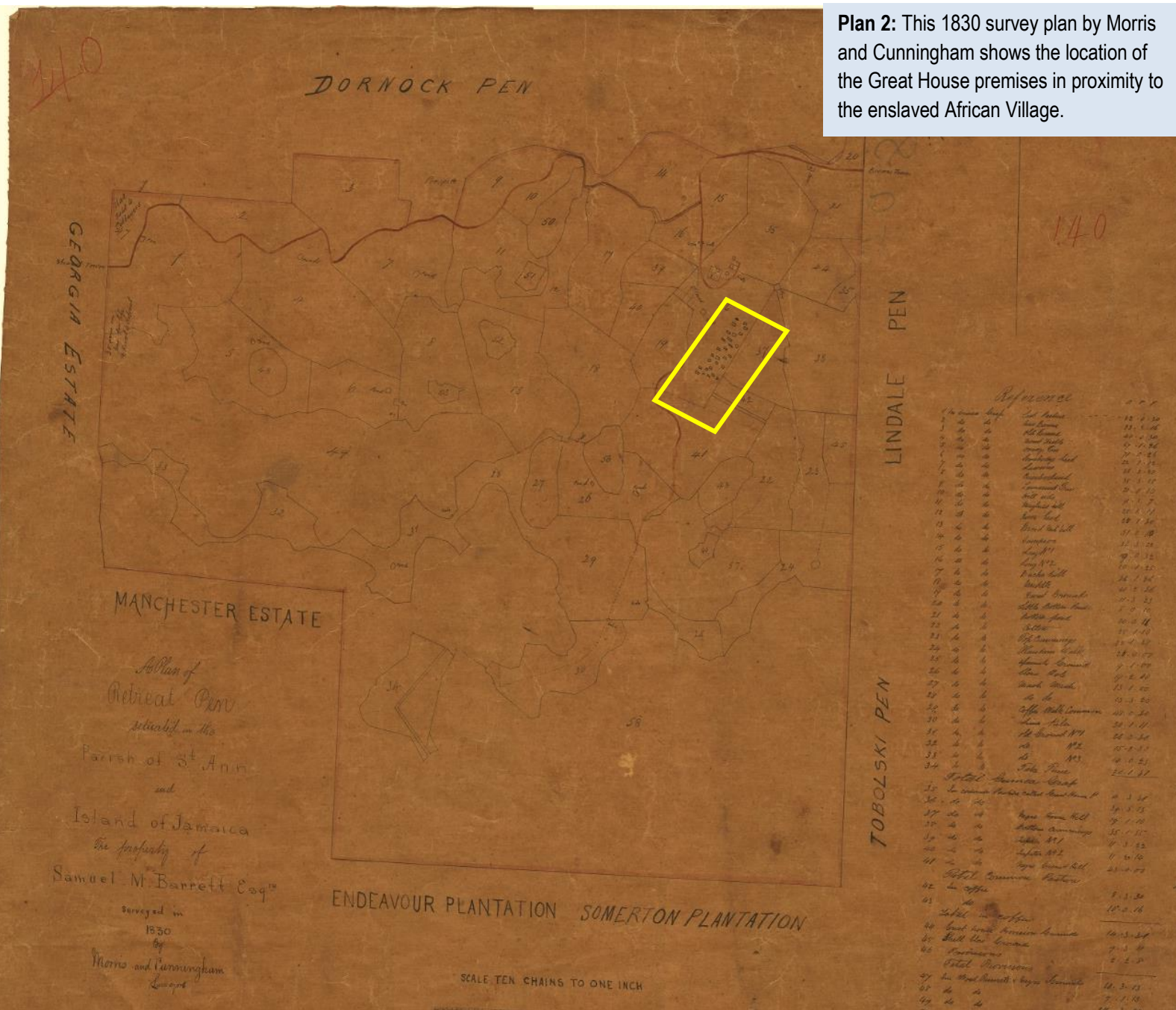
Plate 7. Image of Retreat Pen Great House site at the time this survey was conducted. A modern structure was constructed on a section of the Great House foundation. Before the modern building is an animal mill that has been converted into a cutstone water tank. What appeared to be the stable is now renovated and adopted for storage. The only unaltered extant historical structure is a small nog wall house occupied by an employee of the property.

Retreat Pen was in the possession of several members of the Barrett family. In December 1793, George Goodin Barrett and MHA St. James, bought this estate which amounted to 1,200

acres. After Barrett's death in 1795, the property was inherited by his father, Edward Barrett who also became deceased by 1798.

James Robertson's 1804 map indicates that the Barretts were still in possession of the property at that time. In 1817, Samuel Moulton Barrett owned the estate with 147 slaves and 408 stock and in 1824 with 182 slaves and 537 stock. An 1830 survey conducted by Morris and Cunningham indicates that the Retreat Pen was still the property of Samuel M. Barrett Esquire.

Plan 2: This 1830 survey plan by Morris and Cunningham shows the location of the Great House premises in proximity to the enslaved African Village.



The plan above gives an outline of the pen's layout and uses. There were several ponds, a plantain walk, coffee and other uses beside

its predominant role of being a cattle pen. The plan clearly shows the location of the Great House along with other buildings, the remnants of which were witnessed during the June, 2019 Archaeological survey. In close proximity to these structures was the slave village highlighted in yellow.

Sturge & Harvey visited on 25 February, 1837, and wrote: *“In the course of the morning we rode over to the Retreat Pen, belonging to S.M. Barrett, an estate of great extent and beauty, being several miles in length and depth, and comprising both pasture and mountain woodland. It is managed by a black overseer, named Samuels, who was born a slave on one of the estates of his present master. He is now free, and though he can neither read nor write, the property under his charge is in the finest order, and the people in the best discipline. ... We walked with the overseer through the negro village. The houses are comfortable, and many of them of considerable size, and situated in the midst of neat gardens. They had shingled roofs, and cement or boarded floors. ... They all appeared to be in prosperous condition. Most of the married people had large families. ... After leaving the village, we met many of the people returning from their provision grounds with heavy baskets, and some with mule-loads of provisions, which were either for sale in the market, or were for their own use during the ensuing week. They appeared respectable, intelligent, and contented”*.

A school was started by Mrs Barrett and from 1833, the Rev. Hope Masterton Waddell (1804-1895), a Scottish missionary, would visit and preach with most of the congregation from William Knibb's Baptist church in **Brown's Town** which had been destroyed after the 1832 rebellion. Waddell's 19-year-old daughter also ran an estate school attended by all the older free children and a few apprentices. In 1844, this 2,240 acres estate was owned by Edward Barrett Moulton-Barrett. It was inherited by his son Charles John (Stormie) Moulton-Barrett. The Rev. Fr. Joseph Sidney Woollett SJ, built a chapel near the Great House and provided a base from which Catholic missionaries were able to evangelize in western Jamaica.

An advertisement in the **Gleaner** of 10 Mar 1893 reads: *“In the matter of the estate of Charles John Moulton Barrett, owner: FOR SALE BY AUCTION: ... THE RETREAT, a grazing pen of 2,189 acres more or less, approximately in Guinea grass 800 acres, common and pimento pastures 510 acres, coffee 9 acres, provision grounds to tenants 67 acres, the balance in roads, woodlands, etc. ... the*

residence is commodious with gardens, out-buildings and barbecues, all in fair order". In 1897, when Retreat was sold, Fr. Abraham Joseph Emerick SJ, moved the mission to **Brown's Town**. In 1897, Retreat was owned by Mr. Roper.

The 1912 List of Properties indicates that Retreat was 2,194 acres and owned by Rev. J. P. Hall which was being used as a cattle pen and for banana cultivation. By 1920, the Estate was owned by S.M. Fisher with the acreage remaining the same and the value being £6500. In 1930, the land was owned by Sidney Smith, showing a decrease in an acreage of 2,187 acres, valued at £6250 and being used for a cattle pen.

4.5.3 Gibraltar

Gibraltar is an adjoining property to Endeavour. Coffee was also introduced to this area by Scotsman John Alexander, the great Empire patriot. This district changed ownership several times



during the 19th century. The property was owned in 1810 by the heirs of William Crouch with 32 slaves and 41 stock later owned in 1817 by Arthur Samuel with 12 slaves and 5 stock, then owned in 1831 by the heirs of James Betty with 21 slaves and 252 stock. The List of Properties indicates that Gibraltar property's primary use was wood and ruinate. It was 50 acres in 1912 and owned by Luther Barrett. An additional 70 acres was also in the hands of Francis Taylor and by 1920 the acreage was 108 with the owner being Richard Thomas and valued at £150. The communities of Plantain Walk and Jackland are small neighbouring communities that are in close proximity to Gibraltar. Plantain Walk is significant as most estates consisted of a plantain walk within the estate as seen on the



Plates 8 and 9: The top photo illustrates a small nog wall house and the image below shows a historical grave yard.

plans for Retreat Pen and Lindale Pen. Plantain was the main staple for the Negro population rather than bananas. In 1751, Thomas Thistlewood's estate overseer for Egypt, in St. Elizabeth in his diary indicates that Phibbah the chief domestic slave showed him the local cuisine which included plantain tart which was explained to be just like apple pie.

4.5.4 **Endeavour**

Endeavour is a small community in St. Ann which sits between Gibraltar in St. Ann and Stewart Town in Trelawny. It was a Free Village which took its name from the originating estate property. In 1879, it was 320 acres and owned by H. Niven. By the early 20th Century the general area was in wood and ruinate. In 1912, 65 acres of Endeavour was in the ownership of H. McHugh whilst 102 acres was in the possession of E.M. Anderson and valued at £100. In 1920, H. McHugh Est. is listed as the proprietor of 65 acres worth £120.



Plate 10: The image illustrates a section of Endeavour. Like all the districts found in SML 173; nearly all the extant and desuetude buildings are constructed with nog wall or cutstone material.

Another 73 acres was now owned by V. M. Coore with this portion being chiefly residential. By 1930, 80 acres of Endeavour Estate was owned by Samuel McHugh and worth £150. V. M. Coore's portion, by this, had increased to 92 acres, valued at £300 and its use remained primarily residential. The St. James Anglican Church was built in 1879.



Plates 11 and 12: The photograph above (plate 12) shows the well-maintained Endeavour Anglican Church which was constructed with cutstones. Plate 13 below portrays a depression cultivated with several acres of corn surrounded by conical hillocks blanketed by dense forest vegetation.

4.5.5 Madras

Madras is located in St. Ann between Mahagony Hill and Bryan Castle. Coffee was introduced to this area by pioneer, Scotsman John Alexander. This is evidenced by the remnants of the coffee pulpers and barbecues which were observed at the Madras Great House (“Madras Yard”). The property was owned in 1824 by William M. Johnston who was in possession of 29 slaves with no stock. By 1912, Madras had four different proprietors; these are Geo Wilson who owned 56 acres, J. Sawyers owning 55 acres, J Gibbs owning 64 acres and D. H. McLachan who was in possession of the largest parcel, 165 acres. All these were residential parcels. By 1920, 56 acres was now owned by Thomas Wilson and valued at £120 with the land being in ruinate, Fifty five (55) acres was in the possession of Olivine Sawyers and valued at £100 with land use remaining residential, James Wilson now owned 50 acres valued at £50 with the land being in wood and ruinate. A parcel of 165 acres was now owned by Richard Walker and also in wood and ruinate. In 1930, 50 acres of Madras was owned by James Wilson and valued at £60 and in wood and ruinate. 165 acres was in the ownership of Richard and Aezekiak Walker and was also in wood and ruinate.

Plate 13: The remains of coffee works, barbecue and cutstone water tank and Great House at Madras Yard.



4.5.6 Hyde Hall Mountain

Hyde Hall Mountain in Trelawny was the woodland associated with Hyde Hall Estate. The Hyde Hall plantation produced cane and occupied the plains and undulating lands near the coast while the Negro provision grounds were situated in the mountain woodlands of the interior at distances varying from three up to twenty miles



Plate 14: This large, elongated depression in Hyde Hall Mountain has large tracks of land cultivated in yam while some areas are reserved for the grazing cattle and other animals. The image shows some areas being prepared for yam cultivation.

from their home. According to Barry Higman, the planters saw the woodlands as an adjunct to their properties. These mountain areas were usually the first to be subdivided and sold. In 1912, Hyde Hall Mountain was 1,800 acres, valuing at £800 and owned by Campbell, Curtis and Company. Its use was described as being wood and ruinate and rented to tenants while the main estate, Hyde Hall, was 1,640 acres valued at £5000 also owned by Campbell, Curtis and Company and was used as a Sugar Estate. In 1920, Hyde Hall Mountain remained at 1,800 acres valuing the same as 1912 and its use was woodland, tenants and canes. By 1930, however, the land was 1,800 acres valuing at £1000 and now owned by M.L.

Veira. The use changed somewhat to tenants and bananas.

4.5.7 **The Alps**

Alps was referred to as the Valley of the painted rocks. It was owned in 1810 by Jasper Graham who had 23 slaves and 1 stock. It was later owned by Emily D. Campbell with 29 slaves and 15 stock in 1831. By 1840, it consisted of 551 acres and belonged to Emily D. Campbell. The Alps is situated 2,246 feet above sea level.



Plate 15: The district of Alps may have derived its name from the picturesque limestone morphological panorama which bears some resemblance to the Alps Mountain in Europe.

There is no reference to the Alps on the 1804 James Robertson's map. Alps became a free village and the Baptist missionary under the leadership of Reverend Bull Dexter who commenced work in Alps and utilized an old coffee house as a place of worship in 1835. A school was also commenced in 1839 and at a later date a chapel was constructed on the same premises along with a mission house. Both were done at a total cost of £1100.

Plate 16: The well-preserved Alps Baptist Church constructed with cutstones overlooks the Alps community. The church is augmented by a community training centre.



In 1859, the Rev. Edward Bean Underhill visited and wrote: “*The Alps’ is one of the villages that sprung into existence soon after emancipation. The land was purchased by the Rev. B.B. Dexter, and laid out into about One Hundred building lots for the village, and Two Hundred other lots for provision grounds*”. The Quakers Thomas Harvey and William Brewin visited in 1866 and wrote: “*A few miles more of steep mountain road brought us to the Alps, a magnificent amphitheatre of precipitous mountains, wooded from base to summit. On one of the lower knolls stood a neat Baptist chapel and dwelling, the station of Patrick O’Meally, a native minister. Near it are many good peasants’ houses, all or most of which were closed. It appears that soon after emancipation the land hereabouts was sold out to the people, but notwithstanding the beauty and apparent luxuriance of the scene, the soil proved rocky*

and unproductive. The people therefore, had gone several miles further into the interior, tempted by the opportunity of renting and buying land of extraordinary fertility. We found but Seventeen children in the school, and the small attendance was said to be owing to the claims of the ginger crop, now being gathered in, on the children's labour. Most of these scholars and their master had come three or four miles from the aforesaid land of plenty, so it seemed plain to us the sooner the school and chapel migrated after the population the better". Alps is said to have Seven caves, Two springs, a lake and a river.



Plate 17: The Alps Baptist Church is perched on a limestone hillock but seems dwarf by the much larger adjoining limestone hillocks that surrounds it.

4.5.8 **Sawyers**

Sawyers is situated between the Alps and Jackson Town. It is also referred to as Sawyers Market or John's Field and received the name of its early owner. In 1882, Sawyers was 50 acres and was owned by A S Forsythe. One of Harrison's 188X map gives Sawyer's Market as belonging to the heirs of William Sawyer.

Methodist missionary the Rev. Henry Blaine Foster (d. 1884) wrote: "*at Sawyers Market in Trelawny, a humble dwelling had been for some years rented as a preaching-place; but it was the pleasing privilege of the writer (although with some difficulty in raising the means), after buying the land, and laying the*

foundation-stone in 1845, to erect a chapel, which he had the gratification of opening on the 1st August 1848, with a large and interesting congregation in attendance". Edward Bean Underhill (1813-1901) visited in 1859 and wrote: *"we reached Sawyer's Market, a considerable settlement, having a small Wesleyan chapel, standing by the roadside".* A sign on the present Methodist church by the roadside identifies it as being founded in 1882. During the Great Revival of 1860-1861, even the local "King of the Obeahmen" joined in the church prayer meetings, unlike other places where they were disruptive. There is a cholera cemetery in the community. A cave in the district is named after the Maroon leader, Cudjoe. Taíno pottery sherds have been recovered from this cave. Ruins of brick ovens may be seen in the district.



Plate 18: The Old Sawyers Village site is identified by the numerous stone houses and shop foundations along the the old road; now reduced to a dirt track. The area is littered with ceramic pottery sherds, cut nails, metal fragments of iron pots, barrel straps, farm tools and artesian tools. It is said that this desuetude village is the location of a cholera burial ground.

4.5.9 Richmond Pen

As early as 1784, Richmond Pen is seen on a survey plan conducted by Rob Rosendall. Thomas Harrison's 1888 map clearly outlines Richmond Pen as a large property which adjoins Barnstaple Mountain, a smaller property in acreage. An 1812 survey conducted by Bell, Greene and Mclaughlin outlines Richmond Pen with a sketch of the Great House



Plates 19- 20: Richmond Pen Great House(Cutstone Building) and a panoramic view of the Great House overlooking the grazing lands.



which is a sturdy two storey cut stone structure perched on a hillock and exhibits a commanding view of the pasturelands in the immediate depression. It is also one of two historical structures which is still in use. In 1845, the property was owned by C. Williams and it was 3,700 acres. In 1879, this property was 3,452

in acreage. By 1892, Henry Sewell, who can be described as a quadroon, was in ownership of the property with a decrease in the acreage to 3,000 acres. The 1912 List of Properties outlines that the property was owned by C. E. Gordon and the land was used for cattle grazing. The property was then valued at £1500. By 1930, the acreage increased and the value catapulted to £3500. At this point, it was being used for tenants, residential and pimento.

In 1940, the Government of Jamaica purchased 1,269 acres which was utilized as a land settlement scheme. A catchment tank and two ponds were created for this housing scheme. A forest reserve was also established using 211 acres from the lands purchased by the government while 1,011 acres was sold at £4 an acre. The cut stone great house still stands prominently on a hillock. The settlement which follows in close succession to Richmond Pen is Jackland which was seen on Thomas Harrison's 1888 map is not in existence however, is now on the land which once formed Richmond Pen.

4.5.10 **Jackland**

The community of Jackland is a small settlement. On Thomas Harrison's 1888 map, Jackland is not depicted however, the community is now reflected on lands which formed Richmond Pen (1:50000 map of St. Ann). It is possibly the housing development which was formed by the government when the Richmond Pen lands were purchased.



Plates 21-22: Images of small but beautiful vernacular nog wall houses in Jackland .

4.5.11 Covey Mountain

Covey Mountain is on lands between Wait a Bit and Stewart Town in Trelawny. The 1920 List of Properties, lists Covey Mountain and Good Hope Mountain together as being in woodlands and owned

by the Government of Jamaica. The acreage was 2,541 and valued at £500. This essentially is the woodland which is associated with Covey Estate and would have been the slave provision grounds.



Plates 23-24: Images of Covey Mountain's majestic hillocks and Great House ruin. Associated features not shown are a series of barbecues, cutstone water tanks and pack stone boundary wall. The main building appears to have been abandoned in recent times. The structure can be easily restored. Its architecture is typical of most Great Houses found in SML 173.

4.5.12 Barnstaple Mountain

Barnstaple Mountain is a village/property between Richmond Pen and Broadleaf. This is the woodland or slave provision grounds



associated with the **Barnstable** property estate in Trelawny. The List of Properties for 1912 indicates that Barnstaple Mountain was Eighty Two and a half acres valued at £150. The 1920 List of Properties however, indicates a decrease in the land size to Sixty-Six and a half acres and valued at £150, owned by Flora Wiggan and being utilized as a cattle pen. By 1930, the land had decreased to Sixty Two and a half with a new value of £76 and still owned by Flora Wiggan.



Plates 25 – 27: Images of Barnstaple Baptist Church, vernacular house and historical nog graves.



4.5.13 Broadleaf

Broadleaf is south of Barnstaple Mountain and was established on lands patented by Jane Syms and John Fletcher according to Thomas Harrison's 1888 map. This is also another small community with a concentration of small vernacular structures and nog graves.



Plate 28: Image depicting vernacular house, cut stone tank and nog walled outdoor kitchen.

4.5.14 Bryan Castle/Mountain

Bryan Castle/Mountain is placed between Madras and Endeavour. This land represents the provision grounds of the slaves on **Bryan Castle** estate in Trelawny. In 1844, this Twenty acre property was owned by J. Weir. In 1879, this 236 acre property was owned by Henry Gordon.



Plates: 29-30: Depression and cut stone tank.

4.5.15 Belmont

Belmont was settled after 1776 and an early owner was James Virgo. His widow Rebecca Crouch Gallimore nee Wisdom inherited the property after his death in 1817. At this time, she owned 220 slaves and 168 stock. By 1824, there was an increase in slaves and stock to 234 and 176 respectively. 1831 saw a decrease in numbers to 223 slaves and 133 stock. In 1840, her heirs came into possession of the property which had significantly grown to 854 acres. In 1844, remained at 854 acres and 1879 showed a marginal decline as the property was now 800 acres. The List of Properties indicates that this land was used primarily for grazing.



Plate 31: The Belmont House, a two storey cutstone and nog wall structure with sash windows and hip roof.

4.5.16 First Hill

First Hill is the first foothill on the northern side of Alps in Trelawny. It has small caves, sudden and treacherous pitfalls, and sharp-stoned banks. A bridle track here was converted into a road in 1831. A chapel and a school were also founded here in 1838. This chapel is the First Hill United Church which still exists on the property. The Quakers, Thomas Harvey and William Brewin



Plate 32: Image of First Hill United Church.

visited in 1866 and wrote: “We left Calabar in the afternoon for First Hill, a station of the London Mission, in the interior of Trelawney, where James Milne and his family received us with Christian hospitality. Some notice had been given, and we met about 150 of his congregation in the chapel. We subsequently inspected the school of thirty children, taught in the same building by a black teacher, usefully aided in some departments by the younger members of the mission family. We had much interesting conversation with J.M., as well as with a number of his more intelligent black members, and with several gentlemen connected with estates, whom he kindly invited to meet us. The case of the children's gangs pressed much upon our minds. We named the ‘half-time’ system of English factories to our planting friends. One of them, a man of large experience, said if the children could be kept at school and at work on alternate weeks it might answer, and the supply of juvenile labour still be adequate”. The cornerstone for a new Sunday school and lecture hall was laid on Easter Monday

1917 and the First Chapel was destroyed in the 1944 hurricane, and rebuilt.

4.5.17 **Mahogany Hall**

Mahogany Hall: Legend derives the name from this incident. A Captain of the invading English army seeking to capture Spanish escapees or drive them from the island discovered a Spanish señorita hiding in the hollow of a mahogany tree. He fell in love with her and married her, and built a house on the other side of the tree which he called “Mahogany Hall”. Or was it three officers and three señoritas? In time the old mahogany tree rotted, and a stone was placed there to mark the spot. Mahogany Hall was owned by Sir Simon Clarke, Bart. In 1817, it was owned by Sir Simon Haughton Clarke, Bart. with 156 enslaved and 133 heads of stock along with Berkshire. In 1831, the slaves increased to 160 enslaved and 434 heads of stock. By 1840, it was owned by his heirs and consisted of 1,914 acres. Edward Bean Edward Underhill visited Mahogany Hall in 1859 and wrote: “a grazing property was passed through, called Mahogany Penn, having excellent pastures; some of them almost equaling an English greensward. The buildings and walls were, however, in a state of dilapidation”. About 1860, it was owned by James Wauchope Fisher (1855-1906), Custos of Page | 114 Trelawny (1866-1897), who built the present house there. The extent of the property in 1882 was 2,769 acres- ground provisions 20, Guinea Grass 490, common pasture and pimento 891. The house appeared to have been used as a temporary station by the colonial powers in 1802. Lady Nugent noted: *Miss Howorth and Mr. Miller came to attend me to Mahogany Hall to meet General N. on his return there.* In his map outlining places involved in the Second Maroon, James Robertson delineates a ‘Maroon Path to Mahogany Hall’. An 1833 survey shows a Great House, Negro House, pasture pens, a plantain walk, logwood and Guinea Grass. At this time it was the property of James Manchester Fisher. In 1930, Mahogany Hall was 2,890 acres valued at £5704 and in the ownership of H. E. Capstick and was used for grazing and bananas. In 1920, the acreage was 2,800 acres with the value increasing to £6500 and still owned by Capstick and used for grazing, tenants and canes.

4.5.18 **Manchester Pen**

The Westwood High School was started on the grounds of the Manchester Estate. In 1821, the property then called Marked Cave was owned by the Hon. James Cunningham with 222 enslaved persons and 75 stock. By 1831, the name had changed to Manchester and was in the possession of Samuel Cunningham with 207 enslaved persons and 143 heads of stock. The owner in 1882 was U. T. Todd with acreage a total of 1,348 (Return of Properties 1882). The 1912 List of properties shows that it was 1,205 acres and was valued at £1200 and owned by Herbert R. Milliner. At this time the property was used for cane and banana cultivation and the grazing of cattle. In 1920, it was still 1,205 acres, however, the value had increased significantly to £3000. By 1930, the land size fell to 513 acres valuing at £1300 and was used for grazing, canes and farming.



Plate 33: Former Westwood High School ruins on the Manchester property.



Historical Vernacular Nog Wall Building, BROADLEAF, St. Ann
SOURCE: JNHT Sites and Monuments Record - 2019

5. ARCHAEOLOGICAL RESOURCE IDENTIFICATION

5.1 INTRODUCTION

A combination of several methods were employed to identify cultural heritage assets that may be impacted by the proposed development. These methods included archival research, interviews, satellite image analysis and field walk survey. Members of the various communities found in the proposed mining zone were extremely helpful in identifying the heritage assets; some of which were located in isolated and difficult to access places. This section presents the result of the field survey; including a description and inventory of cultural elements identified.

As aforementioned, the archaeological assets identified in this study is by no means exhaustive. Many assets were not recorded as a result of prolonged rainfall and some residents were not receptive to having homes and progenitors resting places invaded by the survey team. Many sites reported in the interior that could only be reached by foot were not visited as the team was ill-equipped for overnighing in the wilderness.

5.2 RESOURCES

The Archaeology survey team visited the communities of Alps, Endeavour, Gibraltar, Jackland, Lyndale, Madras, Plantain Walk, Retreat, Richmond Pen, Barnstaple Mountain, Broadleaf, Belmont, Covey Mountain, Lawrence, First Hill, Manchester Pen, Mahagony Hall and Sawyers. Though the assets identified in each community were somewhat similar, there are significant nuances and distinct attributes that made each asset special in the contexts of history, design and archaeology. These resources ranged from insular graves to grave yards and cemeteries, plantation vestiges of Great Houses, overseer houses, barbecues, animal mill and associated artefacts, ruins of abandoned free village sites where remains of house foundations, shops, bakery, water tanks and catchment remnants. Despite the ample supply of timber, nearly all historical extant structures and ruins were built with cutstone or the more favoured nog wall (Spanish Wall) masonry. The technique is still being used today, in a lesser degree, to construct low-cost, well-insulated houses.

The archaeological resources identified in the study was classified by levels of significance. Three groups of classification was used, namely, (a) High Significance (HS), (b) Moderate Significance (MS)

and (c) Low Significance (LW). Criteria used for placing sites in their respective class are as follows:

a. High Significance (HS)

- i. Aesthetical Value
- ii. Archaeological Value
- iii. Association – *with iconic figure or historical event*
- iv. Authenticity
- v. Historical Value
- vi. Rarity
- vii. Religious Value
- viii. Spiritual Value

b. Moderate Significance (MS)

- i. Natural Features
- ii. Partially modified historical assets
- iii. Disturbed archaeological site

c. Low Significance (LS)

- i. Fully modified historical assets
- ii. Destroyed archaeological site
- iii. Modern features and structures

- Resources of high significance speaks to those assets which should be protected and preserved.
- Moderate significance speaks to sites that should be inventoried and key authentic elements protected and preserved.
- Low significance speaks to sites which should be inventoried, relocated or modified for adoptive re-use.

The table below (table 3) presents an inventory and classification of archaeology resources recorded during the field survey conducted from June 24-28, 2019 and between September 9-13, 2019.

Table 3.

INVENTORY AND CLASSIFICATION OF ARCHAEOLOGICAL ASSETS

No	SITE	DISTRICT	X-coord	Y-coord	COMMENTS	CLASSIFICATION
1	Alps cut-stone ruin	Alps	773047.1	182024.7	Two storey cut-stone ruin dated 1878. Several historical graves are also present in the vicinity.	HS
2	Alps historical graves	Alps	773049.1	182016.8	A series of historical graves constructed with nog material. According to one resident, some of the deceased were Scottish.	HS
3	Dunn's family graveyard	Alps	773020.6	182018.9	A defined graveyard with three visible historical graves constructed with nog wall material. The site also contains a large barbecue complex, stone walls and house foundations.	HS
4	Cut-stone house foundations	Alps	773019.5	182013.7	A series of barbecues and cut-stone house foundations along the Old Sawyers Road.	HS
5	Graveyard 2 in cornfields	Alps	773020.7	182008.3	Approximately seven historical graves were witnessed at this location. Large artefact assemblages observed which serves as an indication that the area supported a settlement.	HS
6	Graveyard 3 after cornfields	Alps	773022.4	182004.3	There are three historical graves constructed with nog material, one of which has a unique design.	HS
7	Heritage trail campsite 1	Alps	773022.7	182002.7	A modern complex containing a kitchen, toilet, fire pit and water tank. The site was recently a part of a heritage trail. The area is referred to as camp site 1.	MS

8	Two cut-stone house foundations	Alps	773021.3	181956.1	According to the tour guide, one foundation was occupied by the Cordell family and the other owned by Brisset and Haughton. (Part of heritage trail)	HS
9	Historical packed stone bridge	Alps	773021.3	181949.8	This packed stone bridge was found on the Old Alps road. It was used to connect two large hillocks.	HS
10	Heritage site campsite 2	Alps	773006.1	181936.2	Graves (Mckoy/ Fergon family), toilet, shed and tank are present. The area is referred as camp site 2. It was part of the heritage trail.	HS
11	Backra house graves	Alps	772950.1	181954.4	Two historical graves belonging to a member of the Campbell family. A great house once stood at this site.	HS
12	Backra House Barbecues	Alps	772951.3	181958.1	An assemblage of artefacts consisting of historical metal tools, ceramics, olive green wine bottle sherds were observed on a large barbecue.	HS
13	Rocky Fort Historical structures	Alps	772954.5	182001.1	Historical graves, cut-stone house foundations and tank are present.	HS
14	Thorny Hill/Thorny Bottom Village	Alps	772956.6	182020.2	Remnants of a bakery and other house foundations observed.	HS
15	Old Mountain, Village	Alps	773006.3	182029.1	Bakery and numerous cut-stone ruins along with a small cave were identified.	HS
16	Cut-stone structure	Barnstaple Mountain	772718.5	181913.2	Located on property at the intersection of Barnstaple Mountain and Broadleaf.	MS
17	Vernacular house	Barnstaple Mountain	772715.2	181913.6	House with cut-stone foundation, sash windows and hip roof. A barbecue is also located on the premises.	HS
18	Graves	Barnstaple Mountain	772713.4	181920.9	There are four graves, two of which are historic nog graves.	HS

19	Historical graves	Barnstaple Mountain	772713.4	181920.9	An extant grave site with a total of fourteen graves. Eight of these are historical and includes nog and stone graves.	HS
20	Barnstaple Baptist Church	Barnstaple Mountain	772712.5	181922.8	Aside from the church, there is also the Barnstaple Basic school, a belfry and the first church which was converted into a prayer house. This is made from nog-walling; it displays a cut-stone foundation with double steps and a gable roof.	HS
21	Vernacular structure	Barnstaple Mountain	772712.2	181923.7	Nog wall shop with piazza and gable roof. It is adorned with large wooden doors and windows.	HS
22	Historical Graves	Barnstaple Mountain	772712.3	181925.8	A family plot of historical graves some of which are made of nog and cut-stone and the remaining, with packed stones.	HS
23	Cut stone foundation ruin	Barnstaple Mountain	772712.8	181924.3	Vernacular house foundation constructed with cut-stone.	HS
24	Vernacular structure	Barnstaple Mountain	772712.2	181923.7	Outdoor nog wall kitchen which boasts a hip roof.	HS
25	Vernacular structures	Barnstaple Mountain	772711.3	181923.6	Two historical structures at this location include a shop with gable roof and a vernacular house with sash windows and a hip roof.	MS
26	Barnstaple Postal Agency	Barnstaple Mountain	772710.6	181923.7	This is a dilapidated vernacular house with cut-stone foundation, nog walls and hip roof. A cut-stone foundation ruin is also on the premises. Twelve graves are located behind the house.	HS
27	Historical graves	Barnstaple Mountain	772711	181929.2	Seven historical graves, some of which are stone graves.	HS

28	Cut-stone foundation	Barnstaple Mountain	772711.8	181929.9	Cut-stone house foundation with steps. A cut-stone water tank is also on the premises.	HS
29	Cut-stone foundation	Barnstaple Mountain	772709.8	181929.1	Cut-stone foundation ruin.	HS
30	Historical graves	Barnstaple Mountain	772709.1	182930.7	Ten historical graves.	HS
31	Historical graves	Barnstaple Mountain	772708.2	181929.8	Four historical graves.	HS
32	Nog house	Barnstaple Mountain	772706.3	181928.8	House with nog walls and cut-stone foundations, gable roof and fretwork around sash window and a wooden verandah. A nog walled shop with cut-stone foundation and overhanging gable roof is also present.	HS
33	Water Tank	Barnstaple Mountain	772707.1	181926.4	Historical cut-stone water tank.	HS
34	Vernacular House	Barnstaple Mountain	772708.5	181925.8	House with cut-stone foundation, lentils and cut-stone water tank.	MS
35	Historical Graves	Barnstaple Mountain	772708.3	181924.4	An extant cemetery with twenty-four graves. Eleven of these are historical.	HS
36	Grave Site	Barnstaple Mountain	772705.9	181944	Four graves situated on small gradient leading to a depression cultivated with yams. Three of these graves are historical.	HS
37	Nog walled kitchen	Barnstaple Mountain	772703.5	181938.2	A small outdoor kitchen with shingled gable roofing attached to a vernacular house which has been modified. The original cut-stone foundation, however, bears evidence to its historical value.	HS
38	Vernacular House	Barnstaple Mountain	772704.7	181935.9	Vernacular house which displays high cut-stone foundation, gable roof with shingle and jalousie windows. A	HS

					barbecue is also a feature of this house area. A cut-stone foundation ruin is also situated on the property.	
39	Historical Graves	Barnstaple Mountain	772706.3	181935.5	Six graves which include two historical graves. A cut-stone wall divides two separate grave sites at this location.	HS
40	Historical Graves	Barnstaple Mountain	772706.2	181934.8	Grave site with five historical graves and a cut-stone ruin.	HS
41	Vernacular Structures	Barnstaple Mountain	772706.2	181932.7	An ensemble of historical structures which include a nog-walled outdoor kitchen and two houses one displaying a gable roof and a cut-stone foundation.	HS
42	Historical graves	Barnstaple Mountain	772706.6	181932.7	Five graves which includes two historical graves.	HS
43	Historical Graves	Barnstaple Mountain	772659.1	181937.1	A total of twelve graves with six being historical.	HS
44	Vernacular house	Barnstaple Mountain	772701.1	181937.2	House with nog-walling, gable roof and wooden windows. A cluster of historical graves is located on the premises	HS
45	Two-storey vernacular house	Belmont	772655.9	182157.6	The vernacular house is made of cut-stone and displays sash windows and French doors. A cut-stone water tank is also adjacent to the structure.	HS
46	Drip Cave	Belmont	772717.4	182154.3	Large cave which has stalactites and stalagmites. A number of bats and shells were observed in the cave.	MS
47	Sinkhole	Belmont	772718.5	182153.9	This sinkhole is in close proximity to the above mentioned cave.	MS
48	Historical Georgian house	Belmont	772652.2	182215.1	Nog-walled structure with high cut-stone foundation and hip roofing. There is a modern addition to the right of the nog structure and a cut-stone	HS

					water tank to the rear.	
49	Cut-stone tank and catchment	Broadleaf	772720.4	181910.7	Historical structures which includes catchment and cut-stone tank.	HS
50	Vernacular house	Broadleaf	772720.3	181910.7	House with nog walling, sash windows and high cut-stone foundation with cellar.	HS
51	Nog house	Broadleaf	772720.1	181908.8	Blue nog-walled house which displays jalousie windows and shingle roofing and a cellar.	HS
52	Vernacular house	Broadleaf	772720.3	181907.1	Yellow and brown structure constructed with nog walling and outdoor nog kitchen.	HS
53	Vernacular house	Broadleaf	772719.1	181901.1	Cluster of nog wall structures. Blue house with brown cut-stone foundation, lentils above door. A cut-stone tank is located on the property. Small nog structure with gable roof, wooden doors and windows. Pink house with cut-stone foundation with decorative elements around windows and above the door.	HS
54	Cut-stone foundation	Broadleaf	772719.6	181900.2	Cut-stone foundation ruin with steps leading to a verandah which has terrazzo tiles.	HS
55	Vernacular house	Broadleaf	772725.1	181844.7	This vernacular house displays sash windows and lentils above the wooden doors. There is also a catchment tank at this location. A nog-walled storeroom with gable roof and two doors. There are also barbecues on the property.	HS

56	Vernacular House	Broadleaf	772725.8	181837.2	This vernacular house has sash windows with decorative elements. To the rear of this structure is a nog-walled store house with gable roof, barbecues, water tank and catchment.	MS
57	Vernacular house	Broadleaf	772725.8	181837.2	Blue house with nog walling and sash windows decorated with fretwork. A nog wall store house is to the rear and displays cut-stone steps and gable roofing. A cut-stone water tank and catchment along with a barbecue is also located on premises.	HS
58	Vernacular nog structure	Broadleaf	772737.7	181835.4	A nog wall store house/buttery with gable roofing. A barbecue also situated on the premises.	HS
59	Vernacular house	Broadleaf	772732.1	181835.7	Blue house with both hip and gable roofing with sash windows and cut-stone foundation. A barbecue is located to the rear of the building.	MS
60	Vernacular houses	Broadleaf	772733.1	181836.9	An ensemble of historical structures which includes, catchment and cut-stone tank, three vernacular houses, a shop and outdoor kitchens. All these structures are made of nog walling some of which are complimented by sash windows, French door, cut-stone foundation and a barbecue.	MS
61	Nog house	Broadleaf	772743.9	181839.2	Small nog structure with wooden flooring and gable roof.	HS
62	Vernacular House	Broadleaf	772738.2	181830.8	House adorned with sash windows and outdoor kitchen with nog walling. This structure also displays gable roof. A few graves are in the vicinity.	HS

63	Vernacular House	Broadleaf	772737.7	181826.7	A small blue house with sash windows and nog walling.	HS
64	Vernacular house	Broadleaf	772738.7	181826.2	A small blue nog house which is over 100 years old.	HS
65	Vernacular house	Broadleaf	772735.1	181824.6	Nog house with cut-stone foundation, hip roof, wooden flooring and a cellar.	HS
66	Vernacular house	Broadleaf	772736.6	181825.2	An ensemble of historical structures which includes a cut-stone water tank with catchment, a nog wall outdoor kitchen and a vernacular house which has cut-stone foundation, sash windows decorated by fret work and a hip roof.	HS
67	House ruin	Bryan Castle	772600.3	181900.5	Two vernacular ruins made of nog and cut-stone walling. Foundations of a cut-stone structure and a nog wall ruin.	HS
68	Bryan Castle ruin	Bryan Castle	772703.4	181854.9	Remnants of a structure made from nog and cut-stone base. A trough is also in the vicinity. A number of fruit trees are present.	HS
69	Bryan Castle house ruin	Bryan Castle	772708.4	181857.8	Remnants of a house made of nog walling and cut-stone base. A cut-stone water tank is also in the vicinity.	MS
70	Vernacular House Ruins	Bryan Castle	772703.7	181912.7	Cut-stone foundation with steps.	MS
71	Historical Graves	Bryan Castle	772707.2	181913.1	Two historical graves.	HS
72	Covey Mountain Great House	Covey Mountain	772936.2	181868.8	A two storey cut-stone great house ruin, barbecue and water tank	HS
73	Cut-stone tank	Endeavour	773009.8	181938.2	The Mckoy family settled at this location. There are remnants of house foundation and graves.	HS

74	Vernacular structure	Endeavour	772602.9	182154.2	Nog walled building which comprises a storehouse/buttery and outdoor kitchen. Two wagon wheels are also positioned close to the storehouse. A horseshoe was attached to the door.	HS
75	Vernacular house	Endeavour	772606.2	182156.9	House in depression/valley made with French windows, nog walls, cut-stone foundation, hip roof and cellar. Cut-stone water tank and remnants of cut-stone foundation. The house is located amidst the yam fields.	HS
76	Vernacular house	Endeavour	772613.6	182154.8	Vernacular house with a small nog structure to the left of main house. The house displays sash windows and hip roofing. A small barbecue also forms part of architectural design.	MS
77	Endeavour Anglican Church	Endeavour	772539.3	182114.3	Church was built from cut-stone and a cemetery was observed in the church yard.	HS
78	First Hill United Church in Jamaica and the Cayman Islands	First Hill	772941.5	182460	Extant historical church with bell tower, grave yard and cemetery. There is also a large historical manse in ruin, cut-stone water tank and small aqueduct.	HS
79	Vernacular Houses	Gibraltar	772623.4	182047.3	Vernacular house with fret work and gable roof. The second is a nog house with gable roof and jalousie windows.	HS
80	Baptist Church	Gibraltar	772551.8	182031.7	Church is constructed with cut-stone. A manse is also located on the property with a cut-stone water tank.	HS
81	Cut-stone tank and ruin	Gibraltar	772551.8	182031.7	Cut-stone water tank with brick and cut-stone foundation.	HS

82	Nog-walled shops	Gibraltar	772552.1	182031.8	Nog-walled shops in the community square with gable roofing. A prominent two storey vernacular structure is also located within the square which is used as a dwelling place and shop.	HS
83	Historical graves	Gibraltar	772550.1	182032.1	Two historical graves located at the rear of house in the community square.	HS
84	Historical graves	Gibraltar	772551.9	182034.2	There are seven graves two of which are historical.	HS
85	Historical graves	Gibraltar	772551.1	182034.9	Eight graves are at this location with three historical graves.	HS
86	Historical graves	Gibraltar	772551.3	182035.9	Five historical graves.	HS
87	Vernacular structures	Gibraltar	772549.8	182035.9	Cluster of nog wall shops/ structures in the lane.	HS
88	Historical graves	Gibraltar	772557.5	182046.2	Seven graves which include three historical graves.	HS
89	Historical graves	Gibraltar	772557.1	182046.5	Five graves which include four historical graves.	HS
90	Cut-stone ruin foundation with steps	Gibraltar	772557.8	182046.7	HS	HS
91	Historical graves	Gibraltar	772556.3	182045.8	Five historical graves.	HS
92	Vernacular House	Gibraltar	772556.8	182045.5	Nog house with cut-stone foundation and gable roof. Several historical graves are located in the vicinity.	HS
93	Cut-stone foundation ruin	Gibraltar	772553.7	182047.9	Cut-stone foundation with steps.	HS
94	Historical graves	Gibraltar	772553.4	182048.4	A total of seven graves with five historical ones.	HS
95	Historical graves	Gibraltar	772553.6	182049.8	A total of seven graves with four historical graves.	HS
96	Barbecue/Graves	Gibraltar	772553.4	182052.1	Packed stone graves covered by barbecue.	HS
97	Historical graves	Gibraltar	772551.2	182047.4	A total of eight graves with five	HS

					historical.	
98	Nog house	Gibraltar	772553.2	182046.5	House with nog walling, cut-stone foundation and hip roof.	HS
99	Historical graves	Gibraltar	772553.1	182045.7	A total of three graves one historic.	HS
100	Historical graves	Gibraltar	772553.1	182044.6	A total of three graves one historic.	HS
101	Vernacular house	Gibraltar	772549.9	182044.5	House with nog wall, hip roof, cut-stone foundation and French windows.	HS
102	Cutstone foundation	Gibraltar	772549.9	182045.8	Historical ruin.	HS
103	Vernacular house	Gibraltar	772549.4	182045.2	Modified vernacular house with modern window and a cellar.	MS
104	Vernacular house	Gibraltar	772547.5	182046.1	Vernacular house with cut-stone foundation, sash windows decorated with fretwork. There are several cut-stone steps and a barbecue. Original columns from the missing verandah remain.	HS
105	Historical graves	Gibraltar	772552.2	182042.6	Fifteen graves with four historic graves.	HS
106	Vernacular house	Gibraltar			Large cream coloured house with hip roof, jalousie windows and cellar.	HS
107	Nog shop	Gibraltar	772551.4	182040.5	Blue and yellow nog-walled shop with small steps and small piazza modified with cement.	MS
108	Historical graves	Gibraltar	772551.5	182040.1	A total of ten graves, eight of which are historical.	HS
109	Historical graves	Gibraltar	772551.1	182041.8	A total of ten graves, eight of which are historical.	HS
110	Historical Graves	Gibraltar	772550.9	182039.1	A total of ten graves, seven of which are historical.	HS
111	Nog house	Gibraltar	772552.1	182038.8	Nog house with small sash windows, cut-stone foundation and gable roof.	HS
112	Cut-stone tank	Gibraltar	772549.1	182038.2	Water tank associated with historical graves and house foundation.	HS

113	Historical grave	Gibraltar	772548.8	182037.8	Historical grave made of nog material.	HS
114	Historical graves	Gibraltar	772548.5	182038.3	Two historic graves.	HS
115	Cut-stone foundation	Gibraltar	772548.2	182038.4	Cut-stone foundation of residence associated with graves and water tank on property.	HS
116	Vernacular house	Gibraltar	772549.5	182037.4	Blue house within close proximity to small nog shops.	MS
117	Nog house	Gibraltar	772549.5	182036.7	Dilapidated nog house with roof and verandah missing. It also has a frame for what was a gable roofing. It is in the old square with the small shops.	HS
118	Nog structures	Gibraltar	772533.3	182014.3	One orange and black vernacular house with nog walling, hip roof sash windows and cut-stone foundation. A nog kitchen with gable roofing is also located in close proximity to the house.	HS
119	Nog house	Gibraltar	772534.4	182014.1	A vernacular house with nog walling, gable roof and sash windows.	HS
120	Nog house	Gibraltar	772534.2	182015.4	Vernacular house with nog walling, gable roof, French and sash windows. A nog outhouse is used as a furniture shop.	MS
121	Historical grave	Gibraltar	772534.8	182015.8	Four graves with one historical grave.	HS
122	Historical graves	Gibraltar	772537.9	182015.8	A family grave yard with 14 graves demonstrating the changes in grave style throughout the centuries.	HS
123	Vernacular house	Gibraltar	772537.9	182014.7	Pink and green house with verandah, hip roof and nog walling.	MS
124	Vernacular house	Gibraltar	772538.9	182013.8	Two-storey vernacular house with gable roofing. A number of ackee trees are present in the yard, which may suggest a former slave village.	MS
125	Historical graves	Gibraltar	772539.9	182014.4	Twelve graves which include eleven	HS

					historical graves.	
126	Vernacular house	Gibraltar	772540.1	182013.9	Nog house with hip roof and French windows.	MS
127	Vernacular house	Gibraltar	772541.1	182013.6	Nog house with gable roof, cut-stone foundation. House is decorated with fretwork and there is a cut-stone water tank in yard.	HS
128	Vernacular house	Gibraltar	772540.8	182012.8	Orange house with hip roof, sash windows and cellar.	MS
129	Historical graves	Gibraltar	772541.1	182012.7	Extant grave site with nine historical graves and four modern graves.	HS
130	Vernacular House	Gibraltar	772541.7	182013.2	Vernacular pink house with cut-stone foundation, hip roof, French windows with fretwork.	HS
131	Historical Graves	Gibraltar	772542.4	182014.2	Extant grave site in yard. There are thirty-one graves with nineteen of them historical. A cut-stone water tank is also located on the property.	HS
132	Cluster of vernacular houses	Gibraltar	772543.5	182011.3	Ensemble of houses on land. Three vernacular houses with two nog structures on the hill. Another nog-walled house with cut-stone foundation and sash windows with a modern addition to the right is located on the lower ground.	HS
133	Vernacular house	Gibraltar	772545.6	182011.1	A derelict nog structure with cut-stone foundation with verandah missing. The columns for the verandah remain. Cut-stone steps are present with the sash windows, jalousie windows and hip roof.	HS

134	Two-storey vernacular house	Gibraltar	772546.4	182010.9	Vernacular house with upper and lower verandahs. A wooden flooring complements the verandah with wooden railings, hip roof, cut stone foundation. A cut-stone water tank is located adjacent to the house.	HS
135	Vernacular house	Gibraltar	772548.4	182009.9	Blue vernacular house on hill above the two-storey house. It displays sash windows with fretwork around them. The house is also built on a cut-stone foundation.	HS
136	Vernacular house	Gibraltar	772548.9	182011.3	House with hip roof fretwork and cellar.	MS
137	Modified nog house	Gibraltar	772550.6	182010.8	Vernacular structure with modern addition to the right.	MS
138	Rock shelter	Hyde Hall Mountain	772857.4	182146.1	Historical limestone pit	MS
139	Water Tank	Hyde Hall Mountain	772833.7	182129.9	Two cut-stone water tanks with troughs located in the vicinity of two small vernacular house ruins. Also, a graveyard with numerous graves. Graves are represented by packed stone. Some are parallel to each other. Fourteen graves were clearly identified. The size of the graveyard would suggest that the community was a fairly large one. There are several nutmeg and mango trees on the property.	HS
140	Ruinate	Hyde Hall Mountain	772831.5	182109.2	Area being reforested by planting of cedar and Blue Mahoe trees. The area is a very long depression, and sections of it are cultivated in yam.	LS

141	Cut-stone water tank and aqueduct	Hyde Hall Mountain	772820.5	182060.4	At this site an aqueduct about 20m long and four feet deep is used to channel water emerging from rocks into the cut-stone tank.	HS
142	Vernacular Structures	Jackland	772634.6	182109.4	Two structures which consist of a small blue house with a nog-walled kitchen with gable roofing.	HS
143	Nog walled Ruin	Jackland	772636.6	182101.5	Remnants of a nog-walled structure with cut stone foundation.	HS
144	Historical Graves	Jackland	772637.7	182101.1	A total of twelve graves with four historical graves. A few artefacts could be seen on the ground in close proximity to the graves.	HS
145	Cut-stone foundation	Jackland	772636.2	182100.7	Historical building foundation with steps.	HS
146	Cut-stone tank with catchment	Jackland	772626.7	182059.8	Small tank and catchment for domestic purposes.	HS
147	Vernacular house	Jackland	772638.1	182058.8	House with nog walls, cut-stone foundations and French windows which are decorated with fretwork. The roofing is gable and has a cellar. A nog kitchen with cut stone foundation is also close to the house with a cut stone foundation ruin.	HS
148	Historical graves	Jackland	772629.1	182050.2	A total of twelve graves situated in the meadow/ depression. Of this total are six historical graves.	HS
149	Vernacular house	Jackland	772630.4	182046.8	Nog walled house with hip roof. The house is adorned with French windows. Remnants of a cutstone kiln is also situated on the premises.	HS
150	Vernacular house	Jackland	772627.3	182050.8	A cream coloured nog structure with French windows. The house is decorated with fretwork and displays a	HS

					hip roof. A cut-stone foundation is also in close proximity to this house.	
151	Vernacular house	Jackland	772627.1	182051.2	Nog walled house with cut stone foundation, sash windows and hip roof.	HS
152	Historical graves	Jackland	772626.9	182052.7	This is an extant grave site with eleven graves which includes a total of eight historical graves.	HS
153	Lawrence Village	Lawrence	770301.8	182046.8	Old village site and several stone foundations of houses situated on a limestone hillock.	HS
154	Small village site with water tank	Lawrence	772981.8	182043.2	Small depressions with cut-stone water tank. Measurement is 4x4 metres. Hillocks surrounding depression have several cut-stone foundations. Depression cultivated with yams and potatoes with two small plots of yam and potato between them.	HS
155	Lawrence Great House Trelawny	Lawrence	772974.3	182044.6	Cut-stone Great House foundation ruins situated on very high conical limestone hillock. Site is inundated with ferns and few trees. A feature alleged to be graves was observed.	HS
156	Lindale Great House Ruin	Lindale	772328.6	182305.2	This wooden structure is badly deteriorated and is at the stage of collapsing. According to the property owner the lot on which the ruin is situated was recently sold.	HS
157	Nog House	Madras	772618.4	181900.7	House being constructed with nog wall material.	MS
158	Nog House	Madras	772617.5	181843.9	Historical vernacular nog wall house with shingle roof and graves	HS

159	Cut-stone Shop and historical grave	Madras	772618.7	181844.2	Historical shop constructed with cut stone, demonstrates huge cracks in the walls caused by dynamite blasts from bauxite mining. Several graves were identified on the property two of which were historical and constructed with nog-walled materials.	HS
160	Vernacular House	Madras	772618.6	181845.7	Nog wall vernacular house with cut-stone foundation. The house has cracks to the front, side and rear as a result of dynamite blasts. Also has nog wall kitchen at the back of the house in addition to a cut stone perimeter wall, foundations and graves.	HS
161	Vernacular House	Madras	772619.9	181846.9	Historical nog wall house with gable roof and jalousie windows. It also displays cracks resulting from dynamite blasts.	HS
162	Vernacular House	Madras	772617.1	181842.2	This structure has sash windows on verandah with French doors. There is a cut-stone foundation and barbecue. A small nog walled building is to the rear of the house.	HS
163	Nog Shop	Madras	772617.6	181841.4	This nog wall shop has hip roof and six steps at the front. Foundations of structure are seen at the back	HS
164	Vernacular House	Madras	772617.6	181841.4	Two storey vernacular house with fretwork and latticework, French windows and a wooden verandah. Grave to rear of building	HS
165	Nog Wall house	Madras	772616.3	181839.6	This nog wall house was built on a structure with a much larger stone	HS

					foundation to the front	
166	Shop ruins	Madras	772616.7	181834.8	Cut-stone ruins with two entrances one supposedly for a grocery shop and one for bar. Based on certain features the shop had a timber upper floor.	HS
167	Water catchment and reservoir tank	Madras	772617.1	181833.3	National Water Commission (NWC) catchment and reservoir provides water for the entire community.	HS
168	Historical Graves	Madras	772623.8	181822.7	Approximately seven historical graves most of which were children. It is also the home of Carmen Scott.	HS
169	Vernacular House	Madras	772623.8	181820.8	Nicely preserved nog wall house with modern addition. Historical house has gable roofing, and fretwork to windows.	MS
170	Ebenezer Baptist Church and Manse	Madras	772617.1	181820.8	Church built with cut-stone. Also used as the community health centre. There were two historical graves said to be that of the first pastor and his wife. The manse associated with the church has fretwork with a cut-stone foundation.	HS
171	Postal Agency and bar	Madras	772617.1	181820.8	Structure displays a cut-stone foundation.	MS
172	Shop and cluster of houses	Madras	772617.1	181820.8	Wooden structure with cut-stone foundation and beautiful fretwork. Lattice work, shingle roofing and wooden flooring were observed.	HS
173	Saint Barnabas Anglican Church	Madras	772618.7	181816.9	This structure displays gable roof, cruciform design and cut-stone foundation.	HS
174	Madras Great House graves	Madras	772622.1	181814.3	Two historical graves and three modern ones are on the property.	HS

175	Madras Great House	Madras	772622.6	181813.1	This includes cut-stone remnants of pantry, barbecue, house, animal mill, coffee pulper etc. A wide array of artefacts was observed on the property and samples were collected.	HS
176	Historical graves	Madras	772622.8	181813.8	Six graves were observed in the depression with cut-stone water tanks nearby.	HS
177	Modern/historical ruins	Mahogany Hall	772848.6	182354.5	Abandoned, modern house built on historic cut-stone foundation.	LS
178	Pink Concrete block house	Mahogany Hall	772840.2	182354.3	House partially built on cut-stone foundation of historic building. Structure is also abandoned.	LS
179	Modern / historical ruin	Mahogany Hall	772836.8	182354.7	An ensemble of structures including a small modern concrete house. A historical nog-walled house, flat zinc roof, a slaughterhouse, a zinc out house and three graves. The property is abandoned.	LS
180	Modern/ historical ruin	Mahogany Hall	772812.8	182359.4	Small concrete building erected on the foundation of a historical building ruin.	LS
181	Modern / historical ruin	Mahogany Hall			Ensemble of modern and historical structures. An unfinished modern concrete block church and a historical nog-walled house. In the yard there are several cut stone foundations. There are also two graves at the back of the yard. (Abandoned)	MS
182	Sink Hole	Manchester Pen	772659.1	182258.6	Large cinote (doline) which appears to have water. The doline is approximately 80 meters in diameter and 80 meters in depth from its highest point.	MS

183	Westwood High School Ruins	Manchester Pen	772707.9	182241.7	The first location of the Westwood High School for girls. Several cut-stone foundations are located on the property.	HS
184	Owl Mountain Great House Trelawny	Owl Mountain	773020.3	182065.1	Cut-stone Great House ruin on top of high conical limestone hillock. Property is owned by the Currie family. Site is covered predominantly by ferns and few trees. There is no topsoil present.	HS
185	Plantain Walk Grave Yard 1	Plantain walk	772601.6	182041.4	A combination of historic and modern graves was recorded. Twenty-two graves were counted.	HS
186	Plantain Walk Graveyard 2	Plantain walk	772601.9	182040.5	A combination of historical and modern graves was recorded. Twenty-one graves were counted. A cut stone tank was also identified on the property.	HS
187	Plantain Walk Graveyard 3	Plantain walk	772600.9	182040.5	Four graves were identified behind the remnants of the St Paul Baptist church foundations. Two were babies.	HS
188	Two vernacular nog houses	Plantain walk	772558.4	182034.2	Extant historical nog-walled vernacular dwelling.	HS
189	Historical graves	Plantain Walk	772601.7	182030.6	A total of eleven graves, six of which are historical.	HS
190	Retreat Great House Ruins	Retreat	772444.2	182300.5	Only the foundations of the Great House remain. The animal mill has been converted into a water tank. Pimento barbecue is being used as a water catchment.	HS
191	Cut-stone ruin (shop) vernacular structure	Richmond Pen	772634.7	182039.1	This ruin is one of several abandoned buildings observed at the T-junction in Richmond Pen.	HS

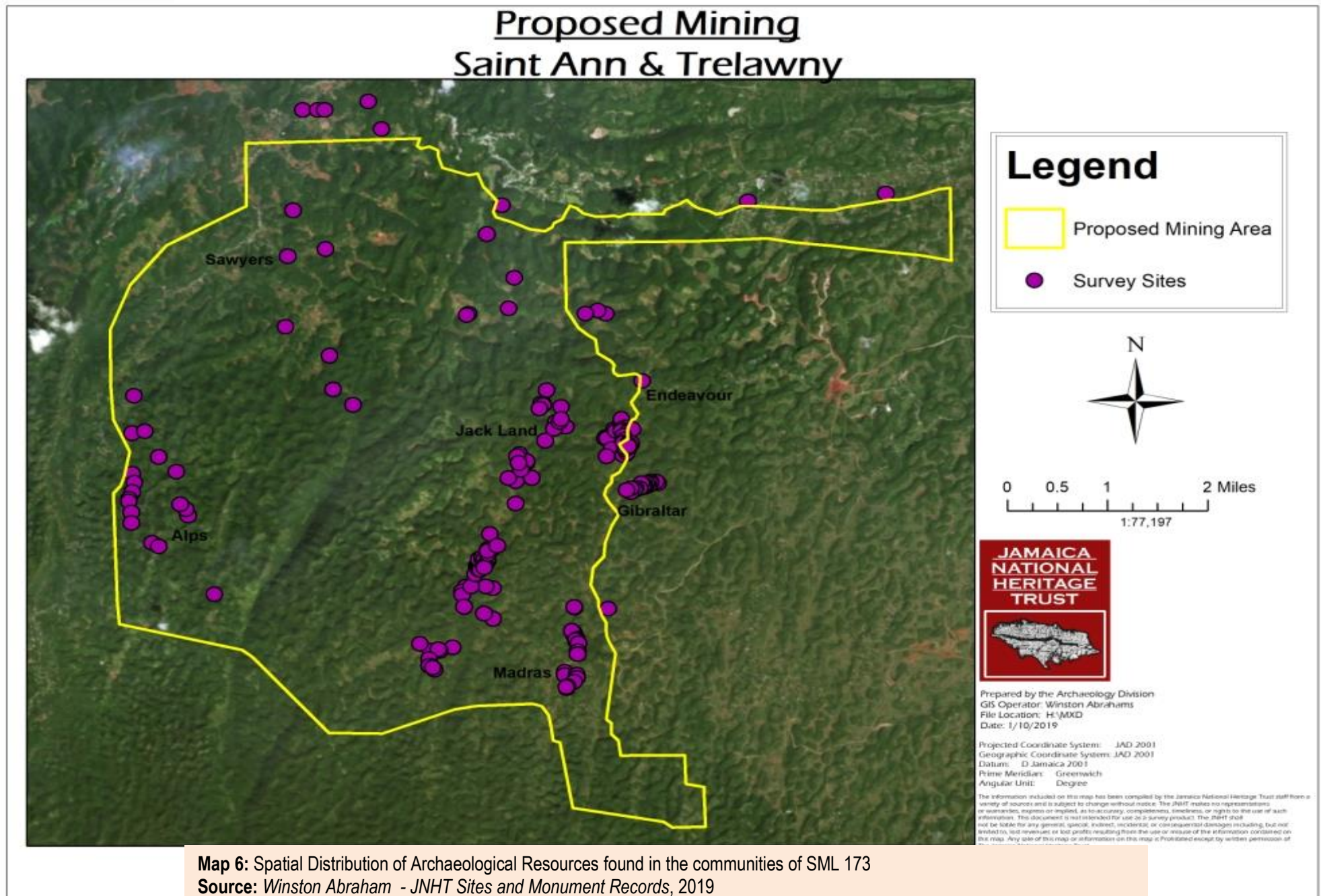
192	Richmond Pen intersection Vernacular structures	Richmond Pen	772648.9	182031.1	These four historical structures have been abandoned and have fallen into a state of disrepair.	HS
193	Historical Grave	Richmond Pen	772651.4	182002.5	Grave of Benjamin Walcott.	HS
194	Historical Grave	Richmond Pen	772651.4	182015.7	Grave with a cut-stone foundation in the vicinity.	HS
195	Vernacular house	Richmond Pen	772642.1	182017.3	House with nog-walling, cut-stone foundation and French windows. The house also has a gable roof with shingle covered with zinc. A large yam field is in close proximity to this house.	HS
196	Cut-stone foundation	Richmond Pen	772645.1	182026.7	This is on the same property as the vernacular house and yam field.	HS
197	Historical Pond	Richmond Pen	772645.5	182027.4	This historical pond is also attached to the yam field and is related to the watering of cows witnessed on the property.	MS
198	Vernacular House	Richmond Pen	772650.1	182030.3	Very old house with nog wall with sections of the roof being gable and hip with French windows. The roof has shingle with a horseshoe used for locking the door.	HS
199	Water catchment and tank	Richmond Pen	772648.1	182022.1	Historical Parish Catchment with cut-stone tank augment water supply to the area.	HS
200	Richmond Pen Great House	Richmond Pen	772748.8	182023.5	This Georgian style Great House exemplifies the preferred Great House architecture found in the area. It is constructed with cut-stone, gable roof and sash windows. A few artefacts were recovered from this location.	HS

201	Vernacular House	Richmond Pen	772655.3	182017.4	House with cut-stone foundation, French windows, gable roof and cellar.	MS
202	Sawyers Old Village	Sawyers	772835.2	182232.1	Remnants of several house foundations with a scatter of artefact assemblages including cut nails, barrel straps, metal pot fragments, olive green wine bottle fragments, pearlware sherds were identified. A historical cut-stone tank was also observed in the vicinity.	HS
203	Sawyers Old Village	Sawyers	772856.1	182227.6	Several historical graves made with nog (Spanish Wall) material were observed in this location. The grave styles are typical European some of which maybe Jewish or German.	HS
204	Sawyers (Cudjoe Cave)	Sawyers	772853.1	182254.7	The cave is approximately 30m long and averages about 40m high. Contents include pot and glass bottle fragments dating from about the 1940's were observed. According to one resident the cave was used as a refuge by Cudjoe the great Maroon leader. It also contains a large population of bats and birds.	MS

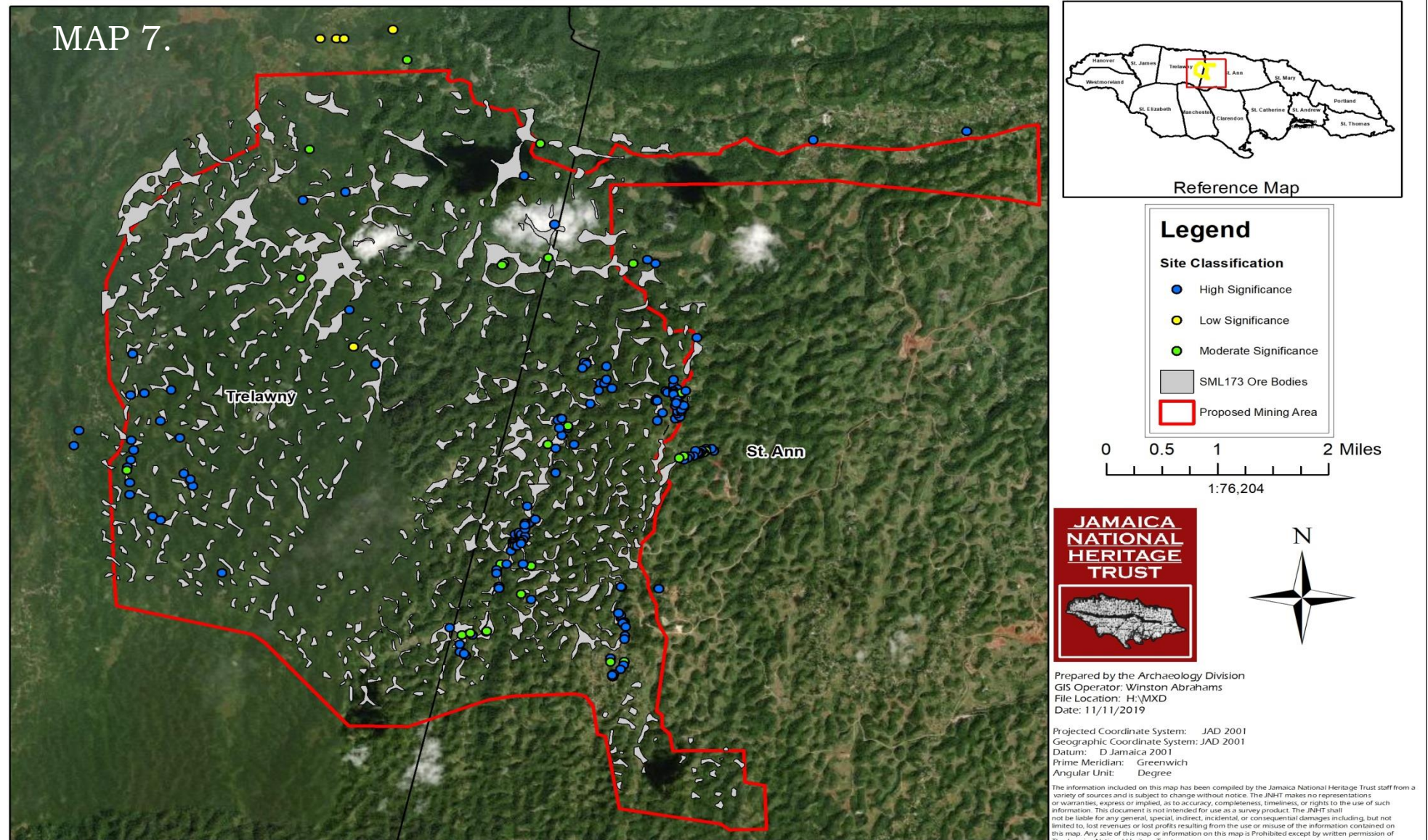
The levels of significance identified in table 3 above are as follows: **HS** - High Significance, **MS** – Moderate Significance, **LS** – Low Significance.



Richmond Pen Great House – St. Ann
SOURCE: JNHT Sites and Monuments Record - 2019



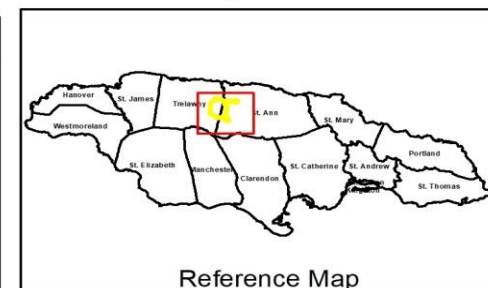
Spatial Distribution of Archaeological Resources



Map 6: Spatial Distribution of Archaeological Resources by category of significance in relation to bauxite ore deposits
Source: Winston Abraham - JNHT Sites and Monument Records, 2019

Spatial Distribution of Archaeological Resources in Alps

MAP 8.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area

0 0.075 0.15 0.3 Miles
1:10,433



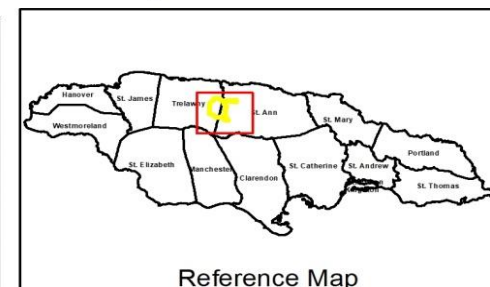
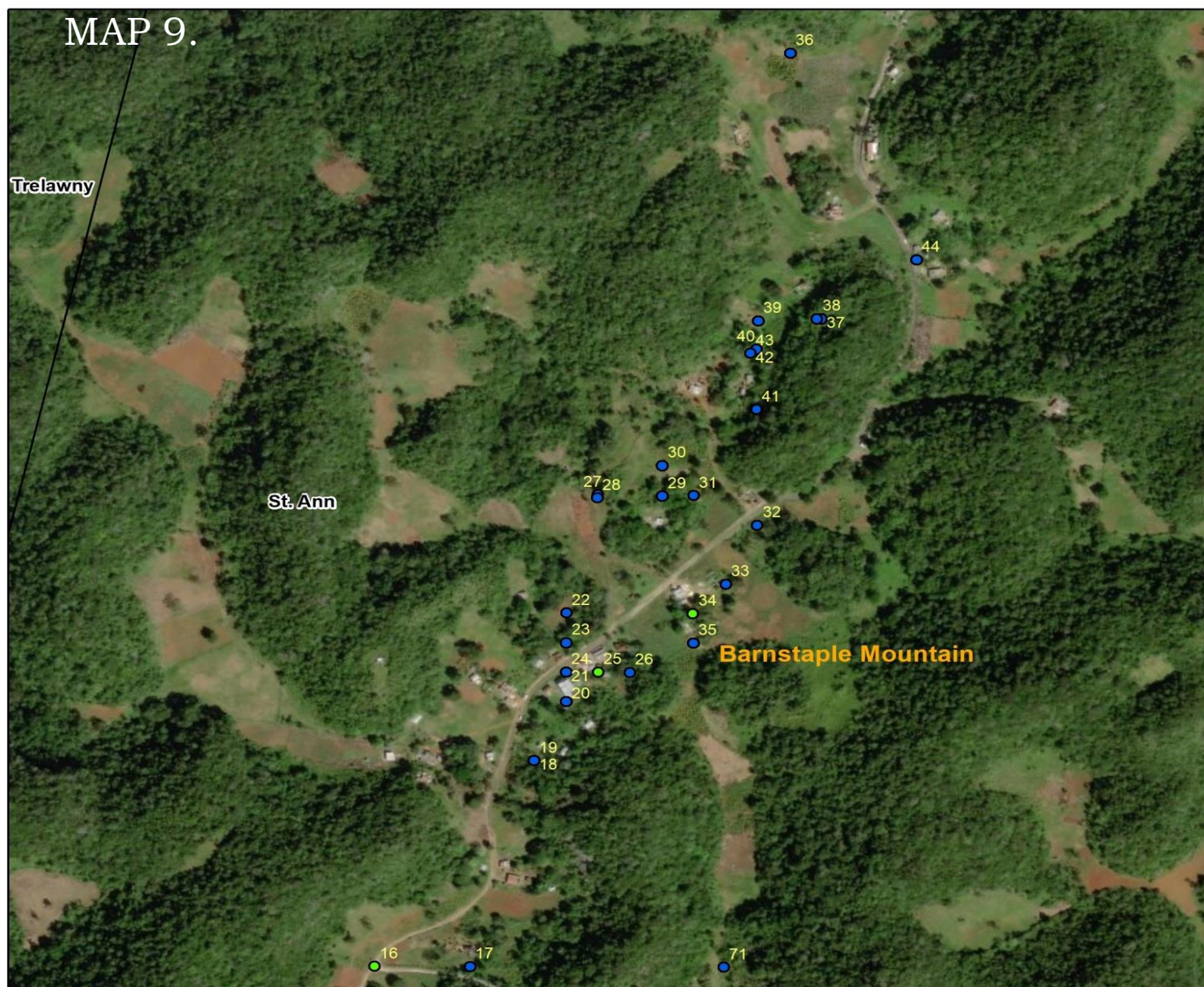
Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 11/11/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Barnstaple Mountain

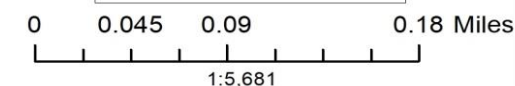
MAP 9.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area



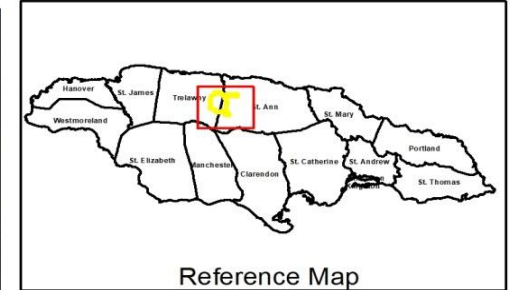
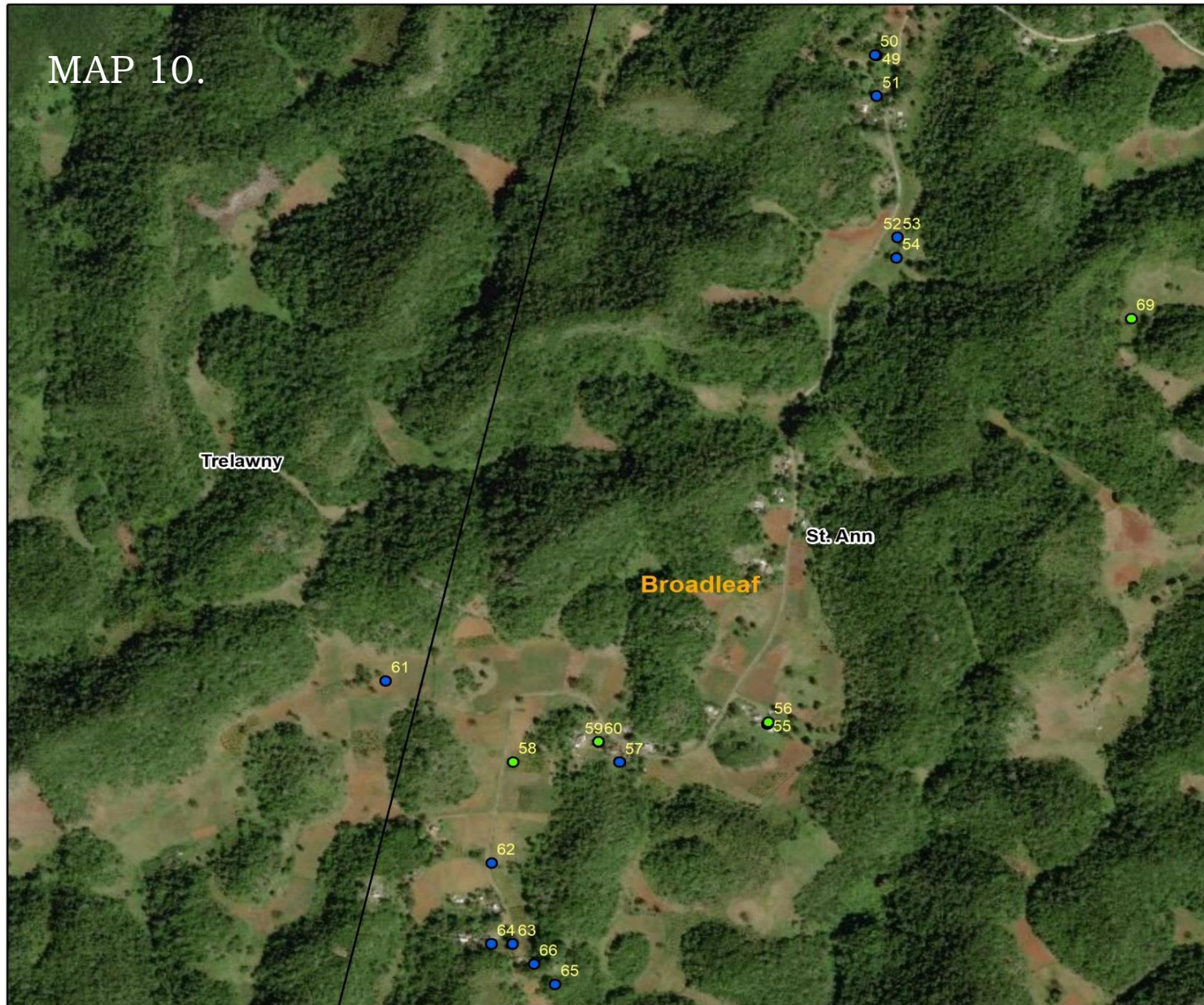
Prepared by the Archaeology Division
 GIS Operator: Winston Abrahams
 File Location: H:\MXD
 Date: 11/11/2019

Projected Coordinate System: JAD 2001
 Geographic Coordinate System: JAD 2001
 Datum: D Jamaica 2001
 Prime Meridian: Greenwich
 Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Broadleaf

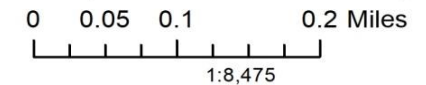
MAP 10.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area

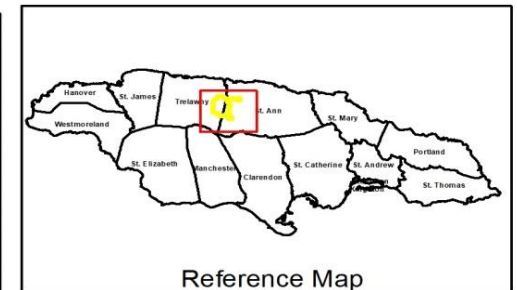


Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 11/11/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Endeavour



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area

0 0.05 0.1 0.2 Miles
1:7,990



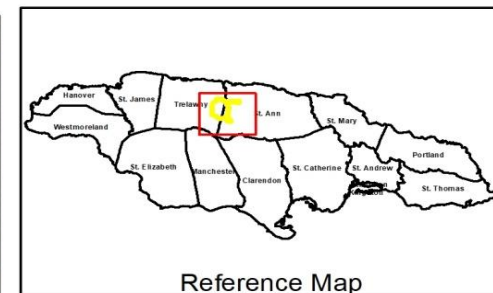
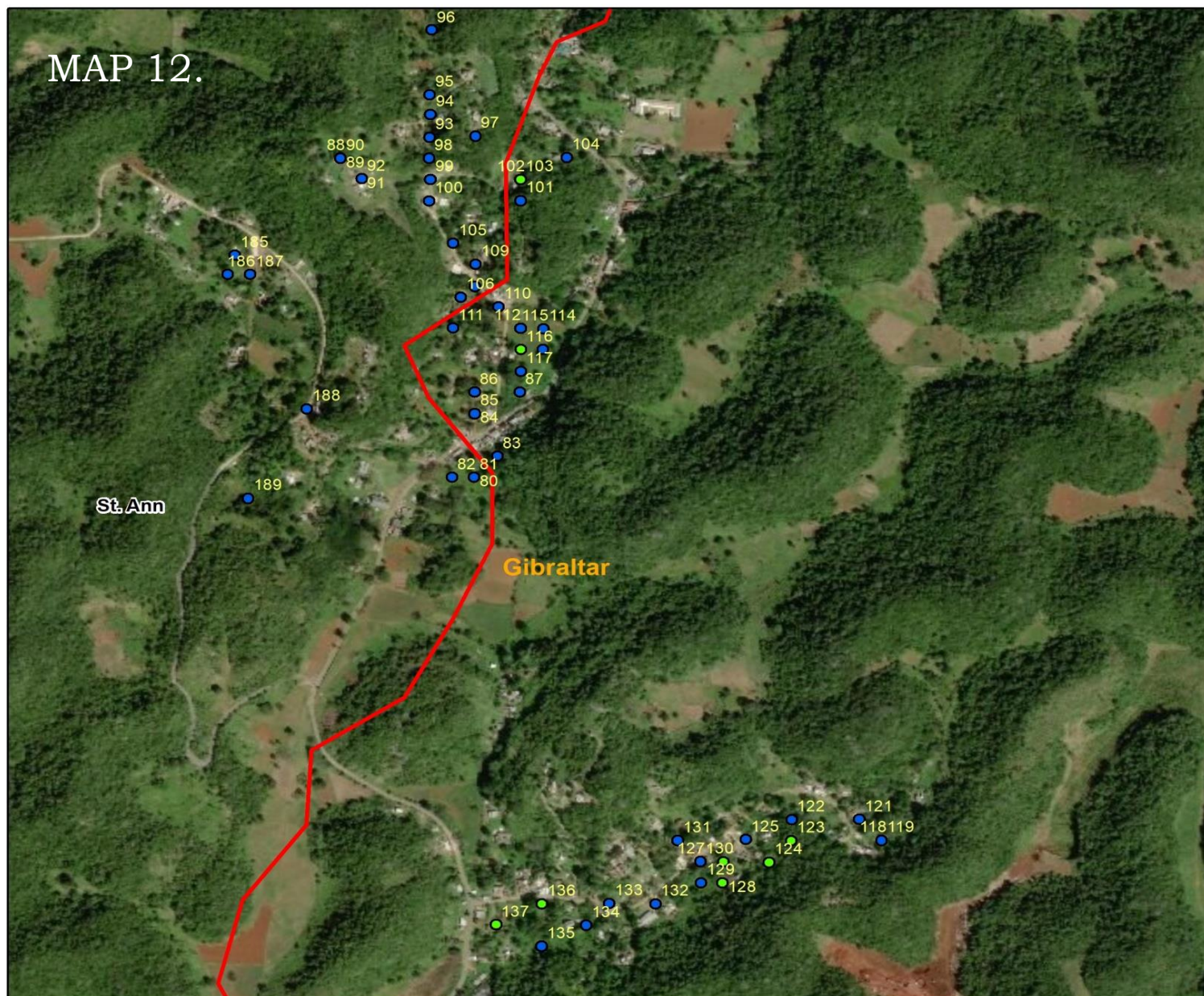
Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 11/11/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Gibraltar

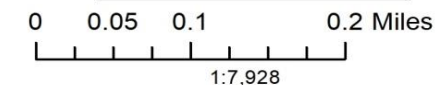
MAP 12.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area



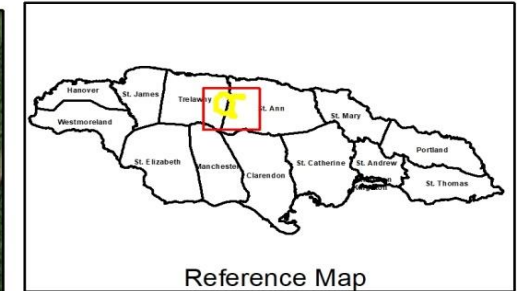
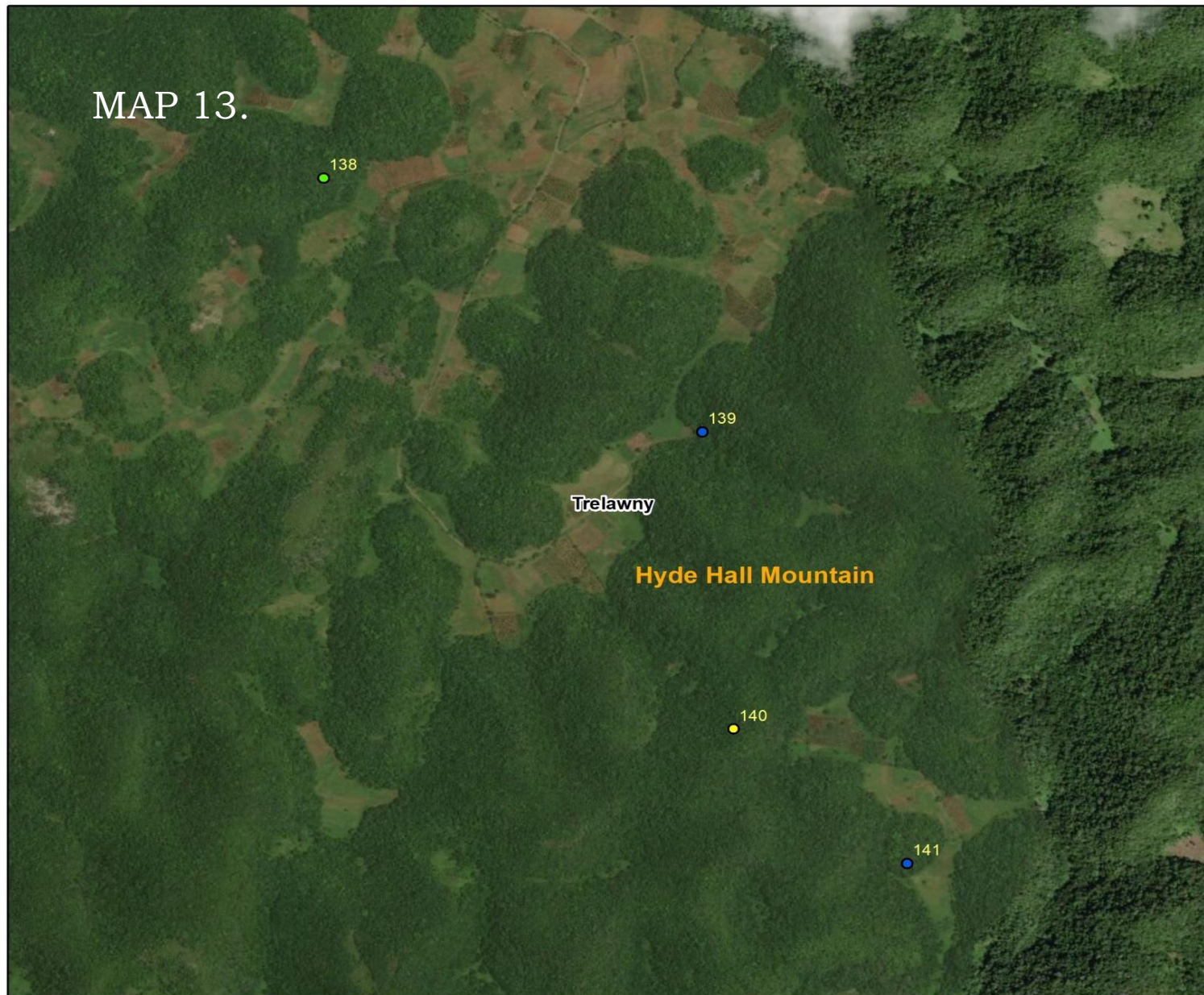
Prepared by the Archaeology Division
 GIS Operator: Winston Abrahams
 File Location: H:\MXD
 Date: 11/11/2019

Projected Coordinate System: JAD 2001
 Geographic Coordinate System: JAD 2001
 Datum: D Jamaica 2001
 Prime Meridian: Greenwich
 Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Hyde Hall Mountain

MAP 13.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area

0 0.075 0.15 0.3 Miles
1:11,357



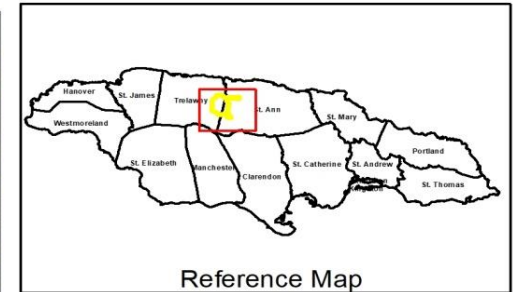
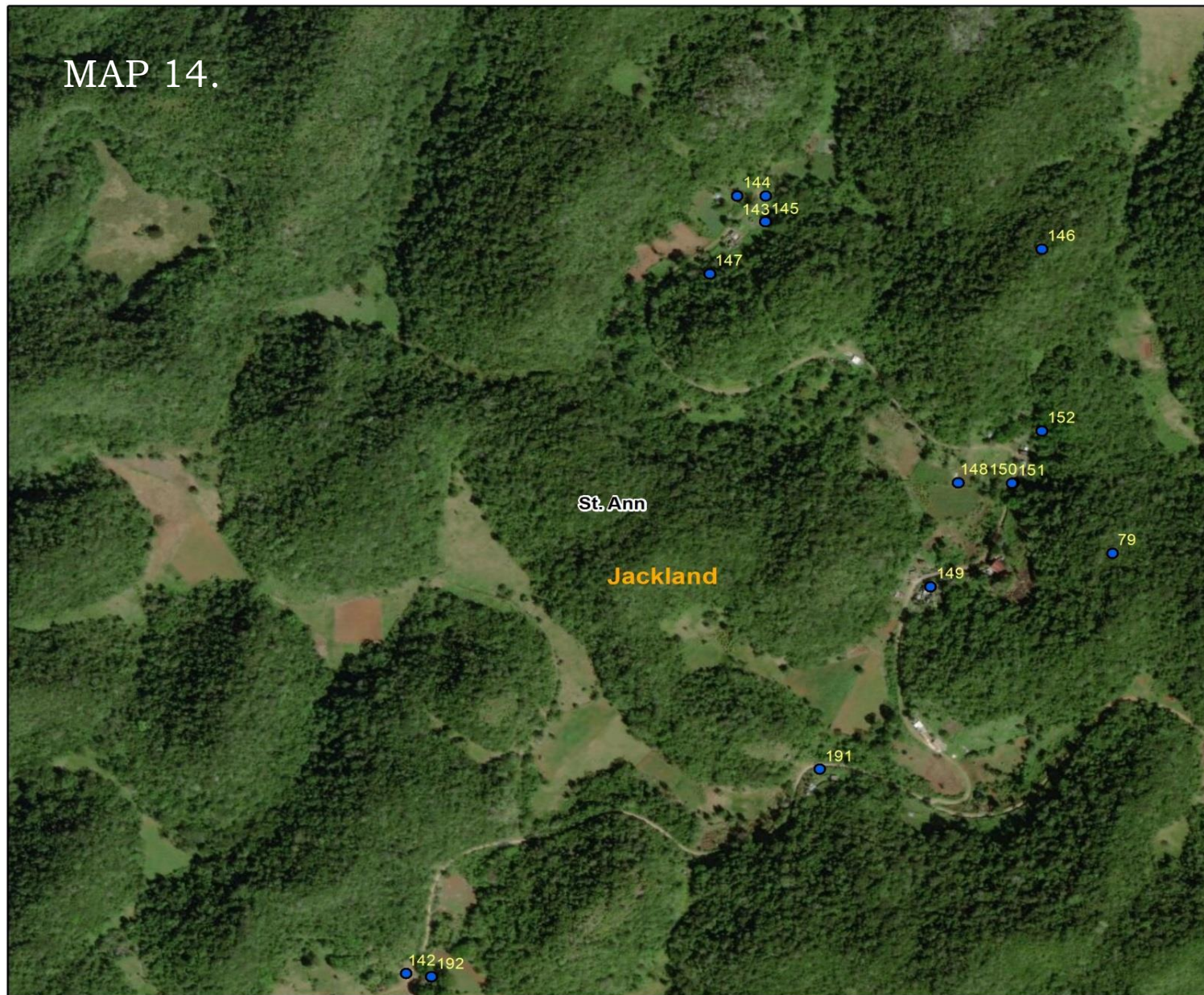
Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 11/11/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Jackland

MAP 14.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area

0 0.05 0.1 0.2 Miles
1:6,493



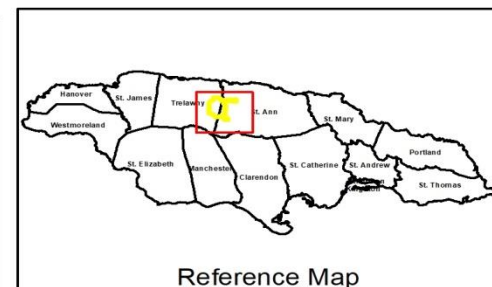
Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 11/11/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Madras

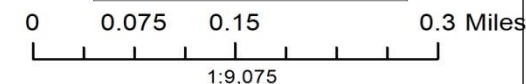
MAP 15.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area

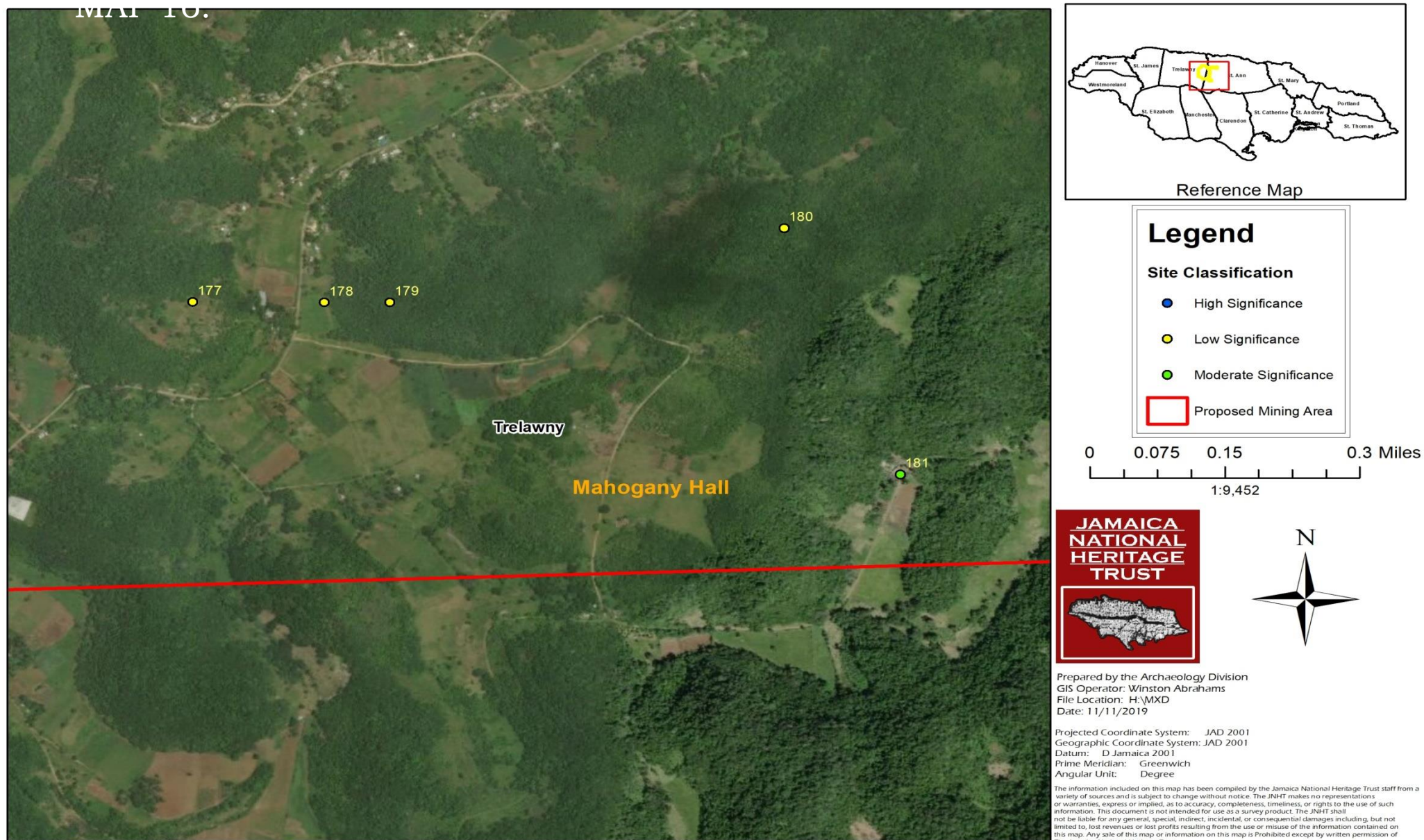


Prepared by the Archaeology Division
GIS Operator: Winston Abrahams
File Location: H:\MXD
Date: 11/11/2019

Projected Coordinate System: JAD 2001
Geographic Coordinate System: JAD 2001
Datum: D Jamaica 2001
Prime Meridian: Greenwich
Angular Unit: Degree

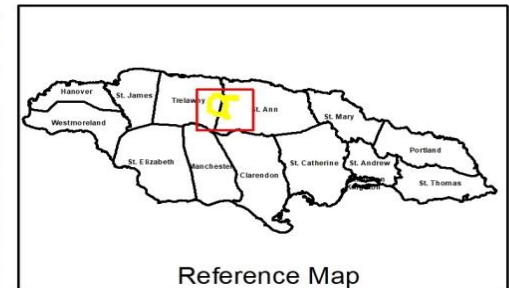
The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

Spatial Distribution of Archaeological Resources in Mahogany Hall



Spatial Distribution of Archaeological Resources in Sawyers

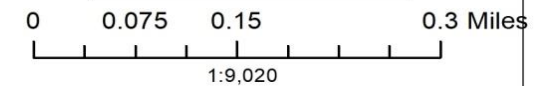
MAP 17.



Legend

Site Classification

- High Significance
- Low Significance
- Moderate Significance
- Proposed Mining Area



Prepared by the Archaeology Division
 GIS Operator: Winston Abrahams
 File Location: H:\MXD
 Date: 11/11/2019

Projected Coordinate System: JAD 2001
 Geographic Coordinate System: JAD 2001
 Datum: D Jamaica 2001
 Prime Meridian: Greenwich
 Angular Unit: Degree

The information included on this map has been compiled by the Jamaica National Heritage Trust staff from a variety of sources and is subject to change without notice. The JNHT makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. The JNHT shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of The Jamaica National Heritage Trust.

ALPS (One of Numerous grave yards), Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019



6. IMPACT IDENTIFICATION AND MITIGATION MEASURES

6.1 INTRODUCTION

This section of the study looks at the potential impacts on the cultural heritage resources identified in Section 5 and prescribes appropriate mitigation strategies to ensure their in-situ or ex-situ preservation. Analysis of potential impact was done in the contexts of negative or positive, major to minor, direct or indirect, long term or short term and reversible or irreversible impact. The findings are presented in Tables 2 and 4. Consideration was also given to the cumulative impact as well.



6.2 ANALYSIS OF IMPACT

Table 4. Potential Impact and Mitigation Measures

Resource ID	Potential Impact	Duration		Magnitude		Form		Mitigation
		Long	Short	Major	Minor	Reversible	Irreversible	
<u>Sawyers</u>	Negative Impact							
	Numerous historical grave sites, historical structures and ruins, the Old Village site with its associated artefact assemblages could suffer direct adverse effects by the proposed development. Other significant archaeological assets that may be adversely impacted are Cudjoe Cave, the Old Sawyers Village and the cholera cemetery.	√		√			√	<ul style="list-style-type: none"> • Delineate the community along with Cudjo Cave, the abandon village site that contains the cholera burial ground, historical graves, foundations of structures along the abandoned old Sawyers road that leads to Stewart Town and protect them by designating them Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property as a result of bauxite mining operation
	Potential dust and noise pollution	√		√		√		
	Potential damage to structures caused by dynamite blasting from							

	bauxite mining infrastructural development	√		√		√		
	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√		√	√	
	Temporary employment		√	√	√	√		
	Improved vehicular access to the community	√		√			√	
	Improved heritage tourism in the area	√		√		√		
<u>Alps</u>	Potential Negative Impact							
	Although numerous archaeological assets identified are located on limestone hillocks and may be safe from potential direct impact; those found in the depressions are potentially threatened by direct deleterious impact. Those found in adjunct	√		√			√	<ul style="list-style-type: none"> Delineate a boundary around the community, including the Old Village area, Lawrence, Backra Yard, Owl Mountain and Rocky Fortt and protect them by designating the area Protected National Heritage under the JNHT Act.

[illegible]

	Improved heritage tourism in the area	√		√		√		
<u>Madras</u>	Potential Negative Impact Along with Gibraltar this community possesses perhaps the largest number of well-preserved historical vernacular houses, shops, graves and plantation ruins, all of which have the potential to be negatively impacted by the mining project. Madras Yard exemplifies the outstanding archaeological assets to be found in the community. Dust and noise pollution Damage to structures caused by dynamite blasting from bauxite mining	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around the village and protect the area by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property.

	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√		√	√		
	Improved heritage tourism in the area	√		√		√		
<u>Gibraltar, Plantain Walk</u>	Potential Negative Impact The community is one of the larger communities that are essentially linear in pattern but sprawl into several small contiguous depressions and on the steep slopes of hillocks. The proposed bauxite mining has the potential to negatively affect significant archaeological resources including numerous historical graveyards, water tanks, nog-walled vernacular houses and plantation ruins. The community has the best	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around the village and protect the area by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property.

	preserved assemblage of historical shops.							
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√	√	√	√		

<u>Bryan Castle</u>	Negative Impact							
	Not many archaeological assets were identified in Bryan Castle. Nonetheless, those historical graves and foundations of ruins have the potential of being negatively impacted by the development. The area is a predominant small scale yam farming area. The small population live primarily on the limestone hillock.	√		√			√	<ul style="list-style-type: none"> Place boundary around the significant archaeological assets and protect them by designating them Protected National Heritage under the JNHT Act.
	Dust and noise pollution		√	√	√	√		<ul style="list-style-type: none"> Compensation for damages inflicted on private property
	Positive Impact							
	Improved infrastructure such as light, water and road.	√		√		√		
	Temporary employment		√		√	√		
Broadleaf	Potential Negative Impact							<ul style="list-style-type: none"> Delineate a boundary around the village and
	A small farming							

	community where ninety-five percent of the people are engaged in farming. They traditionally prepare the land using mule and plough technique. The small nog-walled vernacular house and historical graveyards are well preserved. Proposed bauxite mining has the potential to negatively affect the significant archaeological resources.	√		√			√	protect the area by designating it Protected National Heritage under the JNHT Act.
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous.	√		√			√	
	Temporary employment		√		√	√		
								<ul style="list-style-type: none"> • Compensation for damages inflicted on private property

Barnstaple Mountain	Potential Negative Impact							
	This community is another example of preserved historical vernacular houses, shops, graves, barbecues and churches; all of which have the potential to be negatively impacted by the mining project.	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around the village and protect the area by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property
	Dust and noise pollution.	√		√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining.	√		√		√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous.	√		√			√	
			√		√	√		
	Temporary employment.	√	√	√	√	√		
	Improved heritage tourism in the area.							

Belmont	Potential Negative Impact							
	Bauxite mining activities has the potential to destroy the few historic vernacular structures recorded in this area. A large cave referred to as Drip Cave found in a large depression may also be adversely impacted.	√		√			√	<ul style="list-style-type: none"> Delineate an area around the cave , sinkhole and Great House and protect them by designating them Protected National Heritage under the JNHT Act. Clearly flag with colour code those low significant features that are schedule for relocation of alteration.
	Dust and noise pollution.		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining.	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous.	√		√			√	
	Temporary employment.		√	√	√	√		

Covey Mountain	Potential Negative Impact The most prominent feature identified in this area is the degenerated Covey Mountain Great House and associated features. The house appeared to have been abandoned in recent times and be easily restored. This sturdy two-storey structure may be severely affected by the proposed mining activities.	√		√			√	<ul style="list-style-type: none"> • Delineate the Great House premises along with its associated vestiges and protect it by designating it Protected National Heritage under the JNHT Act. • Clearly flag with clour code to indicate this site is of high significant and is to be protected
	Potential Positive Impact Development and use of the property in the promotion of heritage tourism in the area.	√	√	√	√	√		
Endeavour	Potential Negative Impact This is essentially a small linear pattern community that has a mixture of historical nog-walled structures and 1960s	√		√			√	<ul style="list-style-type: none"> • Delineate the community and protect it by designating it Protected National Heritage under the JNHT Act.

	concrete houses. Farming is the main source of livelihood. The district may be negatively impacted by the proposed mining activities.							<ul style="list-style-type: none"> • Compensation for damages inflicted on private property
	Dust and noise pollution.		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining.	√	√	√	√	√	√	
	Potential Positive Impact							
	Relocation of those property owners who are desirous.	√		√			√	
	Temporary employment.		√	√	√	√		

First Hill	Potential Negative Impact The most prominent features of this community are the historical church and degenerated manse. A number of well-preserved small nog-walled houses are present. The community is located on a limestone hillock. It is anticipated that this community may not be directly impacted.							<ul style="list-style-type: none"> • Compensation for damages inflicted on private property.
	Dust and noise pollution.		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining.	√	√	√	√	√	√	
	Potential Positive Impact Temporary employment.		√	√	√	√		

Owl Mountain	Potential Negative Impact							
	The most significant archaeological asset observed on this site is the Owl Mountain Great House and barbecue ruins located at the apex of a very large conical limestone hillock. Construction of mining service road may negative impact the site	√		√			√	<ul style="list-style-type: none">• Include this site in a delineated boundary with the Alps community and protect the area by designating it as Protected National Heritage under the JNHT Act.• Clearly flag with colour code to indicate this site is of high significant and is to be protected

Jackland	Potential Negative Impact							<ul style="list-style-type: none"> • Delineate the community and protect it by designating it Protected National Heritage under the JNHT Act. • Compensation for damages inflicted on private property
	The proposed mining activities could affect several historical graves, vernacular structures which include nog-walled houses, remnants of a kiln and cut stone water tanks.	√		√			√	
	Dust and noise pollution		√	√	√	√		
	Damage to structures caused by dynamite blasting from bauxite mining	√	√	√	√	√	√	
	Positive Impact							
	Relocation of those property owners who are desirous	√		√			√	
	Temporary employment		√	√	√	√		

Lawrence	<p>Potential Negative Impact</p> <p>The Lawrence Great House ruin and graves are the prominent archaeological resources found perched on the top of a large conical limestone hillock. Mining service road construction may adversely adverse impact the site.</p>	√		√			√	<ul style="list-style-type: none"> • Include this site in a delineated boundary with the Alps community and protect the area by designating it as Protected National Heritage under the JNHT Act. • Clearly flag with clour code to indicate this site is of high significant and is to be protected
Manchester Pen	<p>Potential Negative Impact</p> <p>The cut-stone ruins of the first Westwood High School may be destroyed by the proposed mining activities in this area.</p>	√		√			√	<ul style="list-style-type: none"> • Delineate a boundary around this site and protect it by designating it Protected National Heritage under the JNHT Act. • Clearly flag with clour code to indicate this site is of high significant and is to be protected

Mahagony Hall	Potential Negative Impact All homes in the area are abandoned and are in ruin within this area. Some farming of yam was observed. The mining proposal has the potential of demolishing these ruins.	√		√			√	<ul style="list-style-type: none"> Clearly flag with colour code those low significant features that are scheduled for relocation or alteration
Richmond Pen	Potential Negative Impact This small community boasts one of the few Great Houses within the proposed mining license area for St. Ann. A few smaller vernacular houses were recorded most of which have been abandoned. These could be negatively impacted by the proposed mining activities. Dust and noise pollution. Damage to structures caused by dynamite blasting from bauxite mining.	√		√			√	<ul style="list-style-type: none"> Compensation for damages inflicted on private property Delineate the community and protect it by designating it Protected National Heritage under the JNHT Act.
			√	√	√	√		
		√	√	√	√	√	√	

	Potential Positive Impact							
	Relocation of those property owners who are desirous.	√		√			√	
	Temporary employment.		√	√	√	√		



Richmond Pen (Nog Wall Vernacular House), St. Ann
SOURCE: JNHT Sites and Monuments Record - 2019

6.3 CUMULATIVE IMPACT

6.3.1 Outstanding Universal Value (OUV)

Cumulative impacts have been taken into consideration especially in light of the fact that the Prime Minister has charged the Jamaica National Heritage Trust (JNHT) with the task of taking the necessary steps to have the site designated a World Heritage Site. This proposed development will present challenges for the site in terms of establishing an appropriate Buffer Zone that is integral for preserving the property's Outstanding Universal Values (OUV). Open-pit Bauxite Mining has the potential to inflict direct and indirect adverse impact on communities in the target areas. Tangible assets, both cultural and natural, may be damaged during the pre-mining and mining phases. One of the fundamental objectives of World Heritage inscription is to improve the quality of life of people who live within and around the property and who may be the owners of the cultural heritage deemed to possess Outstanding Universal Value. In this instance, the character of SML 173 may be altered and as such, alteration of the natural environment has the potential to reciprocate change in the cultural environment.

6.3.2 Archaeological Research Value

The material remains of past generations often are the only surviving records that links the past to the present. Understanding the achievements of our progenitors are sometimes attained by studying tangible evidence they left behind. Linkages between Taino, Maroons, Free Villages and plantation societies are best realized by analyzing the archaeological assets. Historical architecture and construction materials, grave designs and inscriptions, for example, are valuable primary record sources in reconstructing past events and associated filial linkages. They are also significant in establishing socio-economic, racial, ethnic and religious profiles. It is incumbent upon the developer to ensure that significant archaeological resources are safeguarded. The cumulative impact of mining in this regard has the potential to threaten the archaeological and cultural heritage research value of SML 173.

6.3.3 Authenticity

Though communities in the area have experienced significant changes throughout the centuries, their fundamental character has withstood the test of time. Over an estimated 75% of the existing buildings are historical vernacular nog-wall structures. They vary from a single room dwelling to two-storey shops, butteries, kitchens and outhouses. The clusters of vernacular nog-wall structures, including houses and graves, exemplify this indigenous type of architecture. It constitutes the largest and best-preserved ensemble of its nature in the island.

These deep rural communities are historically agrarian with about 80% of residents making their livelihood from agriculture, cultivating mainly yam and corn. Ninety percent (90%) of the traditional farming takes place in the adjunct bauxite-rich valleys. This authentically sedentary way of life and the character of their settlement, handed down by generations, may be negatively impacted by the proposed mining project. Some of the potential negative changes to their authentic cultural environment may include:

- Changes to their original community layout, location and traditional farming practice;
- Potential destruction of their progenitor's legacy which is oftentimes manifested in the historical and archaeological assets;
- Exposing the communities to incursion and adverse behavioural influences that result in increased crime and violence;
- Changes in cultural or traditional values.

The potential impacts aforementioned may be negative, major, long term and irreversible.

6.4 MITIGATION

The main mitigation measures to address potential negative cumulative impacts are as follows:

- Group Communities and insular archaeological sites into three clusters and place boundary delimitations around

them and have them designated Protected National Heritage by the JNHT.

- Where an isolated archaeological asset of high significance is located too far from a cluster, it must be delineated and protected under the JNHT Act.
- All archaeological resources outside communities must be clearly flagged and colour coded indicating whether it is to be preserved or relocated.
- Where the declaration process of a site or an area is entrain no mining activity is allowed in that space as a Preservation Notice will be placed there by the JNHT.
- Under the JNHT Act, 1985, a Preservation Notice (sections 19 and 20, JNHT Act) shall be placed on any work that is in breach the Act to protect and preserve heritage assets as National Monument or National Heritage.
- Where there are unreported accidental find of significant archaeological resources, the JNHT will place a Preservation Notice (sections 19 and 20, JNHT Act) on the site in order to conduct its own investigation and recording of the find (s) and a determination reached to preserved the find (s) in-situ or ex-situ.
- A detailed recoring of all sites determined to be altered or relocated. Detail recording must be done before work commences.
- Construction of service roads and other bauxite mining facilities are to be monitored by the JNHT.
- A schedule of construction works should be prepared and presented to the JNHT.
- The use of explosives is prohibited in the vicinity of sensitive archaeological assets designated protected National Heritage or in the process of being designated Protected National Heritage.

6.6 RECOMMENDATION

- The developer, Noranda Jamaica Bauxite Partner II, collorate with the relevant government departments and agencies to improve infrastructures, road, water, electricity, in communities within SML 173.
- Tourism Product Development Company (TPDCo) appraise those sites identified in the proposed mining area to ascertain their viability and develop sustainable heritage tourism trail.



A depression in Barnstaple Mountain with surficial anomalies that could be remnants of graves or house foundations
SOURCE: JNHT Sites and Monuments Record - 2019

A small historical nog wall house on stone foundation (Madras)
SOURCE: JNHT Sites and Monuments Record - 2019



7. ANALYSIS OF ALTERNATIVES

7.1 ALTERNATIVE SITES

- i. There are several other SML designations situated outside the proposed Cockpit Country Protected area that are possible alternative sites to SML 173. Like SML 173, mining of these alternative sites will encounter a myriad of issues some of which are enumerated as follows:
 - Potential disruption of sensitive endemic biodiversity
 - Potential destruction of significant cultural heritage assets;
 - Potential disruption of valuable ground water resources
 - Possible relocation of communities and destruction of farm lands.
 - Noise and air pollution
 - Disruption of traditional way-of-life.
 - Create uncertainty and anxiety among residents and business community.
 - Potential exacerbation poverty in marginalized communities.
 - Mining, road and or rail or zipline construction and installation may adversely affect the aesthetics of the ambient environment.
- ii. Areas in the Parishes of Manchester and St. Elizabeth that fall outside the Cockpit Country zone may be considered for bauxite mining. Again, the aforementioned issues are central to the consideration of these alternative locations. The exponential cost incurred for the construction of new infrastructural facilities to transport the bauxite ore to the Noranda Discovery Bay Bauxite Pier.

7.2 ALTERNATIVE DESIGN

The construction of a road to reach the bauxite ore deposits and transport it to the processing plant may have serious, deleterious effects on the salubrious natural and cultural environment. A less impactful alternative may be the use of conveyor belt or cable

buckets. These alternatives, however, may be more time-consuming and costly; especially in the area of instalment and maintenance.

7.3 NO-ACTION ALTERNATIVE

Defaulting on the proposed development may result in:

- Loss of potential employment opportunity for community members.
- Lost potential opportunity for infrastructural development and improved housing stocks.
- Lost opportunity for poverty alleviation.



ALPS (Great House ruin), Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019



Lawrence Great House ruins and grave site (Trelawny)
SOURCE: JNHT Sites and Monuments Record - 2019

8. MONITORING PROGRAMME

The aim of this monitoring programme is to ensure compliance with relevant legislation, implementation of mitigation to minimize negative impacts. If a permit is granted for the proposed development, Noranda Jamaica Bauxite Partner II (Noranda) should provide the Jamaica National Heritage Trust (JNHT) with the final project plans and a schedule of phased activities. The JNHT will use the schedule to monitor the activities of the project and its impact on the cultural resources.





Vernacular House, Rip Street, Gibraltar, St. Ann
SOURCE: JNHT Sites and Monuments Record - 2019

9. BIBLIOGRAPHY

Bailey, Betty. *“Tombstones in the Jewish Cemetery and what they Tell”* Jamaica Journal 20:2

Beckles, Hilary edited. *Inside Slavery, Process and Legacy in the Caribbean Experience.* Canoe Press the University of the West Indies, Barbados, Jamaica, Trinidad and Tobago, 1996

Besson, Jean. *Two Martha Braes Two Histories European Expansion and Caribbean Culture-Building in Jamaica.* The University of North Carolina Press, 2002

Butler, Harry. *The Story of British Shorthand* Sir Isaac Pitman & Sons. 1951

Cassidy, Frederic G. and R. B. LePage. *Dictionary of Jamaican English.* Cambridge: Cambridge University Press, 1967

Ching, Francis D.K. *A Visual Dictionary of Architecture.* New York, Chichester, Singapore, Brisbane, Toronto, Weinheim: John Wiley and Sons Inc, 1995

Clarke, Dendy, Phippo. *The Voice of Jubilee: A Narrative of the Baptist Mission Jamaica from Its Commencement, with Biographical Notices of Its Fathers and Founders.* London: John Snow Paternoster Row, 1865

Cundall, Frank. *Historic Jamaica.* Kingston: Institute of Jamaica, 1915

Duerden, James Edwin. *Aboriginal Indian Remains in Jamaica.* Kingston: Institute of Jamaica, 1897

Edwards, Bryan. *The History, Civil and Commercial of the West Indies.* London: Cambridge University Press, 1819

Edwards, Bryan. *The proceedings of the Governor and Assembly of Jamaica, in regard to the Maroon Negroes.* London: Cambridge University Press, 1796

Espeut, Peter. *An Encyclopedia of Geographical names in Jamaica Past and Present: with historical and biographical notes, anecdotes and legends* (forthcoming)

Fremmer, Ray. *James Goodin Unsung Hero* the Daily Gleaner 17 January 1982

Gordon, Shirley. *Our cause of His glory: Christianity and Emancipation in Jamaica*, Mona: The Press UWI, 1998

Green, Pat, “Small Settler’ Houses in Chapelton: Microcosm of the Jamaican Vernacular” *Jamaica Journal* 17 (3) (1984)

Harvey and Brewin. *Jamaica in 1866: A narrative of a tour through the island with remarks on its Social Educational and Industrial Condition.* London: A. W. Bennett, 5 Bishops Gate Street, 1867

Higman Barry. *Jamaica Surveyed Plantation Maps and Plans of the Eighteenth and Nineteenth Centuries.* Kingston: Institute of Jamaica Publications Limited, 1988

Johnson, Anthony. *St. Ann, Portrait of the Garden Parish.* Teejay Limited, 1995

Jones, Phillip Allsworth. *Pre Colombian Jamaica, Jamaica Caribbean Archaeology and Ethnohistory.* University Alabama Press, 2008

Jamaica National Heritage Trust. Cockpit Country Heritage Survey, 2009

Keagan and Atkinson. *The Earliest Inhabitants: The Dynamics of the Jamaican Taíno.* Kingston: University of West Indies Press, 2006

List of Properties 50 acres and Upwards 1912, 1920, 1930. (National Library of Jamaica, Kingston)

Osborne, Francis J. *History of the Catholic Church in Jamaica.* Loyola Press, 1988

Patterson, Orlando. *The Sociology of Slavery: An Analysis of the Origins, Development, and Structure of Negro Slave Society in Jamaica.* MacGibbon & Kee, 1967

Pigou, Elizabeth “Western Responses to Death in a Jamaican Context” *Jamaica Journal* 20:2

Robinson Carey. 2007 pg19

Senior, Olive. *Encyclopedia of Jamaican Heritage.* The Guinep Publishers Limited 2003

Sibley, Inez Knibb. *Dictionary of Place-names in Jamaica*. Kingston: Institute of Jamaica Publications Limited, 1978

Sibley, Inez Knibb. *The Baptists of Jamaica 1793- 1965*. The Baptist Union, 1965

Sturge, Joseph and Thomas Harvey. *The West Indies in 1837*, Hamilton Cass and Company, 1838

Underhill, Edward Bean. *The West Indies: Their Social and Religious Condition*. London: Jackson, Walford and Hodder, 1862

Waddell, Rev. Hope Masterton. *Twenty – nine years in the West Indies and Central Africa 1829- 1858*. London: Frank and Cass Company Limited, 1863.

Maps

Conrad Douglas and Associates Limited. The SML 173 proposed bauxite mining area in sections of Saint Ann and Trelawny 2019

Conrad Douglas and Associates Limited. SML 173 Karst Topography and Bauxite Ore Deposits

Craskell, Thomas and Simpson. Map of the County of Cornwall & Middlesex in the Island of Jamaica (surveyed 1756-61), (1763)

Jamaica National Heritage Trust Act 1985.

JNHT Sites and Monuments Record 2019. Map showing SML 173 proposed mining area in Saint Ann and Trelawny

JNHT Sites and Monuments Record 2019. Spatial Distribution of Archaeological Resources

Robertson, James. To his Royal Highness the Duke of York this map of the County of Cornwall & Middlesex in the Island of Jamaica... London: Published (Nov. 1st, 1804)

Thomas Harrison Cadastral Map of St. James (1899), St. Elizabeth (1866), St. Ann (1879), Manchester (1885), Trelawny (1888)

A.M.S. E621. Second Edition 1944 Sheet 3 St. Ann's Bay prepared under the direction of the Chief Engineers U. S. Army Service (S X). US Army, Washington D.C. 1944

Jamaica 1/50,000 Sheets C, D- (1959)

Jamaica 1/50,000, (Metric Edition) Series 1 Sheet 2 1-JSD/OSD
1991- Montego Bay Jamaica

1/50,000 (Metric Edition) Series 1 Sheets 3 1-JSD/OSD 1991-
Falmouth – Browns Town

Jamaica 1/50,000 (Metric Edition) Series 1 Sheets 7 1-JSD/OSD
1991-Albert Town- Alexandria

Plans

Bell, Greene, McLaughlin. A plan showing the Boundaries of the
Industry Plantation in St. Ann 1812

M. J. Griffiths St. Ann. A Plan of Lindale Pen in the Parish of St.
Ann 1860

Morris & Cunningham. A Plan of Retreat Pen 1830

Morris , Cunningham and V. Woolridge. Plan of Mahogany Hall
Pen April 1833

Ralph Robinson. Lindale Pen 1807

Rob Rosendall. Survey diagram of 115 acres of land which is
bordered by Industry Coffee Plantation, Barnstaple Mountain and
Richmond Pen 1784



ALPS (View of panorama from Backra Yard), Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

Grave yard in yam field at Barnstaple Mountain, St. Ann
SOURCE: JNHT Sites and Monuments Record - 2019



10. APPENDICES

Glossary of Terms

Adjunct	An adjunct is something added or supplementary and therefore connected to something larger or more important.
Archaeology	Archaeology is the study of the past cultures through analysis of material cultural remains. This includes all remains which were shaped by humans (artefacts), bones of early peoples, biofacts, ecofacts, buildings and cultural landscapes. This is done by recording and retrieving these material culture. Archaeologists often work closely with historians and anthropologists.
Archaeological Assets / Resources	All tangible evidence of human activity that is pre-historical, historical, cultural or scientific that is of interest. It includes features, structures, objects or remains from an archaeological site
Archaeological Field Survey	Archaeological field survey is the methodological process by which archaeologists collect information about the location, distribution and organization of past human cultures across an area.
Archaeological Impact Assessment	Archaeological Impact Assessment (AIA) is a systematic analysis of a project / development potential effect on all aspects of the material cultural heritage, in order to provide information for the deciding agency to consider in the decision-making process, and further give bodies with relevant environmental responsibilities the opportunity to comment before consent is given or denied.
Archaeological Site	A place or area where tangible evidence of human activity of pre-historical, historical , cultural of secientific interest is or was located on , above, or below the ground or underwater. The identification, recovery and interpretation of this evidence can be carried out using archaeological research methods.
Artefact	An object produced or shaped by human craft especially a tool, weapon or ornament of archaeological or historical interest.
Barbecue	A platform made from a limestone mortar used for the drying of produce such as coffee beans, corn, pimento berries and chocolate beans. It also serves a dual purpose of both drying and a water catchment (used as a gutter).

Cultural Landscape	A cultural landscape as a geographic area (including both cultural and natural resources), that is associated with a historic event, activity or person, or exhibiting any other cultural or aesthetic values. The four general types are historical sites, historical designed landscapes, historic vernacular landscapes, and ethnographic landscapes.
Desk-based Assessment	This is an assessment of the known or potential archaeological resources within a specified area or site on land or underwater, consisting of a collection of existing written and graphic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resources in the local, regional, national or international context as appropriate.
Evaluation	A limited programme of non- intrusiveand/ or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site, and if present defines their character and extent, and relative quality. It enables an assessment of their worth in a local, national, regional or international context as appropriate
Extant	Extant is used to refer to something very old that is still existing and still in use.
Gable roof	A roof sloping downward in two parts from a central ridge so as to form a gable at each end
Hillock	A small conical limestone hill or mound
Hip roof	A roof having sloping ends and sides meeting at an inclined projecting angle
Historical	The term denotes the period after European contact as it relates to the Americas. In Jamaica all events and developments associated with this period up to the past hundred years may be classified as historical.
Karst Limsetone	Karst is an area of land made up of limestone. Limestone, also known as chalk or calcium carbonate, is a soft rock that dissolves in water. Karst landscapes feature caves, underground streams and sinkholes on the surface.

Nog	This is referred to as one of a number of short wooden pieces of inserted between the principal members of half timbered wall to strengthen the frame and retain a stone and mortar infill. The stone and lime mortar used to fill the spaces between the members of the timber frame is referred to as nogging.
Quadroon	This is a person is one quarter black and three quarter white
Pen	Enclosure for animals, farm or gentleman's estate. Pens were types of estates which produced livestock and foodstuff for the local markets, but supplemented their income by the growing of pimento, cotton, logwood for export. Working cattle, horses, asses and mules were all raised for sale to estates and plantations where they were used to power mills and transport goods and people. Pens also purchased worn out cattle from estates and plantations and fattened them for the local market.
Táíno	Amerindian people inhabiting Jamaica from around AD 650 into the seventeenth century. It is estimated that some 50- 60,000 Táíno lived in Jamaica at the arrival of the Spaniards.
Vernacular	This is a style of architecture which exemplifies the most common building techniques based on the forms and materials of a particular historical period, region or group of people.

Artefact assemblage on BACKRA YARD BARBECUE, (Alps) Trelawny
SOURCE: JNHT Sites and Monuments Record - 2019

