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CULTURAL AND NATURAL HERITAGE

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Point 7 de l'Ordre du jour provisoire: Etat de conservation de biens inscrits sur la Liste du patrimoine mondial et/ou sur la Liste du patrimoine mondial en péril

MISSION REPORT / RAPPORT DE MISSION

Morne Trois Pitons National Park (Dominica) (814)
Parc national de Morne Trois Pitons (Dominique) (814)

24 - 31 March 2017

UNESCO World Heritage Centre - WHC
International Union for Conservation of Nature - IUCN

Reactive Monitoring Mission to
Morne Trois Pitons National Park, Dominica
24 - 31 March 2017



Mission Report
May 2017

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
ABBREVIATIONS AND ACRONYMS	iv
EXECUTIVE SUMMARY	1
1. BACKGROUND TO THE MISSION	4
2. LEGAL AND MANAGEMENT FRAMEWORK	6
2.1. <i>Protected area and national legislation</i>	6
2.2. <i>Institutional framework</i>	7
2.3. <i>Management structure</i>	8
3. IDENTIFICATION AND ASSESSMENT OF ISSUES	10
3.1. <i>Lack of Retrospective Statement of Outstanding Value</i>	10
3.2. <i>Geothermal power projects development</i>	10
3.2.1. Background	10
3.2.2. Impacts	12
3.2.3. Environmental and social impact assessment	14
3.3. <i>Boundary Configuration, Neighbouring Areas and Land Use Planning</i>	15
3.3.1. Defining the Buffer zone	15
3.4. <i>Governance and management</i>	17
3.4.1. Management plan	17
3.4.2. Governance	18
4. ASSESSMENT OF THE STATE OF CONSERVATION	19
4.1. <i>Background</i>	19
4.2. <i>Global state of conservation</i>	19
4.3. <i>Threats</i>	20
4.3.1. Climate change	20
4.3.2. Hydropower	21
4.3.3. Tourism	21
5. CONCLUSIONS AND RECOMMENDATIONS	23
6. References	24
<i>Bibliography</i>	24
<i>Databases</i>	24
7. ANNEXES	25
7.1. <i>Annex 1: World Heritage Committee Decision 39COM 7B.30 (Bonn, 2015)</i>	25
7.2. <i>Annex 2: World Heritage Committee Decision 40COM 7B.73 (Istanbul, 2016)</i>	26
7.3. <i>Annex 3: Terms of Reference of the 2017 Reactive Monitoring Mission</i>	27
7.4. <i>Annex 4: Justification of Nomination for the MTPNP</i>	29
7.5. <i>Annex 5: Retrospective Statement of Outstanding Universal Value of MTPNP</i>	30
7.6. <i>Annex 6: Mission Agenda as conducted</i>	31
7.7. <i>Annex 7: Composition of the mission team</i>	33
7.8. <i>Annex 8: People met during the Mission</i>	34
7.9. <i>Annex 9: Selected Maps</i>	35
7.10 <i>Annex 10: Photographic Documentation</i>	36

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Finally, the mission owes a debt of gratitude to Ms Jacqueline Andre, recently appointed manager of the Morne Trois Pitons National Park, for her guidance and permanent support, and for sharing her first-hand knowledge about the Park.

The mission furthermore owes a debt of gratitude to the representatives of institutions, civil society organizations, consulting companies, and the private sector for sharing their views. All people consulted during the mission are listed in Annex 8; possible omissions are unintentional and exclusively the authors' responsibility.

Last but not least, the mission would like to thank the World Heritage Centre and IUCN for their full support throughout the mission and helpful comments on draft versions of this report.



ABBREVIATIONS AND ACRONYMS

ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie (France)
BRGM	Bureau de Recherches Géologiques et Minières (France)
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
DCA	Dominica Conservation Association
DOMLEC	Dominica's Electric Utility Company
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
FHPD	Forestry, Wildlife and Parks Division
GEF	Global Environment Facility
KBA	Key Biodiversity Area
IUCN	International Union for the Conservation of Nature
MAF	Ministry of Agriculture and Fisheries
MHE	Ministry of Health and Environment
MTEE	Ministry of Trade, Energy and Employment
MTUR	Ministry of Tourism and Urban Renewal
MTPNP	Morne Trois Pitons National Park
MTPNPWHS	Morne Trois Piton National Park World Heritage Site
NGO	Non-governmental Organisation
NPS	National Parks Service of Dominica
OUV	Outstanding Universal Value
OG	Operational Guidelines of the World Heritage Convention
PPD	Physical Planning Division
RSOUV	Retrospective Statement of Outstanding Universal Value
SOC	State of Conservation
SPACC	Special Program on Adaptation to Climate Change
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNDP	United Nations Development Programme
WHC	World Heritage Centre

EXECUTIVE SUMMARY

The Morne Trois Pitons National Park (MTPNP) was inscribed on the World Heritage List under natural criteria (viii) and (x) in 1997. The 21st session of the World Heritage Committee in Naples, Italy recognized its “global significance in the light of its diverse flora with endemic species of vascular plants, its volcanoes, rivers and waterfalls, illustrating ongoing geomorphological processes with high scenic value” (Decision 21 COM VIII.A).

The MTPNP presents a rare combination of natural features of World Heritage value. Its luxuriant natural tropical forest blends with scenic volcanic features of great scientific interest in this national park centred on the over 1,300-m-high volcano known as Morne Trois Pitons. With its precipitous slopes and deeply incised valleys, 50 fumaroles, hot springs, three freshwater lakes, a 'boiling lake' and five volcanoes, located on the park's nearly 7,000 ha, it offers the richest plant diversity in the Lesser Antilles.

The State Party has demonstrated its commitment to its obligations under the 1972 Convention since the property's inscription, notably, by halting the construction of ground transportation within the Park in 1999 and submitting an Environmental Impact of assessment (EIA) of a cable car project on 19 April 1999 (WHC.99/CONF.204/05), as well as by actively participating in meetings and in the survey of the Second Cycle of the Periodic Reporting Exercise for Latin America and the Caribbean.

The Committee encouraged the State Party to invite a joint World Heritage Centre/Advisory Bodies Reactive Monitoring mission to assess the progress made in the implementation of pending measures, requested by the Committee at its 39th session, concerning a geothermal project implementation.

The objectives of the mission, which took place from 24 to 31 March 2017, were the following:

1. Assess the impacts of existing geothermal infrastructure and the current status of geothermal projects in the Roseau Valley and its potential impacts on the OUV of the property;
2. Assess the progress achieved by the State Party in the preparation of an Environmental Impact Assessment (EIA) for the project which should include a specific assessment of potential impacts on the OUV of the property;
3. In line with paragraph 173 of the Operational Guidelines, assess any other relevant issues that may negatively impact on the OUV of the property, including its conditions of integrity and protection and management.
4. Assess the management arrangements within the property and other relevant coordination arrangements, at local and national level that are necessary to ensure the proper follow-up of recommendations made by the World Heritage Committee with regard to the state of conservation of the property.

Even if no documents were put at disposal of the mission before the visit, a number of pertinent key documents, including the draft TOR for a new Environmental and Social Impact Assessment of the geothermal project were presented to the mission during the meetings, and provided electronically just after the mission. The mission could also obtain a certain amount

of confirmations and commitments, namely that no energy development will be undertaken within the boundaries of the MTPNP.

Concerning the **impacts of the existing geothermal infrastructure**, the mission could ascertain that the four existing geothermal plants are placed clearly outside the property, two of which at a distance that is safe for the OUV of the MTPNP. The other two plants (Laudat village and Trafalgar) are at a distance that, although the mission could identify no specific actual or potential threats, will require specific and enhanced monitoring to anticipate any potential future negative impact on the OUV in view of possible mitigation measures. The four plants are presently not active, as the drilling exploration is over and the operational phase has to be started after completion of an environmental and social impact assessment to be started later in the current year. The mission obtained a clear commitment that no development of geothermal infrastructure will ever be allowed within the MTPNP and its buffer zone.

As regards the **progress achieved by the State Party in the preparation of an EIA** in line with IUCN guidelines, the draft ToRs of a new Environmental and Social Impact Assessment (ESIA) financed by The World Bank have been established recently and have been submitted just after the mission to the World Heritage Centre for review by IUCN. Due note has been taken by the SP of the need to integrate in the study a specific assessment of potential impacts on the property's OUV.

As concerns **other relevant issues** that may negatively impact on the OUV of the property (§173 of the Operational Guidelines), climate change primarily, then also hydropower development and tourism pressure have been discussed during the mission as sources for potential threats in the future, requiring close monitoring.

Information was provided on the **management of the property** and the resources allocated to ensure the proper follow-up of recommendations made by the World Heritage Committee. The daily management of the property is ensured by the Division of Forestry with stretched yet effective resources. There is no permanent body for the coordination with tourism, energy, public works and environment ministries and service, but steering committees are set up every time it is required, preventing conflicts with governmental sectors outside the competence of the Division of Forestry. The legislation clearly defines the property as a no-take area with strictly regulated access (camping is forbidden also in the framework of eco-tourism activities). The communities living in the villages in the vicinity of the Park are well aware of its value and collaborate with the authorities in its protection. An enhanced management plan is being developed with the support of UNDP and will concern not only the MTPNP, but all the protected areas, which represent over 70% of the territory of the Country. A 5-year study funded by the World Bank has started to design a buffer zone as part of an overall zoning strategy developed in the framework of an enhanced management plan for the property.

The mission acknowledges with gratitude the information received on the present suspension of the geothermal project, the ongoing elaboration of an EIA, the TOR of which will be submitted to the World Heritage Centre, and the ongoing study for the elaboration of a buffer zone, and notes the good conservation of the park as a no-take area with rigorously restricted access. Another immediate positive result of the mission was the finalization and provision to the World Heritage Centre of the Retrospective Statement of Outstanding Universal Value (RSOUV) of the property, which will be presented for adoption at the 41st session of the World Heritage Committee.

In light of the above, the mission has elaborated a number of recommendations whose overview is provided below. All recommendations to the State Party are presented in detail in chapter 3, where they are explained individually in corresponding sub-chapters.

Recommendation 1

Ensure that no hydropower or geothermal projects are allowed within the boundaries of the property as they are incompatible with its World Heritage status, and foresee an EIA for each of the future hydropower or geothermal projects in the vicinity of the property, assessing potential impacts on the Outstanding Universal Value (OUV) in line with the IUCN World Heritage Advice Note on Environmental Assessment, before making any decisions that are difficult to reverse, in accordance with paragraph 172 of the Operational Guidelines.

Recommendation 2

Continue monitoring in the area of Laudat and Trafalgar for any potential impacts on the OUV of the property from the exploration phase of the geothermal project and to ensure that any impacts from the operational phase can be detected in a timely manner and properly mitigated.

Recommendation 3

Undertake, as foreseen in the terms of reference of the Environmental and Social Impact Assessment (ESIA), an assessment of potential impacts of the geothermal project on the OUV of the property, in line with IUCN's World Heritage advice note on environmental assessment) considering any necessary mitigation measures, and submit a copy of the ESIA to the World Heritage Centre for review by IUCN, prior to any decision to approve the operational phase of the project.

Recommendation 4

Establish an effective buffer zone of the Morne Trois Pitons, in the framework of the project financed to this end by the GEF, ensuring that threats to OUV, including conditions of integrity, are clearly considered in this process and, once the buffer zone of the National Park has been established, to develop a minor boundary modification proposal to officially establish a buffer zone of the property.

Recommendation 5

Finalize the preparation of an updated management plan for the property in the framework of the project financed to this end by UNDP.

Recommendation 6

Further consolidate the governance of all protected areas of Dominica, taking into consideration the institution of a national park service, based on the conclusions of the study funded by the Caribbean Development Bank and in conformity with the original provisions of the National Parks and Protected Areas Act (1975).

Recommendation 7

Develop and implement a long-term monitoring programme of climate change impacts on biodiversity values, with special attention given to the most sensitive species and habitats.

1. BACKGROUND TO THE MISSION

The Commonwealth of Dominica is one of the three largest Windward Islands in the Caribbean Lesser Antilles (see Map 1).

The Morne Trois Pitons National Park (MTPNP) is located in the highlands of south-central Dominica at 9.5 km northeast from the capital Roseau and covers 6,857 hectares. The MTPNP is the only Dominican property inscribed on the World Heritage List (1997). Presenting a rare combination of natural features of World Heritage value, the MTPNP was inscribed on the World Heritage List under criteria (viii) and (x) at the 21th session of the World Heritage Committee (Naples, 1997). By Decision 21 COM VIII, the Committee pointed out the “global significance [of the property] in the light of its diverse flora with endemic species of vascular plants, its volcanoes, rivers and waterfalls, illustrating ongoing geo-morphological processes with high scenic value”.

In November 2013, the State Party provided the World Heritage Centre with information on a geothermal project in the Roseau valley, in the vicinity of the Park. The World Heritage Centre then requested the submission of an EIA for review by the Advisory Bodies. In its Decision 39 COM 7B.35 (July 2015), the World Heritage Committee regretted that the State Party did not provide completed Environmental Impact Assessments (EIAs) for the two geothermal production wells, nor the feasibility study or an EIA for the construction of a Small Geothermal Power Plant adjacent to the property, and requested the State Party to provide all available documentation on the project as a matter of urgency, including an assessment of potential impacts of the project on the Outstanding Universal Value (OUV) of the property, in line with IUCN's World Heritage Advice Note on Environmental Assessment.

Dominica was then hit (August 2015) by Tropical Storm Erika, which was the deadliest natural disaster in Dominica since Hurricane David (1979) and the State Party was not able, in the following months dedicated to humanitarian priorities and recovery, to fulfill the requests of the Committee. However, on 6 November 2015, the State Party submitted to the World Heritage Centre the Environmental Impact Assessment (EIA) of Geothermal Wells Drilling in the Roseau Valley and its executive summary both prepared in 2013, as well as the EIA prepared for the Phase one (exploratory drilling of the project) in 2011.

By its decision 40 COM 7B.73 (July 2016) the World Heritage Committee took note of the Environmental Impact Assessments (EIAs). Noting that the abovementioned EIAs did not include an assessment of potential impacts of the project on the Outstanding Universal Value (OUV) of the property, it reiterated its request to the State Party to prepare such an EIA, in line with IUCN's World Heritage Advice Note on Environmental Assessment, and urged again the State Party to suspend the geothermal project until the above mentioned EIA has been submitted to the World Heritage Centre, and reviewed by IUCN.

In the same decision, the Committee also reiterated its request to the State Party to invite a joint World Heritage Centre/IUCN Reactive Monitoring mission to the property, to assess the impacts of existing geothermal infrastructure, and the current status of the geothermal project in the Roseau Valley and its potential impacts on the OUV of the property.

The State Party finally invited the mission for the period 27 - 31 March 2017. The objectives of this mission, as per the Terms of Reference established in line with **Decision 40 COM 7B.73** were the following:

The terms of Reference of the mission were the following:

1. Assess the impacts of existing geothermal infrastructure and the current status of geothermal projects in the Roseau Valley and its potential impacts on the OUV of the property;
2. Assess the progress achieved by the State Party in the preparation of an Environmental Impact Assessment (EIA) for the project which should include a specific assessment of potential impacts on the OUV of the property;
3. In line with paragraph 173 of the Operational Guidelines, assess any other relevant issues that may negatively impact on the OUV of the property, including its conditions of integrity and protection and management.
4. Assess the management arrangements within the property and other relevant coordination arrangements, at local and national level that are necessary to ensure the proper follow-up of recommendations made by the World Heritage Committee with regard to the state of conservation of the property.

The mission was carried out by Mr Mauro Rosi (representing the UNESCO World Heritage Centre) and Mr Thierry Lefebvre (representing IUCN) and took place from 24 to 31 March 2017.

Even if no documentation was provided by the State Party in preparation of and in advance to the mission, a number of pertinent key documents, including the draft TOR for a new Environmental and Social Impact Assessment of the geothermal project were presented to the mission during the meetings and provided in electronic copy just after the conclusion of the mission. The mission could visit and have full access to the four Geothermal Plants situated in the vicinity of the MTPNP, and received by qualified staff all technical explanations concerning the project. The diverse persons met during the visit promised that copies of the documents showed during the mission would be provided for review in the days following the visit but they have been received at the time of writing this report. The mission could also visit several interpretation centres within the Park, as well three villages close to the boundaries of the Park (Laudat, Trafalgar and Wotten Waven). The southern borders of the Park, heavily hit by storm Erika, were also visited.

2. LEGAL AND MANAGEMENT FRAMEWORK

2.1. Protected area and national legislation

According to the current legislation in the field of natural heritage the Forestry and Wildlife Division of the Ministry of Agriculture and Fisheries of Dominica is in charge of the management of the Morne Trois Pitons National Park.

The relevant legal provisions at the national level are as follows:

- National Parks and Protected Areas Act (1975), Chapter 42:02, designated the MTPNP as a national park and provides for the establishment of National Park's Section under the Forestry and Wildlife Division, consisting on a National Parks Service, a National Parks Advisory Council and a Director of National Parks, working together with several part-time and full time park officers and a Park Superintendent. A zoning plan is in place for the Park, which determines activity areas with regard to existing land use patterns and interests and existing and allowable uses. Some of these provisions, namely the ones referring to the establishment of a National Parks Service have not been implemented due to budgetary reasons.
- Forest Act (1959), Chapter 60:01, an act to make provision for the conservation and control of forests, defines the power of the President, the Director of Forestry and Wildlife and forest officers, which are assigned by this act.
- Forestry and Wildlife Act (1976) , Chapter 60:02, an act to make provision for the protection, conservation and management of wild animals, amphibians, crustaceans, freshwater fishes, and reptiles, and for purposes connected therewith. States that the Forestry and Wildlife Division of the Ministry of Agriculture and Fisheries' shall promote forest and wildlife conservation and management in Dominica under the general supervision of the Permanent Secretary of Agriculture and Fisheries' and under the authority of the Minister.
- Fisheries Act (1987) , Chapter 61:60, an act to provide for the promotion and regulation of fishing in the fishery waters of Dominica and for matters incidental thereto and connected therewith.
- Physical Planning Act (2002), makes provision for the orderly and progressive development of land in both urban and rural areas and to preserve and improve the amenities thereof; for the grant of permission to develop land and for other powers of control over the use of land; for the regulation of the construction of buildings and regulated matters; to confer additional powers in respect of the land acquisitions and development of land for planning purposes and for other matters connected therewith.
- Electricity Supplies Act (2006), Act 10, regulates the generation, transmission, distribution and supply of electricity services and for purposes connected therewith; establishes an independent regulatory commission; and repeals the electricity supply act 1996 (No. 21 of 1996)

In addition to being a State Party to the World heritage Convention, Dominica also is a signatory to the following international conventions related to nature conservation:

- UN Convention on Biological Diversity

- UN Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- UN Framework Convention on Climate Change
- UN Convention to Combat Desertification Cartagena Protocol on Biosafety International Convention on Civil Liability for Oil Pollution Damage Basel Convention on the Control of Trans Boundary Movements of Hazardous Wastes and their Disposal

2.2. Institutional framework

According to the laws and regulations, the Forestry, Wildlife and Parks Division of the Ministry of Agriculture and Fisheries has the main the responsibility of the Morne Trois Pitons National Park; some specific aspects are however also managed by the Ministry of Tourism and Urban Renewal and by the Physical Planning Division (PPD).

- **The Ministry of Agriculture and Fisheries** is responsible for the promotion of sustainable growth and development of the agricultural sector to improve food security. The Forestry, Wildlife and Parks Division corresponds to a separate Department within the Ministry of Agriculture and Fisheries, referred by law as Forestry and Wildlife Division. It is in charge of enforcing the forestry, wildlife and national parks legislation, for implementing the mandate of the Division through institutional capacity and resources, infrastructure upgrade and development, soil and water conservation, public relations and environmental education, research and monitoring and the administration of Waitukubuli National Trail.
- **The Physical Planning Division (PPD)**, links the Planning Authority with the Public Service and Government. It is in charge of the administration and operation of the Planning system for which the Physical Planning Act (2002) guides and regulates the country's physical development. Under Physical Planning Act 5 (2002) "development" is defined as *"the carrying out of building, engineering, mining or other operations in, on, over or under any land, the making of any material change in use of any building or land or the subdivision of land"*.
- **The Ministry of Tourism and Urban Renewal** has the responsibility for the sustainable development of tourism with special emphasis on the promotion and marketing of eco-tourism; it is responsible for the content and the management of the interpretation centres within the protected areas of the Country, including the MTPNP
- **The Ministry of Health and Environment** is responsible for ensuring the social security and medical system of the country
- **The Ministry of Trade, Energy and Employment** has the mission to formulate and implement policies and measures in the field of trade, industry, domestic and foreign investment, private sector relations, consumer protection, and the full engagement of the Dominica's Diaspora for greater growth and development. Its **Energy Unit** is responsible for coordinating, in consultation with key stakeholders and in accordance with Government's established policy, the development of a comprehensive programme for developing Dominica's renewable energy resources, for making sound policy recommendations to the Minister for Energy for the effective implementation of

the Renewable Energy Programme, and to ensure that performance in meeting standards and targets is monitored, evaluated and reported on a regular basis

- **The Ministry of Public Works and Ports** institutes policies and regulatory measures and execute programmes to improve the infrastructure in roads, utilities, ports, energy and strengthen services in civil aviation, maritime and meteorological services administration sub-sectors. The **Energy Unit** of this ministry is in charge of the the Establishment of a Geothermal Energy Generation Plant, in the framework of a Sustainable Energy Plan.

Other related national agencies:

- Dominica Conservation Association (DCA)¹, which is a non-profit NGO involved in the management and development of national natural, cultural and economic resources.
- Dominica's Electric Utility Company (DOMLEC), which is **in charge/owns** three hydro-plants, on the Roseau River in the Roseau Valley, operating around the MTPNP.

2.3. Management structure

The Ministry of Agriculture and Fisheries provides management services of marine and coastal plans, protected areas and biodiversity including MTPNP management. Within this Ministry, the Forestry, Wildlife and Parks Division is responsible for ensuring the implementation of forestry activities regulations under management plans.

The National Parks and Protected Areas Act No.16 of 1975 of the Laws of Dominica provides for all lands that constitute the national parks and protected areas system to be vested in the State and dedicated to the people of Dominica for their benefit, education and enjoyment.

According to the abovementioned law, the MTPNP should be under the co-management of a National Parks Service, a National Parks Advisory Council and a Director of National Parks. However, the MTPNP is administrated by the Forestry, Wildlife and Parks Division of the Ministry of Agriculture and Fisheries due to budgetary and manpower constraints. For this reason the daily responsibility for the MTPNP resides in the National Parks Unit of the above-mentioned Division. A Forest Officer acts as Park Superintendent in charge of the overall supervision of Park together with a number of park wardens who patrol the site every day.

The Morne Trois Pitons National Park headquarters are located in the capital Roseau. The MTPNP has three (3) visitor centres located at the Freshwater Lake, the Emerald Pool and the Middleham Falls. The centres (logistics and content) are managed by the Ministry of Tourism and Urban Renewal

The development and management of the Morne Trois Pitons National Park has been guided by two separate management plans spanning the periods 1993-1998 and 2002-2012 respectively. The revised Management Plan 2002-2012 was prepared with the technical assistance offered by the World Heritage Centre in response to a request of the State Party. The Government of Dominica has elaborated a new draft Management Plan in 2011 under a Global Environment Facility (GEF) project. It focuses on a "Special Programme for Adaptation to Climate Change, SPAAC", that corresponds to a regional program, implemented by the

¹<http://www.global500.org/index.php/thelaureates/online-directory/item/611-dominica-conservation-association>

World Bank and executed by the Caribbean Community Climate Change Centre (CCCC), as part of a strategy to reduce the vulnerability of Dominica's ecosystems to the impact of climate change. However the implementation of this plan has not been budgeted, so that it remains only as a valid basis for discussion for possible future reforms.

3. IDENTIFICATION AND ASSESSMENT OF ISSUES

3.1. Lack of Retrospective Statement of Outstanding Value

According to the Decision 31 COM 11D.1 in 2007, the World Heritage Committee requested that Statements of Outstanding Universal Value (OUV) be drafted and approved retrospectively for all World Heritage properties inscribed between 1978 and 2006, prior to the launch of the Second Cycle of Periodic Reporting in each region. An OUV Statement represents a formalisation, in an agreed format, of the reasons why a World Heritage property has OUV. It is an essential requirement for the inscription of a property on the World Heritage List. In this context, the revision of the RSOUV for the property was still pending. But during the mission, a RSOUV text was finalized on the basis of past discussions among World Heritage Centre, IUCN and State Party. The finalized RSOUV will be formally presented for adoption at the 41st session of the World Heritage Committee.

3.2. Geothermal power projects development

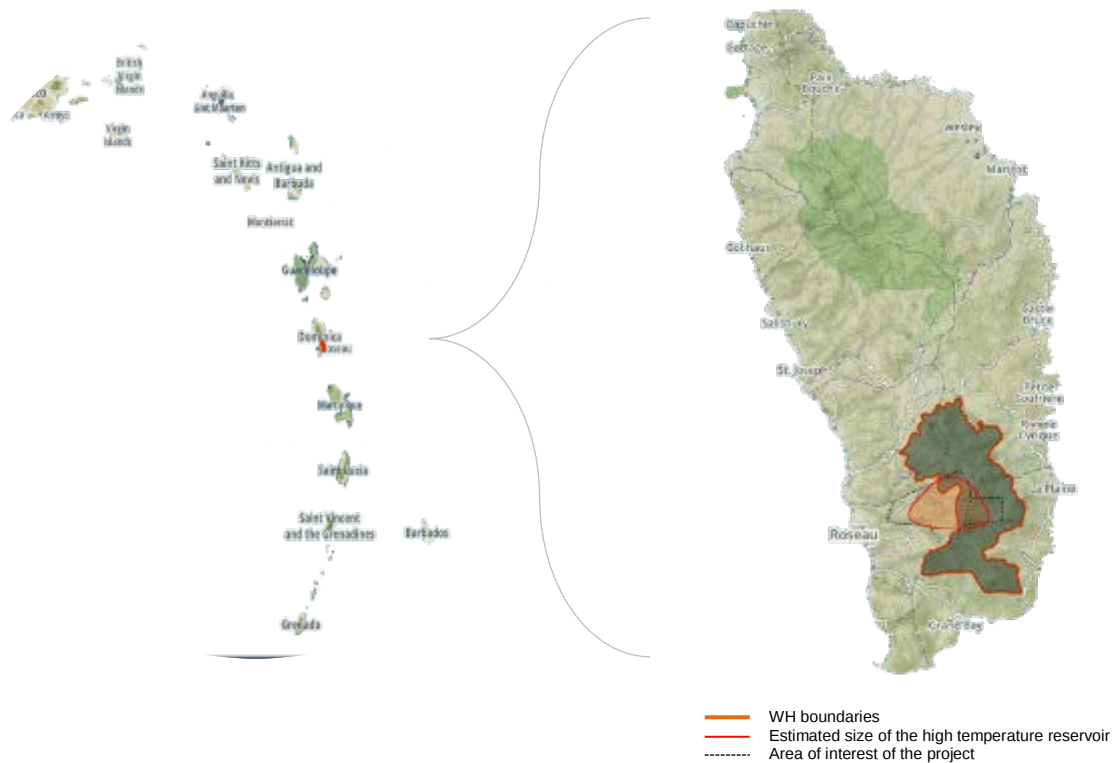
3.2.1. Background

In 2013, following a request for clarifications of the World Heritage Centre, the State Party confirmed its intention to move ahead with the development of geothermal resources in Roseau Valley, adjacent to the property. The project involved the construction of a small-scale geothermal power plant with a gross output capability of at least 15 MW to supply domestic electricity market in Dominica. As a long-term objective, it aims to achieve a 120 MW power plant to provide electricity export opportunity to French territories of Guadeloupe and Martinique via submarine cables.

The Geothermal project started as part of the European cooperation programme INTERREG III-B Caribbean space, in partnership with the Regional Councils of Guadeloupe and Martinique, the “Agence de l'Environnement et de la Maîtrise de l'Energie” (ADEME), the “Bureau de Recherches Géologiques et Minières” (BRGM) and the French company “CFG Services”. The geothermal study area of interest has been identified in June 2008 by BRGM after evaluation of resources and exploratory drilling programme. Focused on the Roseau Valley geothermal field, and located about 8km ENE of the Capital of Roseau, it includes most part of the high temperature reservoir (210-230°C). This area, which covers an estimated maximum size of 15km² overlaps with the property, raising great concerns.



Map 1. Geothermal study area of interest and WH boundaries



In order to prove the existence of a viable geothermal resource, an exploratory phase was launched in 2011 until 2012, and involved the drilling of three test wells in the communities of Wotten Waven (well site WW-1) and Laudat (well sites WW-2 and WW-3), all outside the boundaries of the property. Final depth was comprised between 1200m and 1613m. This test confirmed a geothermal resource base of 65MW.

The next phase of the project included drilling and testing of two full size production wells, with a view to developing a 10-15MW small geothermal power plant. It comprised the installation of a production platform, drilling and testing a production well in Laudat (WW-P1) and a re-injection well in Trafalgar (WW-R1). Started in 2013, the drilling of these two full-size wells, with a depth comprised between 1501m and 1915m, has been completed in 2014.

In 2014, the World Heritage Centre requested to the State Party to provide completed Environmental Impact Assessments (EIAs) on those projects but no reply was received. In 2015, this request has been reiterated for the two production wells as well as the results of their environmental monitoring. The World Heritage Centre further requested the State Party to provide a feasibility study for the construction of the Small Geothermal Power Plant and an EIA for this development, including assessment of its potential impacts on the Outstanding Universal Value (OUV) of the property, in line with IUCN's World Heritage Advice Note on Environmental Assessment. In November 2015, Dominican authorities submitted the Environmental Impact Assessment (EIA) of Geothermal Wells Drilling in the Roseau Valley and its executive summary both prepared in 2013, as well as the EIA prepared for the Phase one (exploratory drilling of the project) in 2011. In 2017, the World Heritage Centre received the terms of reference of this new Environmental and social impact assessment (ESIA) to be completed by August 2017.

3.2.2. Impacts

Most of the potential environmental impacts of geothermal exploration and production occur during the preliminary stages, in particular drilling and plant construction. Drilling and testing have been carried out on two existing platforms that has been visited during the mission:

- Laudat site, located near DOMLEC balancing tank, within 1 mile from the boundary of the MTPNP. This platform was constructed as part of the exploratory phase and will be used as a potential production well (WW-P1). It is planned to build a geothermal power plant with an expected generation capacity of 5-7 MW. Power generation equipment will be located on a newly created pad adjacent. The production phase is planned to begin in 2019.

Photograph 1. Laudat platform



- Trafalgar site, built between July and August 2013, was chosen for reinjection of geothermal fluid (WW-R1). Being located about 2 km downstream of Laudat, this platform is farther from the boundaries of the property.

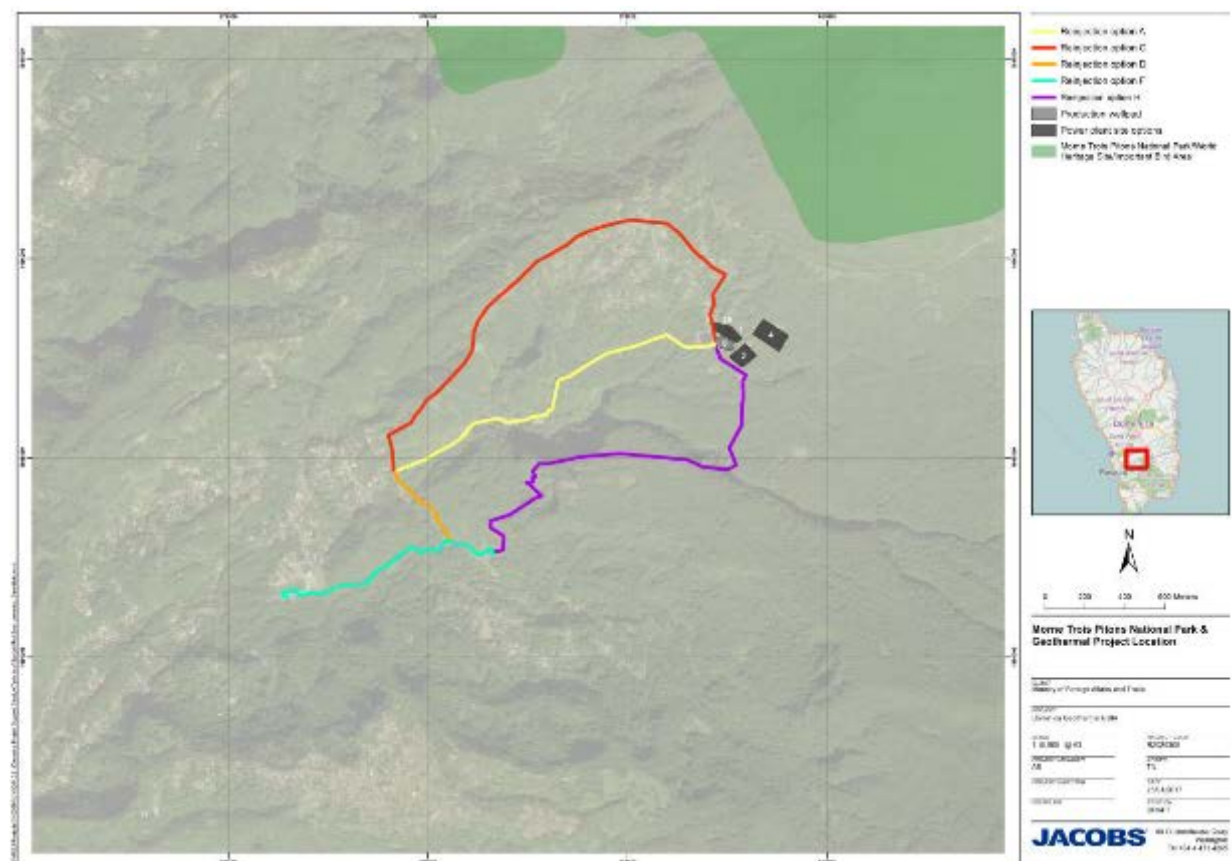
Photograph 2. Trafalgar platform



These platforms and access roads are downstream and outside the boundaries of the TMPNP and its proposed buffer zone, but are in close proximity: at its nearest point (Laudat), the project is estimated to be located around 400 m from the boundary of MTPNP. The mission could observe that due to high sloping ground, this land adjoining the property is not very accessible (except close to the road). Both sites are close to residential buildings, they include secondary tropical forest and previously cultivated areas.

Exploratory phases have been concluded in 2014 so there is no on-going works at these sites now. But three options have been defined for the construction of the power plant at Laudat site (with an estimated area between 3250m² and 14300m²) and eight possible pipeline routes are considered for reinjection pipelines, of which one is close to the boundaries of the property (the longest one), as shown on the map below:

Map 2. Reinjection and power plant options (source: Jacobs, ESIA)



Potential impacts of construction and dismantling phases in production and reinjection sites will be mainly due to power plant and pipeline installation (in Laudat site) and road widening to access the platforms. Three sites have been identified for the development of the power plant siting, around existing wellpad WW-P1, and land requirement is comprised between 3200m² and 14300m². Potential disturbance varies considerably depending on the site and technical options but potentially would include habitat destruction (deforestation), noise and vibrations (disappearance, stress), reduction of ecological connectivity, invasive species. During the exploratory phase, these risks were assessed as moderate to low. However, the MTPNP is a Key Biodiversity Area (KBA) and has been ranked for irreplaceability in an IUCN thematic study on terrestrial biodiversity (2013). It is of global importance in particular for two amphibian species (*Eleutherodactylus amplinympha*, *Leptodactylus fallax*) and for the Red-necked Parrot (*Amazona arausiaca*), a bird species qualified as vulnerable (VU, IUCN Red List). This ubiquitous species lives in forested areas, and is locally common on agricultural land. Its

remaining habitat is distributed in 2-5 areas of Dominica, especially in northern and central forest reserves, and 17% of its distribution area falls within the MTPNP. Adjacent areas of critical importance are not protected (IUCN, Red List) and one of the major threats is habitat loss mainly caused by clearance for agriculture. Removal of vegetation to enable power plant construction and pipeline installation could negatively impact critical habitat for this species, known to frequent the Laudat area. Consequently, special attention must be given to continue to monitor its population annually and to enforce protection of its existing habitats in the vicinity of the well sites.

Drilling phase can produce several impacts to biodiversity, in particular toxic gas emission (fumes with high level of sulphur emanating from the drilling areas), first of all hydrogen sulphide (necrosis, mortality), vibration and noises affecting fauna (disappearance, stress, reduced habitat), night-time illumination of platforms (mortality, stress, behavioural changes). For 3 Bitons and Ravine areas, the main risks are loss of part of available flow, possible problems with free movements of species and stress linked to water abstraction. These potential impacts will be assessed in the ESIA considering the different options of reinjection pipeline routes and power plant siting.

Recommendation 1

Ensure that no hydropower or geothermal projects are allowed within the boundaries of the property as they are incompatible with its World Heritage status, and foresee an EIA for each of the future hydropower or geothermal projects in the vicinity of the property, assessing potential impacts on the Outstanding Universal Value (OUV) in line with the IUCN World Heritage Advice Note on Environmental Assessment, before making any decisions that are difficult to reverse, in accordance with paragraph 172 of the Operational Guidelines.

Recommendation 2

Continue monitoring in the area of Laudat and Trafalgar for any potential impacts on the OUV of the property from the exploration phase of the geothermal project and to ensure that any impacts from the operational phase can be detected in a timely manner and properly mitigated.

3.2.3. Environmental and social impact assessment

Several environmental and social studies have been carried out since 2009 but without considering any assessment of potential impacts of the geothermal project on the OUV of the property.

Dates	Environmental Impact Assessment	Sites
2009	Regulatory Impact Assessment on the Initial Environment	
2011	Phase 1: Exploration Drilling Process	Pachoute, Robinson, DOMLEC
2013	Phase 2: Preliminary Environmental Impact Assessment of Geothermal Production and Re-Injection Drilling Wells in Dominica	Laudat, Trafalgar
2013-2015	Initial environmental status of the Roseau Valley in Dominica, planned for development of geothermal electricity production. Section 3 Biodiversity / Terrestrial Flora and Fauna	Laudat, Trafalgar
	Initial environmental status of the Roseau Valley in Dominica, planned for development of geothermal electricity production. Final summary report	Laudat, Trafalgar

For the exploratory phase, Environmental Impact Assessment (2011) stated that “the potential drilling and geothermal production sites are not affected by any of environmentally protected areas” but without mentioning the MTPNP in the list (p.58). Only areas adjacent to the four drilling zones have been assessed for potential impact on biodiversity, regarding water quality, aquatic biodiversity (species vulnerability to disturbance), visual impact of key infrastructures and buildings. Four areas have been selected in the Roseau Valley to assess potential impacts on terrestrial fauna and flora, based on expert knowledge (IUCN red lists) and grounded based observations. The EIA recommended to consider carefully potential impacts on the banks of rivers and ravines for the essential ecological role they play (erosion, stability, floods, diversity, fauna, etc.).

Prior to the drilling of the two production wells in Laudat and Trafalgar, an EIA has been carried out in 2013 considering a study area of 1km around both wells sites. Terrestrial ecological assessment consisted of a series of observations and hydromorphological measurements to better understand the environment close to the stations, but sampling and field observations were limited, and potential impacts on OUV were not considered. Further ground-based surveys will be required to completely assess the footprint of the power plant site and reinjection line routes.

These environmental monitoring served as baseline surveys of social, physical and biological environment within the Roseau Valley to support the preparation of an ESIA for operational phase, which is currently undertaken by the New Zealand company Jacobs. Terms of reference (ToRs) of this new Environmental and social impact assessment (ESIA) have been finalised with the support of the World Bank and a first draft will be completed in August 2017. This information had not been received before the mission, and was briefly presented during a meeting. The mission asked to make a stronger connection to OUV in a separate chapter, in line with IUCN’s World Heritage Advice Note on Environmental Assessment. A new version of the ToRs has been sent later confirming that “a special reference will be made to any rare or threatened species as well as endemic species of both animals and plants. Impacts on the Outstanding Universal Value (OUV) of the Morne Trois National Park World Heritage Site in relation to biodiversity will be considered.”, Gaps identified in the baseline studies will also be taken into consideration. In addition, the study will propose measures for mitigation, avoidance and/or offsetting of potential adverse impacts “to ensure performance measures are as low as reasonable possible” (ESIA ToR). It will also include monitoring to ensure that control measures are effective and impacts are minimised. These provisions are likely to respond to the requests expressed by the World Heritage Committee.

Recommendation 3

Undertake, as foreseen in the terms of reference of the Environmental and Social Impact Assessment (ESIA), an assessment of potential impacts of the geothermal project on the OUV of the property, in line with IUCN's World Heritage advice note on environmental assessment) considering any necessary mitigation measures and submit a copy of the ESIA to the World Heritage Centre for review by IUCN, prior to any decision to approve the operational phase of the project.

3.3. Boundary Configuration, Neighbouring Areas and Land Use Planning

3.3.1. Defining the Buffer zone

The area of the inscribed property is 6,857 ha. The property had no buffer zone by the time of inscription on the World Heritage List.

In 2007, the WHC requested that the clarifications of the property boundaries for all World Heritage properties inscribed between 1978 and 1998. A boundaries marking system is in place and the professionals in charge of the conservation and management of the property (namely the Site Manager and the wardens) have a clear ideas on the boundaries of the property for their daily operational needs. However, the issue of formal clarification through appropriate establishment of maps and retrospective inventory is still pending at the moment of the drafting of the present report.

Photograph 3 : WH Boundary



During the mission, it was clarified that a buffer zone is not a legal requirement per se according to Dominican protected areas legislation, but a decisive asset and tool in the field of the management. However, given the close proximity of villages to the boundaries, land tenure issues in some areas and importance of agricultural activity around the park, a buffer zone is necessary to mitigate existing and potential impacts of anthropogenic activities, while enabling stakeholders communities to sustain livelihoods environmentally safe.

The operational guidelines for the implementation of the World Heritage Convention define a buffer zone as “an area surrounding the property which has restrictions placed on its use to give an added layer of protection: the area consisting of a buffer zone should be determined through technical studies. Details on the size, characteristics and authorized uses of a buffer zone as well as a map indicating its precise boundaries, should be provided”. Previous proposals recommended to establish a buffer zone around the entire MTPNP, with a width extending up to 1000m. The 2011 draft enhanced Management Plan of MTPNP considers the establishment of a 305m (1000ft.) buffer in the northern area of the park in the Pont Cassé areas in which some building development have been authorized. The same Management Plan recommended 200 m (656.2ft.) buffer in other areas of the Park. Based on a study undertaken in 2011, total area of the proposed buffer zone is 1 232,3 ha of which 292,2 ha (24%) is privately owned. Considering land tenure issues and residential development, the depth of the proposed buffer zone in the northern and northwestern area ranges from 152m to 305m. In other parts of the property, a 200m buffer zone has been recommended, that is too

narrow to ensure ecological functionality but could be sufficient to minimize impacts of anthropogenic activities on biodiversity, if effectively managed.

A new project is now under elaboration whose outcomes may differ from the 2011 recommendations. The mission, in fact, was informed that a 5-year project funded by GEF plans to define a specific management plan for Morne Trois Pitons National Park and to ensure by 2019 the legal establishment of a buffer zone for the MTPNP, as part of an overall zoning strategy developed in the framework of an enhanced management plan for the property. Called “Supporting Sustainable Ecosystems by Strengthening the Effectiveness of Dominica’s Protected Areas System”, this project aims also to “demonstrate a model for effective integrated landscape management encompassing the strengthening of an existing protected area (Morne Trois Pitons National Park)” (GEF). The assessment will also help with zonation within the core zone (special zone, intensive use, extensive use, environmental study, research, wildland management) as proposed in the 2011 management plan.

The Morne Trois Pitons National Park headquarters are located in the capital Roseau. The MTPNP has three (3) visitor centres located at the Freshwater Lake, the Emerald Pool (both visited during the mission) and the Middleham Falls. The centres are managed by the Ministry of Tourism and Urban Renewal.

Recommendation 4

Establish an effective buffer zone of the Morne Trois Pitons, in the framework of the project financed to this end by the GEF, ensuring that threats to OUV, including conditions of integrity, are clearly considered in this process and, once the buffer zone of the National Park has been established, to develop a minor boundary modification proposal to officially establish a buffer zone of the property.

3.4. Governance and management

3.4.1. Management plan

At the time of its inscription, the MTPNP had a management plan but it was not officially adopted. A revision of this management plan has been developed in 1998 with financial assistance from World Heritage Fund. This revised management plan (2002-2012) was never ratified by government and only partially implemented due to institutional, manpower and budgetary limitations.

Under UNDP/GEF SPACC project, a new version of management plan (improved management plan, 2011) has been developed but is not fully implemented. This plan makes a clear reference to the World Heritage status (§4.3.) and its specific management objectives are in line with the OUV, in particular the first two : “to manage this natural area in such a way that the essential characteristics and values remain” and “to ensure that the plants and animals are not negatively impacted by human interference”. The mission takes note that an update is in course with the support of UNDP.

Management effectiveness is also limited by gaps in human and financial resources. Although participants to the meetings were not in capacity to inform about the MTPNP budget, they expressed concerns about insufficient and uncertain funding, inadequate to completely support the basic required structures for effective management. To help secure sufficient resources, it is important to identify new sources of incomes, by increasing fees and through a protected area conservation trust fund. This proposal was considered in a GEF project called “Supporting Sustainable Ecosystem by strengthening the Effectiveness of Dominica’s Protected Area System” (2012-2016) but has not been yet implemented.

During the mission, needs for advanced degrees in environmental education (interpretation, awareness) were expressed. In its evaluation of the nomination, IUCN recommended possible

twining arrangement with a similar World Heritage island forest park. This proposal has not been implemented but could be of interest for the managers.

Recommendation 5

Finalize the preparation of an updated management plan for the property in the framework of the project financed to this end by UNDP.

3.4.2. Governance

The MTPNP management is under the responsibility of the Ministry of Agriculture and forestry through its department of the Forestry, Wildlife and Park division. The 2011 management plan states that “the current organizational structure within the Forestry and National Parks Service is inadequate to manage and develop the National Parks.” (p.76) There is also a need to enhance institutional coordination with other administrations, such as the Ministry of Tourism and Legal Affairs, in charge of the Visitor Centres.

The mission confirmed the need for a more systemic approach to management of the property. As a possible solution, the Caribbean Development Bank supported in 2008 a project to establish a National Park Service (NPS), as provided by the National parks legislation, in order to centralize the management of parks and to contribute to their sustainable management). It comprised two phases, a) review of legal framework for the management of national parks and protected areas as well as the conduct of amendments to existing legislation to address identified deficiencies; and b) institutional framework including establishment and operationalization of a NPS. Despite the completion of this project, this proposal has not been established.

Recommendation 6

Further consolidate the governance of all protected areas of Dominica, taking into consideration the institution of a national park service, based on the conclusions of the study funded by the Caribbean Development Bank and in conformity with the original provisions of the National Parks and Protected Areas Act (1975).

4. ASSESSMENT OF THE STATE OF CONSERVATION

4.1. Background



Morne Trois Pitons national park is located 13km east of the town of Roseau and covers 6857 ha in the highlands of south-central Dominica, representing 9% of the area of the island. With an altitude comprised between 500m and 1342m, it encompasses nearly all the headwaters of the streams and rivers in the southern half of Dominica.

The MTPNP has been established in 1975 on former State lands and a donation from a private owner to protect representative samples of the island's diverse flora (five natural vegetation zones within the area²) as well as habitat for a variety of fauna, including three globally threatened species³. It was inscribed in 1997 on the World Heritage list on the basis of natural criteria (viii) for its volcanoes, rivers and waterfalls, illustrating ongoing geo-morphological processes with high scenic value, and (x) for its diverse

flora with endemic species of vascular plants.

Main values, as mentioned in the short description of the property, are “a luxuriant natural tropical forest blends with scenic volcanic features of great scientific interest in this national park centred on the 1,342-m-high volcano known as Morne Trois Pitons. With its precipitous slopes and deeply incised valleys, 50 fumaroles, hot springs, three freshwater lakes, a 'boiling lake' and five volcanoes, located on the park's nearly 7,000 ha, together with the richest biodiversity in the Lesser Antilles, Morne Trois Pitons National Park presents a rare combination of natural features of World Heritage value.” (UNESCO).

In its evaluation (1996), IUCN mentioned some integrity issues in particular deficiencies in boundaries and existence of some private land cultivated near the Freshwater Lake. It noted as a major negative change the augmentation of hydro-power infrastructure at Freshwater Lake which involved a new pipeline, water diversion and new access road. It also indicated that the MTPNP had a management plan (1990-2000) not fully implemented as it was not officially adopted.

At the time of its inscription, the State Party submitted a technical assistance for the revision of the management plan and undertook to stop any hydroelectric power development in the Park and to eliminate private holdings in the Park, which have been effectively implemented.

4.2. Global state of conservation

The MTPNP contains the largest and most diverse and pristine forest in the Eastern Caribbean and is in good state of conservation.

Geological values are not threatened but there are some concerns regarding biodiversity, mainly due to impacts of natural hazards (climate change, volcanic activity) and anthropogenic pressures (tourism) that cause habitat loss in some small areas (see 4.3.). 28 communities are

² Cloud forest, montane Thicket, montane Rainforest, Mature Rainforest, Secondary Rainforest

³ Two endemic species of the Amazona parrots and the Forest thrush *Cichlherminia lherminieri*

located around the MTPNP (villages are within a one mile boundary of the property) and except small areas affected by shifting agriculture, current threats are very limited.

4.3. Threats

4.3.1. Climate change

Major impacts on flora and fauna are due to weather events and climate change will increase this threat. Potential implications of climate change on the national parks including MTPNP have been clearly identified in a report (2011).

Climate trends projections made for 2075-2099 for central Caribbean including Dominica show that early dry season get wetter by 10% (January to April) and an overall rainfall deficiency during rainy season of 10-20%. Warming over the region is expected to increase by 2-2,5°C. Drought can lead to increase frequency of forest fires, diseases, invasive species, and threaten watershed resources, while flooding increase soil erosion, silting of rivers and streams.

Dominica's location in the hurricane belt makes it susceptible to tropical storms and hurricanes, particularly between June to November. Since 1979, ten tropical storms have impacted the island, and two of them (David, 1979, Erika, 2015) have caused significant damages to the forest resources, by impacting feeding grounds, nesting sites and roosting areas. Red-necked Parrot was affected by these hurricane damages but many areas have been reoccupied after the species disappeared from them. Due to rugged terrain and high precipitation, Dominica is also susceptible to major landslides increased by these events. Through a field trip until Petite Savanne (south-eastern part of the island) the mission could observe areas adjacent to MTPNP highly affected by Erika storm, which also caused three landslides within the property.

Photograph 4. Landslides in the southern part of Dominica after Erika storm (outside the boundaries of the WH)



Recommendation 7

Develop and implement a long-term monitoring programme of climate change impacts on biodiversity values, with special attention given to the most sensitive species and habitats.

4.3.2. Hydropower

At the time of its inscription, the MTPNP had been affected by hydropower infrastructures and transmission lines near Freshwater lake (through the central area), that feed the hydroelectric power station at Laudat and Trafalgar sites (DOMLEC powerplant). The mission could observe these pipelines are still working but there are no new hydropower projects in development within the property.

Photograph 5. Hydropower infrastructure near Freshwater lake



4.3.3. Tourism

Major tourism activities inside the MTPNP are hiking, bird watching and mountain climbing, and most of the popular trails developed within the park start from or near the village of Laudat.

The three visitor centres are located at the Freshwater Lake, the Emerald Pool and the Middleham Falls and the mission could visit the first two. Despite a significant decrease between 2000 and 2009, there is high level of visitors in some specific places (Emerald Pool received 63,558 visitors in 2009, 500 during the day of the mission visit) that could have effect on low tolerance species to human disturbance, Although there is no evaluation of acceptable charge, impacts are minors and the mission could observe that these places are effectively managed and interpretation circuits well maintained. Facilities are generally in good conditions, with controlled access and built-up paths to contain visitors. However, an interpretation programme for the World Heritage site needs to be developed.

Photographs 6-9. Emerald Pool Visitor centre (© IUCN Thierry Lefebvre 2017)



5. CONCLUSIONS AND RECOMMENDATIONS

The mission could not ascertain the existence of any actual threat to the OUV of the property. However, close monitoring is required to prevent any possible threat, in view of the timely adoption of measures. The mission acknowledges with gratitude the information received on the suspension of the geothermal project, the elaboration of an EIA and the ongoing study for the elaboration of a buffer zone, as well the good conservation of the park as no-take area with rigorously restricted access.

The following list provides an overview of all individual recommendations to the State Party offered in chapter 3. All recommendations are explained in detail in the corresponding sub-chapters.

Recommendation 1

Ensure that no hydropower or geothermal projects are allowed within the boundaries of the property as they are incompatible with its World Heritage status, and foresee an EIA for each of the future hydropower or geothermal projects in the vicinity of the property, assessing potential impacts on the Outstanding Universal Value (OUV) in line with the IUCN World Heritage Advice Note on Environmental Assessment, before making any decisions that are difficult to reverse, in accordance with paragraph 172 of the Operational Guidelines.

Recommendation 2

Continue monitoring in the area of Laudat and Trafalgar for any potential impacts on the OUV of the property from the exploration phase of the geothermal project and to ensure that any impacts from the operational phase can be detected in a timely manner and properly mitigated.

Recommendation 3

Undertake, as foreseen in the terms of reference of the Environmental and Social Impact Assessment (ESIA), an assessment of potential impacts of the geothermal project on the OUV of the property, in line with IUCN's World Heritage advice note on environmental assessment) considering any necessary mitigation measures, and submit a copy of the ESIA to the World Heritage Centre for review by IUCN, prior to any decision to approve the operational phase of the project.

Recommendation 4

Establish an effective buffer zone of the Morne Trois Pitons, in the framework of the project financed to this end by the GEF, ensuring that threats to OUV, including conditions of integrity, are clearly considered in this process and, once the buffer zone of the National Park has been established, to develop a minor boundary modification proposal to officially establish a buffer zone of the property.

Recommendation 5

Finalize the preparation of an updated management plan for the property in the framework of the project financed to this end by UNDP.

Recommendation 6

Further consolidate the governance of all protected areas of Dominica, taking into consideration the institution of a national park service, based on the conclusions of the study funded by the Caribbean Development Bank and in conformity with the original provisions of the National Parks and Protected Areas Act (1975).

Recommendation 7

Develop and implement a long-term monitoring programme of climate change impacts on biodiversity values, with special attention given to the most sensitive species and habitats.

6. REFERENCES

The mission was able to take advantage of a wealth of an important amount of information prepared and/or compiled by the State Party.

Extensive use was made of the official document section of the World Heritage Centre (<http://whc.unesco.org/en/list/814/documents/>).

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Maynard-Date Anelda, George Alexis (2014). A Caribbean geothermal success story. United Nations University – Geothermal training programme, Report. 7 pp.

Databases

Name	Website
IUCN Red List of Threatened Species	http://www.iucnredlist.org/
Protected planet	https://protectedplanet.net
World Heritage SOC Information System	http://whc.unesco.org/en/soc/
World Heritage Outlook	http://www.worldheritageoutlook.iucn.org

7. ANNEXES

7.1. Annex 1: World Heritage Committee Decision 39COM 7B.30 (Bonn, 2015)

Draft Decision: 39 COM 7B.30

The World Heritage Committee,

1. Having examined Document WHC-15/39.COM/7B.Add,

2. Regrets that the State Party did not provide completed Environmental Impact Assessments (EIAs) for the two geothermal production wells, nor the feasibility study or an EIA for the construction of a Small Geothermal Power Plant adjacent to the property, and requests the State Party to provide all available documentation on the project as a matter of urgency, including an assessment of potential impacts of the project on the Outstanding Universal Value (OUV) of the property, in line with IUCN's World Heritage Advice Note on Environmental Assessment;

3. Urges the State Party to suspend the project until these documents have been submitted to the World Heritage Centre, for review by IUCN;

4. Also requests the State Party to invite a joint World Heritage Centre/IUCN reactive monitoring mission to assess the current status of the project, the impacts of existing geothermal infrastructure and potential impacts of the planned Small Geothermal Power Plant on the OUV of the property;

5. Further requests the State Party to submit to the World Heritage Centre, by **1 February 2016**, an updated report, including a 1-page executive summary, on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 40th session in 2016.

7.2. Annex 2: World Heritage Committee Decision 40COM 7B.73 (Istanbul/UNESCO 2016)

Draft Decision: 40 COM 7B.73

The World Heritage Committee,

1. Having examined Document WHC/16/40.COM/7B.Add,
2. Recalling Decision 39 COM 7B.30, adopted at its 39th session (Bonn, 2015),
3. Regrets that the State Party did not submit a report on the state of conservation of the property, as requested by the Committee;
4. Takes note of the Environmental Impact Assessments (EIAs) for exploration and production phases of the geothermal project in the Roseau Valley submitted by the State Party to the World Heritage Centre;
5. Noting that the abovementioned EIAs do not include an assessment of potential impacts of the project on the Outstanding Universal Value (OUV) of the property, reiterates its request to the State Party to prepare such an EIA, in line with IUCN's World Heritage Advice Note on Environmental Assessment, and urges again the State Party to suspend the geothermal project until the above mentioned EIA has been submitted to the World Heritage Centre, and reviewed by IUCN;
6. Also reiterates its request to the State Party to invite a joint World Heritage Centre/IUCN Reactive Monitoring mission to the property, to assess the impacts of existing geothermal infrastructure, and the current status of the geothermal project in the Roseau Valley and its potential impacts on the OUV of the property;
7. Requests the State Party to submit to the World Heritage Centre, by **1 February 2017**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 41st session in 2017.

7.3. Annex 3: Terms of Reference of the 2017 Reactive Monitoring Mission

TERMS OF REFERENCE IUCN Reactive Monitoring Mission Morne Trois Pitons National Park (Dominica) 27-31 March 2017

At its 40th session, the World Heritage Committee requested the State Party of Dominica to invite, as a matter of urgency, a joint World Heritage Centre/IUCN reactive monitoring mission to the Morne Trois Pitons National Park World Heritage Site (Decision 40 COM 7B.73, Annex 1). The objective of the mission is to assess the impacts of existing geothermal infrastructure, and the current status of the geothermal project in the Roseau Valley and its potential impacts on the OUV of the property. The mission will be conducted by Mauro Rosi representing the World Heritage Centre and Thierry Lefebvre representing IUCN.

In particular the mission should undertake the following:

5. Assess the impacts of existing geothermal infrastructure and the current status of geothermal projects in the Roseau Valley and its potential impacts on the OUV of the property;
6. Assess the progress achieved by the State Party in the preparation of an Environmental Impact Assessment (EIA) for the project which should include a specific assessment of potential impacts on the OUV of the property;
7. In line with paragraph 173 of the *Operational Guidelines*, assess any other relevant issues that may negatively impact on the OUV of the property, including its conditions of integrity and protection and management.
8. Assess the management arrangements within the property and other relevant coordination arrangements, at local and national level that are necessary to ensure the proper follow-up of recommendations made by the World Heritage Committee with regard to the state of conservation of the property.

The State Party will facilitate necessary field visits to key locations. In order to enable preparation for the mission, the State Party should provide the following items in appropriate format, including web links, to the World Heritage Centre and IUCN as soon as possible and preferably no later than one month prior to the mission:

- a) Information on the current status of any existing and planned geothermal projects within or in the vicinity of the property, including any relevant EIAs;
- b) The most recent management plan of the property;

The mission will hold consultations with the relevant authorities in Dominica, particularly the National Commission for UNESCO, Minister of Agriculture and Fisheries, the Ministry of Trade, Energy and Employment and the Ministry Health and Environment. In addition, the mission will hold consultations with a range of relevant stakeholders, including: representatives of non-governmental organizations (NGOs), relevant scientists, researchers and experts.

Based on the results of the above-mentioned reviews, assessments and discussions with the State Party representatives, authorities and stakeholders, the mission will prepare a concise

report on the findings and recommendations within six weeks following the site visit, following the attached reactive monitoring mission report format (Annex 3). The mission's recommendations to the Government of Dominica and the World Heritage Committee will have the objective of providing guidance to the State Party that will ensure the ongoing conservation of the property's OUV. It should be noted that recommendations will be provided within the mission report and not during the mission implementation.

7.4. Annex 4: Justification of Nomination for the MTPNP

Report of the 21st Session of the Committee (WHC-97/CONF.208/17)
Naples, Italy (1997)

Morne Trois Pitons National Park (814) Dominica N(i)(iv)

The Committee inscribed the Morne Trois Pitons National Park on the basis of natural criteria (i) and (iv) for its diverse flora with endemic species of vascular plants, its volcanoes, rivers and waterfalls, illustrating ongoing geo-morphological processes with high scenic value.

The Committee commended the authorities of Dominica for their response to the Bureau's request to provide a time frame for the revision of the management plan and for having submitted a technical assistance request for this revision. The Committee took note of the answer provided by the Dominican authorities that they have no plans for further hydroelectric power development in the Park and act to eliminate private holdings in the Park.

7.5. Annex 5: Retrospective Statement of Outstanding Universal Value of MTPNP

Submitted in March 2012 – Revised by the WHC and to be submitted to the World Heritage Committee

7.6. Annex 6: Mission Agenda as conducted (next page)

26/27 March	Flight Paris/Fort de France/pointe à Pitre/ Douglas-Charles Airport (Dominica). Car trip to Roseau and transfer to the Hotel. Exchange on the Programme and Preparation of the interviews programmed during the mission.	
27 March PM Hotel Lobby	Short briefing on the programme and logistics of the mission	Sonia Williams, Secretary-General of the National Commission of Dominica for UNESCO
27 March PM Hotel Lobby	Meeting on the programme and objectives of the mission Exchange of information on the situation of the management arrangements concerning the Morne Trois Pitons property between 2013 and now. For months, the new Site Manager was not able to take her responsibility due to lack of information (no briefing from her predecessor) and prolonged leave.	Ms Jacqueline Andre, Focal Point, Morne Trois Pitons National Park World Heritage Property, Forest Officer/National Parks, Forestry, Wildlife & Parks Division
TUE 28 March AM Government Headquarters	Meeting on the objectives of the mission. Overview of issues concerning the state of conservation of the Morne Trois Pitons National Park. Exchange of information on the management of the MTPNP.	Mr. Minchinton Burton, Director of Forestry Ms Sonia Williams, NATCOM SG Ms Jacqueline Andre, Manager of the Property
TUE 28 March AM Government Headquarters	Meeting on the state of conservation of the property, in light of the information required by the World Heritage Committee (decision Management structure Management Geothermal energy	Ms Hyacinth Chandler, Permanent Secretary, Ministry of Education and Human Resource Development Mr Harold Guiste, Permanent Secretary, Ministry of Agriculture and Fisheries Mr Michael A. Fadelle, Coordinator, Renewable Energy Programme, Energy Unit, Ministry of Trade, Energy and Employment Ms Careen Prevost, Permanent Secretary, Ministry of Tourism and Urban Renewal Ms Sylvanie Burton, Permanent Secretary, Ministry of Trade, Energy and Employment, and Ministry of Foreign Affairs and CARICOM
TUE 28 March PM MTPNP	Field trip to the Morne Trois Pitons National Park (interpretation centre of Emerald Pool)	
WED 29 March AM Government Headquarters	Meeting with the people in charge of the Geothermal project	Mr Harold Guiste, Permanent Secretary, Ministry of Agriculture and Fisheries Mr Michael A. Fadelle, Coordinator, Renewable Energy Programme, Energy Unit, Ministry of Trade, Energy and Employment Edward Lambert, Principal Advisor, Office of the Prime Minister Kelvin Rolle, Chief Physical Planner, Physical Planning Division Sonia Williams, NATCOM SG Ms Jacqueline Andre, Manager of the Property

WED 29 March AM	Visit to the Geothermal plants in the vicinity of the of Morne Trois Pitons National Park.	Felix Eugene, Forester, Division of Forestry, Wildlife and National Parks Mr. Garry Shillingford, Project Officer in the Geothermal Project Management Unit, Ministry for Public Works, Energy and Ports Ms Jacqueline Andre, Manager of the Property
Field	Visit to the villages of Laudat, Trafalgar and Wotten Waven	
THU 30 March AM	Meeting with NGO and members of civil society on the Geothermal project. Involvement, interests and position of the communities.	Ms Lyn-John Fontenelle, Consultant, Geothermal project Mr Alfred Noel, Chairman, Laudat Village Improvement Comitee (LVIC) Mr Michael A. Fadelle, Coordinator, Renewable Energy Programme, Energy Unit, Ministry of Trade, Energy and Employment Mr. Garry Shillingford, Project Officer in the Geothermal Project Management Unit, Ministry for Public Works, Energy and Ports Ms Jacqueline Andre, Manager of the Property, Mr David Williams, Forestry Consultant, former Manager of the Trois Pitons National Park Property and former national focal point for World Heritage Ms Sonia Williams, NATCOM SG
THU 30 March 2:00 pm	Field visit to Petit Savanne (southern borders of the Morne Trois Pitons National Park). Observation of the areas devastated by hurricane Erika.	Felix Eugene, Forester, Division of Forestry, Wildlife and National Parks Ms Jacqueline Andre, Manager of the Property,
FRI 31 March 9:00 am	Technical meeting on the outcome of the mission, and discussion on the next steps. Schedule for the SOC, the ROUSV, the official mission report, the Committee, the complementary information.	Ms Lyn-John Fontenelle, Consultant, Geothermal project Mr Michael A. Fadelle, Coordinator, Renewable Energy Programme, Energy Unit, Ministry of Trade, Energy and Employment Ms Jacqueline Andre, Manager of the Property, Ms Sonia Williams, NATCOM SG
FRI 31 March AM	Short meeting on the outcomes of the mission	Hon. Johnson Drigo, Minister of Agriculture and Fisheries Ms Jacqueline Andre, Manager of the Property, Ms Sonia Williams, NATCOM SG
FRI 31 March PM SAM 1 April AM	Car trip from Roseau to the Douglas-Charles Airport. Flight to Pointe à Pitre and Paris.	

7.7. Annex 7: Composition of the mission team



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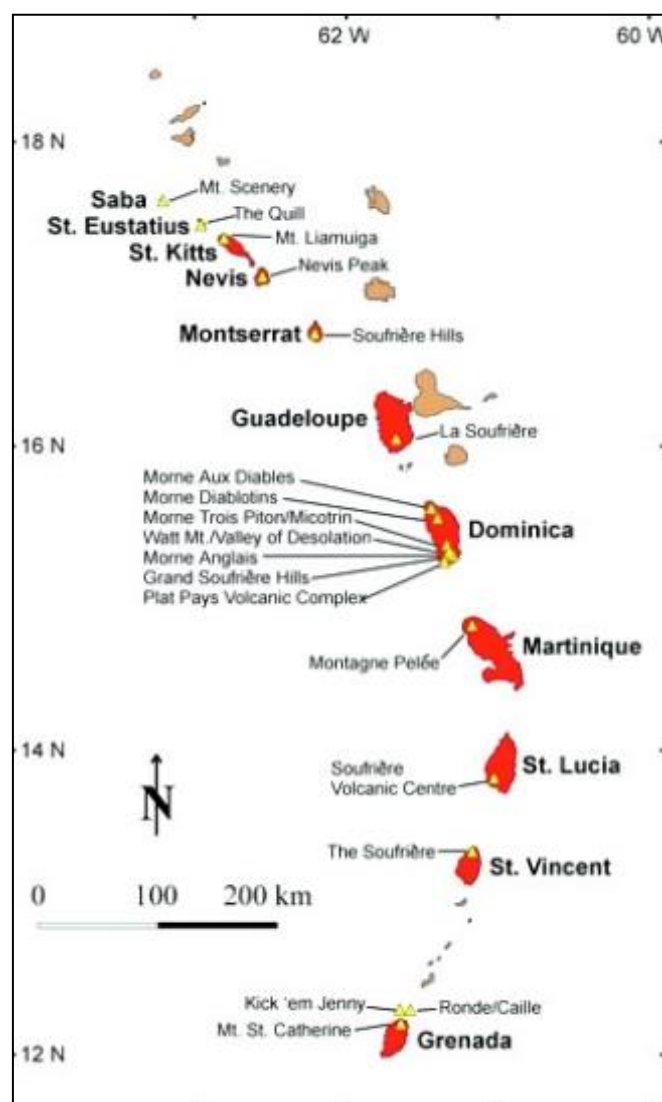
7.8. Annex 8: People met during the Mission

Listed by institutions and in alphabetical order by last name in each group. Possible omissions are unintended and entirely the authors' responsibility.

Responsible of Morne Trois Pitons National Park Management	
Ms Jacqueline Andre	Morne Trois Pitons National Park World Heritage Property, Forest Officer – National Parks, Forestry, Wildlife & Parks Division
Mr. Minchinton Burton	Director of Forestry
Mr. Felix Eugene	Forester, Division of Forestry, Wildlife and National Parks
Ms Sonia Williams	Secretary-General of the National Commission of Dominica for UNESCO
National Government	
Ministry of Agriculture and Fisheries	
Hon. Johnson Drigo	Minister
Mr Harold Guiste	Permanent Secretary
Ministry of Trade, Energy and Employment	
Mr Michael A. Fadelle	Coordinator, Renewable Energy Programme, Energy Unit
	Permanent Secretary
Ministry of Tourism and Urban Renewal	
Ms Careen Prevost	Permanent Secretary
Ministry of Education and Human Resource Development	
Ms Hyacinth Chandler	Permanent Secretary
Ministry for Public Works, Energy and Ports	
Mr. Garry Shillingford	Project Officer in the Geothermal Project Management Unit
Ministry of Foreign Affairs	
Ms Sylvanie Burton	Permanent Secretary
Office of the Prime Minister	
Edward Lambert	Principal Advisor
Physical Planning Division	
Kelvin Rolle, Chief	Physical Planner
Civil society	
Alfred Noel	Chairman, Laudat Village Improvement Comitee (LVIC)
Consultants	
Ms Lyn-John Fontenelle	Geothermal project
Mr David Williams	Forestry Consultant, former Manager of the Trois Pitons National Park Property and former national focal point for World Heritage

7.9. Annex 9: Selected Maps

Map 1. Overview of the Caribbean Islands



Source: Lindsay et al. 2015

Map 2. Morne Trois Pitons National Park Map at the time of nomination

http://whc.unesco.org/fr/list/814/multiple=1&unique_number=962

Sources: UNESCO

7.10 Annex 10: Photographic Documentation

Meetings and field visits



- 1 Roseau
- 2 Emerald Pool
- 3 Trafalgar / Laudat sites
- 4 Freshwater Lake
- 5 Petite Savanne



Tuesday 28 March
Government Headquarters
ROSEAU

Photograph : Meeting with Ministries representatives





Tuesday 28 March

Interpretation centre of Emerald Pool
MORNE TROIS PITONS NATIONAL PARK

Photograph : Interpretation center





Wednesday 29 March
Laudat and Trafalgar sites
MORNE TROIS PITONS NATIONAL PARK

Photograph : Laudat platform



Photograph : Trafalgar platform



Photograph : Trafalgar platform





Wednesday 29 March

Freshwater lake

MORNE TROIS PITONS NATIONAL PARK

Photograph : Freshwater lake



Photograph : Freshwater lake





Thursday 30 March

Petite Savanne

MORNE TROIS PITONS NATIONAL PARK

Photograph : Southeastern area (outside MTPNP boundaries)



Photograph : Southeastern area (outside MTPNP boundaries)



Photograph : Southeastern area (outside MTPNP boundaries)



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