Dominica Geothermal Development Company Limited
Powering a New Generation...

Environmental and Social Impact Assessment (ESIA) Addendum (Updated February 2022)

Proposed Dominica Geothermal Development

September 2021

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Environmental and Social Impact Assessment (ESIA) Addendum

Proposed Dominica Geothermal Development

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Acronyms and Abbreviations

Name	Description
°C	Celsius
AFD	Agence Française de Développement
amsl	above mean sea level
AOO	Area of occupancy
RAP	Resettlement Action Plan
BAOI	Biotic area of influence
BHA	Bottomhole assembly
BMCs	Borrowing Member Countries
BMCs	Borrowing Member Countries
BOP	Blowout preventer
CDB	Caribbean Development Bank
CGA	Country Gender Assessment
CH	Critical habitat
CIA	Cumulative Impact Assessment
CO_2	Carbon Dioxide
CR	Critically Endangered
DAIC	Dominica Association of Industry and Commerce
dBA	A-weighted decibels
DC	Drill collar
DGDC	Dominica Geothermal Development Company
DOMLEC	Dominica Electricity Services Limited
DOWASCO	Dominica's Water and Sewerage Company Ltd
E&S	Environmental and Social
EHS	Environmental, Health, and Safety
EN	Endangered
EOO	Extent of occurrence
EPC	Engineering, Procurement, and Construction
ERM	Environmental Resources Management
ESMP	Environmental and Social Management Plan
ESRP	Environmental and Social Review Procedures
FPIC	Free, Prior, and Informed Consent
GoCD	Commonwealth of Dominica
H_2S	Hydrogen Sulfide
HDI	Human development index
IDB	Inter-American Development Bank
IFC	International Finance Corporation
ILO	International Labor Organization
IUCN	International Union for Conservation of Nature
kha	kilohectare
km	Kilometer
kV	Kilovolt

LC	Least Concern
m	Meter
m/s	Meter per second
m^2	Square meter
m^3	Cubic meter
m^3/h	Cubic meter per hour
mg/L	milligram per liter
MTPNP	Morne Trois Pitons National Park
MW	megawatt
NT	Near threatened
OECS	Organization of Eastern Caribbean States
ORC	Organic Rankine Cycle
POOH	Pull out of the hole
PPA	Power Purchase Agreement
PS	Performance Standard
RoW	Right-of-Way
SGS	Steam Gathering System
TBC	The Biodiversity Consultancy
TD	Total depth
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNPRI	UN Principles for Responsible Investment
VECs	Valued Environmental Components
VU	Vulnerable
WBG	World Bank Group
WBM	Water base muds
WHS	World Heritage Site
WOC	Waiting on cement

EXECUTIVE SUMMARY

The Dominica Geothermal Development Company (DGDC), Ltd., is a private “special purpose” company with its own board, created in 2017. DGDC is 100% owned by the Government of the Commonwealth of Dominica (GoCD) and equity is transferred from GoCD to the DGDC under subsidiary agreement. DGDC, with financial support from various partners, is developing a 10-megawatt (MW) binary geothermal power plant and related facilities on the Island of Dominica. The Project is located on the southwestern periphery of the village of Laudat, northeast from Wotten Waven and Trafalgar villages. The Project components will be located in four separate areas: Power Plant Site, Injection Area, Production Well Area, and the back-up Production Pad.

DGDC is also planning, at a later stage of the Project, to build a new electricity transmission network for connecting the geothermal plant to the existing 11 kilovolt (kV) grid and primary load centers on the Island of Dominica, which will include the construction of six new substation facilities to allow interface of the new lines with the existing 11 kV network.

In 2018, Jacobs New Zealand Limited (Jacobs) prepared an Environmental and Social Impact Assessment (ESIA) for the construction and operation of the Dominica Geothermal Project. The Project included the construction and operation of geothermal wells, reinjection systems and a geothermal power plant with a capacity of 7 MW and connection to the Dominica electrical grid and associated infrastructure.

Following an unsuccessful procurement in November 2019, carried out by GoCD using World Bank financing and procurements rules, there has been subsequent design modifications, including an increase in capacity from 7 MW to 10 MW, the addition of a production well pad and well, and the relocation of the reinjection well pad and well.

The World Bank approved the Jacobs ESIA in 2018. In 2020, ECLIPSE, Inc., prepared an additional ESIA that assessed the impacts of the relocation of the reinjection well, its pad, and reinjection pipeline.

The objective of this Addendum to the ESIA, prepared by Environmental Resources Management (ERM) is to complement the existing ESIA studies conducted by Jacobs and ECLIPSE to provide punctual updates of gaps identified and further assess the Project’s environmental and social impacts based on updated project design details, including an updated Environmental and Social Management Plan (ESMP) compliant to the relevant National regulations, International Finance Corporation (IFC) Performance Standards, Inter-American Development Bank (IDB) safeguard policies, Green Climate Fund requirements, Caribbean Development Bank (CDB), Agence Française de Développement (AFD), and the applicable IFC Environmental, Health and Safety Guidelines.

Specific objectives of this ESIA Addendum include:

- Supplement the policy, legal, and administrative framework to incorporate IFC, IDB, GCF, CDB, and AFD requirements;
- Update the Project Description and site alternative selection analysis with modifications since the 2018 and 2020 ESIAs;
- Update the Biological Resources and the Socioeconomic Resources assessments;
- Update the impact analysis and measures to minimize negative impacts and enhance positive impacts of the Project, following the mitigation hierarchy; and
- Present updated Environmental and Social Management Plans for the Project.

The proposed geothermal development Project is anticipated to deliver benefits during the operation given that it would provide baseload renewable electricity to the island of Dominica and reduce the reliance on diesel fuel for power generation; however, it is acknowledged that the Project could also potentially lead to

negative environmental and social impacts during its construction and operation. Potential environmental and social impacts to the updated the Biological Resources and the Socioeconomic Resources assessments resulting from modified Project-related activities include:

Biological Resources

- Ground works would result in the direct loss and disturbance of vegetation (loss of 2.7 of primary and secondary rainforest, natural habitat).
- Mortality and Injury to fauna due vegetation clearing and habitat loss.
- Habitat loss for wildlife due to construction within the road improvement/ expansion locations, reinjection and production well pads, reinjection pipeline, power plant area and immediate surrounding areas.
- Operation of the drill rig and related drilling and testing activities would generate air emissions, the accumulation of which could inhibit growth of vegetation.
- During construction of the drill rig, blow testing, and other construction activities, the Project will generate high noise levels causing wildlife displacement and mask acoustic calling, thus affecting mating and feeding behaviors, within the Biological Area of Interest.
- Fragmentation of habitat and reduction of ecological connectivity.
- Mortality or injury to fauna due to open geothermal brine ponds.
- Project-related activities would result in the temporary degradation of habitat quality within the nearby Morne Trois Pitons National Park World Heritage Site.

Socioeconomic Resources

- Gender impacts (the Project will likely affect men and women differently).
- Worker influx impacts.
- Land acquisition, resettlement and livelihood restoration impacts.

Based on this assessment, none of the abovementioned impacts were determined to be major and would all be reduced to minor or negligible with the implementation of appropriate mitigation measures. An Environmental and Social Management Plan (ESMP) has been updated outlining the measures and actions necessary to further minimize impacts to acceptable levels. The ESMP includes mitigation measures for the following areas/resources:

- Biodiversity Management
- Erosion and Sediment Control
- Waste Management
- Water Management
- Air Emissions Management
- Noise Management
- Disaster Risk and Emergency Management
- Well Blowout and Prevention
- Emergency Response
- Security Management

- Operational Health and Security Management
- Labor Conditions and Workers Selection
- Internal and External Grievance Mechanism
- Community Health and Safety Management
- Contractor Management
- Stakeholder Engagement
- COVID-19 Contingency Plan
- Chance Find
- Transportation Management

In addition, implementation of the Project would result in positive environmental and social impacts, as the Project would generate benefits to the Island of Dominica population.

1. INTRODUCTION

The Dominica Geothermal Development Company (DGDC), Ltd., is a private “special purpose” company with its own board, created in 2017. DGDC is 100% owned by the Government of the Commonwealth of Dominica (GoCD) and equity is transferred from GoCD to the DGDC under a subsidiary agreement. DGDC, with financial support from various partners, is developing a 10-megawatt (MW) binary geothermal power plant and related facilities on the Island of Dominica. The Project is located on the southwestern periphery of the village of Laudat, northeast from Wotten Waven and Trafalgar villages.

The Island of Dominica is located near the center of an archipelago of islands known as the Lesser Antilles, between the neighboring French territories of Martinique and Guadeloupe. The proposed Project would use local geothermal resources to provide a sustainable source of power that would reduce reliance on petroleum markets for electric power generation in Dominica, and would decrease emissions of criteria pollutants and greenhouse gases associated with global climate change.

In 2018, Jacobs New Zealand Limited (Jacobs) prepared an Environmental and Social Impact Assessment (ESIA) for the construction and operation of the Dominica Geothermal Project. The Project included the construction and operation of geothermal wells, reinjection systems and a geothermal power plant with a capacity of 7 MW, and connection to the Dominica electrical grid and associated infrastructure. Following an unsuccessful procurement in November 2019, carried out by GoCD using World Bank financing and procurements rules, there has been subsequent design modifications (e.g., increase in capacity from 7 MW to 10 MW, the addition of a production well pad and well, and the relocation of the reinjection well pad and well; see Section 3.0).

The World Bank approved the Jacobs ESIA in 2018. In 2020, ECLIPSE, Inc., prepared an additional ESIA that assessed the impacts of the relocation of the reinjection well, its pad, and reinjection pipeline.

This ESIA Addendum, prepared by Environmental Resources Management (ERM), updates the existing two ESIAs, provides punctual updates of gaps identified in the existing ESIAs and mitigation/ management plans, assesses the impacts of any additional Project modifications which have occurred recently (described in Section 3 of this document), and provides mitigation and management of those additional impacts (such as for the addition of a back-up production pad and well).

1.1 Project Proponents

In 2020, the DGDC, with financial support from various partners is planning to construct a 10 MW Domestic Power plant. Dominica Electricity Services Limited (DOMLEC) is Dominica’s privately owned electricity generation and distribution company, currently the sole generator and distributor (apart from some small scale solar installations) on the island. DGDC will sell geothermal energy to DOMLEC, who will distribute it to residents on the national grid.

1.2 Purpose and Need for the Project

The proposed geothermal development Project would provide baseload renewable electricity to the island of Dominica and reduce the reliance on diesel fuel for power generation.

1.3 Objectives and Scope

The objective of this Addendum to the ESIA is to complement the existing ESIA studies conducted by Jacobs and ECLIPSE to provide punctual updates of gaps identified and further assess the Project’s environmental and social impacts based on updated project design details, including an updated Environmental and Social Management Plan (ESMP) compliant to the relevant National regulations,

International Finance Corporation (IFC) Performance Standards, Inter-American Development Bank (IDB) safeguard policies, Green Climate Fund requirements, Caribbean Development Bank (CDB), Agence Française de Développement (AFD), and the applicable IFC Environmental, Health and Safety Guidelines.

Specific objectives of this ESIA Addendum include:

- Supplement the policy, legal, and administrative framework to incorporate IFC, IDB, GCF, CDB, and AFD requirements;
- Update the Project Description and site alternative selection analysis with modifications since the 2018 and 2020 ESIAs;
- Update the Biological Resources and the Socioeconomic Resources assessments;
- Identify measures to minimize negative impacts and enhance positive impacts of the Project, following the mitigation hierarchy; and
- Present updated Environmental and Social Management Plans for the Project.

2. SUPPLEMENTAL POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

2.1 International Standards

2.1.1 Inter-American Development Bank (IDB)

The IDB has established its own policies and safeguards to ensure that projects financed by the IDB group are sustainable (see Table 2-1 below). These environmental and social policies are guided by international best practices, and are relatively consistent with widely used IFC guidelines regarding environmental, health, and social management.

Table 2-1: Triggered Inter-American Development Bank Safeguards and Policies

IDB Policies	Policy Description
OP-703 – Environmental and Safeguards Compliance Policy	The Policy has three specific objectives: (i) To enhance long-term development benefits by integrating environmental sustainability outcomes in all Bank operations and activities and strengthening environmental management capacities in its borrowing member countries. (ii) To ensure that all Bank operations and activities are environmentally sustainable (iii) To foster corporate environmental responsibility within the Bank. The Policy has two sets of directives, as follows: • *Environmental Mainstreaming (Directives A.1 through A.7),* which refer to the concept of mainstreaming environmental issues and upstreaming them early on during the project cycle. • *Safeguarding Directives (Directives B.1 through B.16)* – allow the Bank to adopt a more effective and efficient risk management framework. Safeguards are applied throughout the project cycle to ensure the environmental sustainability of all Bank-financed operations. The Environmental Safeguards Directives are: B.1 Bank Policies; B.2 Country Laws and Regulations; B.3 Screening and Classification; B.4 Other Risk Factors; B.5 Environmental Assessment Requirements; B.6 Consultations; B.7 Supervision and Compliance; B.8 Transboundary Impacts; B.9 Natural Habitats and Cultural Sites; B.10 Hazardous Materials; B.11 Pollution Prevention and Abatement; B.12 Project Under Construction; B.13 Noninvestment Lending and Flexible

IDB Policies	Policy Description
	Lending Instruments; B.14 Multiple Phase and Repeat Loans; B.15 Co-financing Operations; B.16 In-country Systems; B.17 Procurement.
OP-761 Gender Equality in Development	This Policy integrates a gender perspective that seeks equal conditions and opportunities for women and men to reach their social, economic, political, and cultural potential by providing specific mechanisms for ensuring the effective implementation of the Policy and the evaluation of its results.
OP-704 – Natural Disaster Risk Management	The Policy has two interrelated specific objectives: i) To strengthen the Bank's effectiveness in supporting its borrowers to systematically manage risks related to natural hazards by identifying these risks, reducing vulnerability, and preventing and mitigating related disasters before they occur. ii) To facilitate rapid and appropriate assistance by the Bank to its borrowing member countries in response to disasters in an effort to efficiently revitalize their development efforts and avoid rebuilding vulnerability.
OP-102 Access to Information Policy	This Policy is based on the principle that information concerning the Bank and its activities must be made available to the public in the absence of a compelling reason for confidentiality. Information provided to the public must be made available in a form and at a time that enhances the transparency and therefore the quality of Bank activities.

Source: IDB, Operational Policies.

Regarding environmental and social issues, the Project triggers the following directives of the Environment Safeguard Policy (OP-703):

- *B.1, Bank Policies*: The Bank will only finance operations and activities that comply with the directives of this policy and are consistent with the relevant provisions of other Bank policies. This policy ensured the borrower/executing agency has legislation in place that promotes environmental management, training, and environmental governance, and promotes conservation and sustainable use of natural resources.
- *B.2, Country Laws and Regulations*: Project activities must comply with all Dominica laws and regulations, including the preparation of an ESIA.
- *B.3, Screening and Classification*: The Project will have impacts on the environment and the community. The Project is classified as Category "A". In accordance with OP-703, Category A projects are "any operation that is likely to cause significant negative environmental and associated social impacts, or have profound implications affecting natural resources," and require a project specific ESIA as well as an ESMP.
- *B.4, Other Risk Factors*: The Project's executing agency needs to comply with the ESIA and ESMP requirements. Therefore, the executing agency and relevant third parties will be required to develop appropriate measures for managing the identified risks, and such risks include economic displacement.
- *B.5, Environmental Assessment Requirements*: This Addendum to the ESIA addresses the IDB's requirement for environmental assessment for the Project.
- *B.6, Consultations*: An initial public consultation was conducted on 8 November 2017 to discuss possible alternatives and receive initial stakeholder feedback. Consistent with the IDB's Access to Information Policy (OP-102) and this policy (OP-703), this Addendum to the ESIA will be made available to the public.

- *B.7, Supervision and Compliance*: A monitoring plan will be implemented for the Project as part of the Project's ESMP.
- *B.9, Natural Habitats and Cultural Sites*: The Project is located near in the Roseau Valley, on the Island of Dominica and there are no known prehistoric archaeological sites and no currently listed historic sites or landmarks in the Project area. This directive requires the development of mitigation and monitoring measures to mitigate the potential impacts identified in this ESIA and the ESMP.
- *B.10, Hazardous Materials:* The Project will require the use of hazardous materials and will result in the production of hazardous waste. Hazardous material minimization, handling, storage, transportation and disposal is addressed in the Project's ESMP.
- *B.11, Pollution Prevention and Abatement*: Project activities have a risk of pollution, specifically during the construction phase. Pollution prevention is addressed in the Project's ESMP.
- *B17. Contractor clause for implementation of ESMP.*

Additionally, the Project triggers the IDB's Access to Information Policy (OP-102), the Gender Equality in Development Policy (OP-761), and the Disaster Risk Management Policy (OP-704). When it comes to financing projects, it is the Bank's intent to be as clear and transparent as possible and, through clear stakeholder communication, to improve the quality of its operations.

2.1.2 Caribbean Development Bank (CDB)

One of the most relevant CDB policies for the purpose of this report and the Project itself is the Environmental and Social Review Procedures (ESRP) from December 1, 2014.

The ESRP outlines how CDB within its mandate and operations ensure that environment and social risks are managed. The ESRP includes eight environment and social performance standards that reflect the principles, core policies, standards and best practice approaches adopted and used in the treatment of sensitive environmental and social issues by the multilateral financial and development community. The objectives of the performance requirements are to:

- Optimize decision making with respect to environment and social impacts, and risks to anticipate, avoid, mitigate, and/or compensate for adverse project impacts on the environment and affected people and communities;
- Assist Borrowing Member Countries (BMCs) to build capacity and strengthen their institutions and governance systems to effectively manage environmental and social risks; and
- Provide staff, BMCs and other development partners with a clear understanding of the CDB's requirements, and procedures, accountabilities for managing environment and social risks in its operations.

The environmental and social performance requirements include objectives, principles and scope related to the policies shown in Table 2-2.

Table 2-2 CDB Policies

CDB Policies	Policy Objectives
Pollution Prevention, Control and Management	Identify and address how pollution prevention, control and management requirements for the project will be appropriately managed, (given the nature and scale of the project geographic location and ambient environmental conditions) and taking into account financially feasible and cost effective control methods, throughout the project cycle using a discrete environment and social management system or a project specific ESMP.
Toxic and Hazardous Substances Control and Management	CDB financed projects should avoid and/or minimize risks and impacts to human health and safety, and to the environment, from the procurement, production and use, and disposal of toxic and hazardous materials and substances, including pesticides and Persistent Organic Pollutants
Cultural Property and Heritage	CDB financed operations will be guided by applicable international conventions ratified by the Borrower as well as by national legislation and regulations to avoid adverse impacts on cultural resources. The application of this requirement is designed to promote awareness and appreciation, encourage their protection, conservation and sound management and applies whether the cultural heritage has been legally protected, internationally recognized or previously disturbed.
Natural Habitats and Biodiversity Conservation	Identify and make every use of opportunities to conserve and sustainably use biodiversity natural habitats, and as priority, maintain the benefits of priority ecosystem services and in so doing reflect the objectives of the Convention on Biological Diversity. CDB will not finance or support operations that significantly convert or degrade impacts on critical, natural, protected habitats, and will instead promote the conservation, protection and management of natural resources.
Directly Affected Communities	To avoid or minimize adverse impacts on communities directly affected by development projects and ensure that they benefit from projects that affect them.
Vulnerable Groups	To avoid adverse impacts upon groups that may be disadvantaged in the development process by virtue of their age (children and the elderly), ethnicity, religion, culture, gender, physical and mental ability or way of life. In development projects financed by the Bank, likely to have significant impacts on vulnerable groups, especially those below the poverty line, the landless, the elderly, women and children, the disabled, and Indigenous Peoples (IP). Particular attention should be given to these groups to ensure that they are not disadvantaged and at a minimum restore their livelihoods in real terms relative to pre-project levels; and or enhance and improve their standards of living.
Land Acquisition and Involuntary Resettlement	In recognition of the long term adverse consequences involuntary displacement or badly planned resettlement initiatives can have on people, it is required that CDB-financed project activities ensure that where unavoidable, individuals affected by land acquisition or involuntary resettlement, (including ‘squatters’) are consulted, fairly compensated for the loss of land and other assets taken for development

	purposes; and are able to restore their incomes and standards of living or improve them. The displacement (relocation, loss of residential land, or loss of shelter) and economic displacement (loss of land, assets, access to assets, income sources, or means of livelihoods) as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas, whether losses and restrictions are full or partial, permanent or temporary. Given the great diversity in the scale (from one person to more than 20 households) of involuntary resettlement issues encountered in CDB's BMCs the applicability of this performance requirement will be worked out with the Borrower on a "case by case" basis and applies to both the public and private sector. **This performance requirement does not apply to victims of natural disasters or to resettlement resulting from voluntary land transactions**
Community, Worker Health and Safety	The Borrower will provide workers with a safe and healthy environment, ensuring that risks (biological, physical, chemical or radiological) associated or inherent to the particular sector are: identified, avoided, mitigated or controlled. In addition, steps will be taken to prevent accidents, injury and disease arising from work that present potential hazard to workers through the provision of personal protective equipment, controls to avoid or minimize risks, as well as having in place appropriate emergency response plans and procedures. The Borrower will also assess and identify potential risks to safety of affected communities during all phases of the project cycle to both natural and accidental hazards. The approach will be based on favoring prevention or avoidance of risks and impacts to minimization or reduction.

CDB will not finance projects that do not meet its environment and social performance requirements as defined in the ESRP. Borrowers are required to monitor and report to the Bank on their compliance with the ESRP requirements. The Bank recognizes the value a well-informed and engaged public can bring to the development process and contribute to the attainment of the BMC's sustainable development objectives. CDB is therefore committed to the principle of corporate transparency, accountability and stakeholder engagement, and BMCs are encouraged to adopt and promote these principles.

The ESRP requires that Borrowers initiate early engagement, participation, consultations and disclosure of information to parties likely to be affected by significant negative impacts from the investments projects it finances (CDB, Environmental and Social Review Procedures, 2014).

2.1.3 International Finance Corporation (IFC)

Although the Project is committed to complying with the IDB Safeguards and CDB policies and procedures, the IDB itself recognizes a series of additional norms and standards that, if implemented, could help minimize risks associated with the development of this Project. These are described below.

The IFC is a division of the World Bank Group that lends to private investors. The IFC released a Sustainability Policy and set of Performance Standards (PS) on Social and Environmental Sustainability in January 2012. These standards stipulate that the Project shall meet certain requirements throughout the life cycle of an investment by IFC or other relevant financial institution or commercial banks, which are signatory to the Equator Principles (EP, 2006).

These PS and guidelines provide ways and means to identify impacts and affected stakeholders and lays down processes for management and mitigation of adverse impacts, see the Table 2-3 below.

Table 2-3: International Finance Corporation Performance Standards

Performance Standard	Description	Purpose
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	Underscores the importance of managing environmental and social performance throughout the life of a project (any business activity that is subject to assessment and management).	■ To identify and assess environmental and social risks and impacts of the project. ■ To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize impacts and risks ■ To promote improved environmental and social performance through management systems. ■ To ensure grievances and external communications from are responded to and managed appropriately. ■ To promote and provide means for adequate engagement with Affected Communities
PS 2: Labour and Working Conditions	Recognises that the pursuit of economic growth through employment creation and income generation should come with the protection of worker's fundamental rights.	■ To promote the fair treatment, non-discrimination and equal opportunity of workers and to protect workers. ■ To promote compliance with national labour and employment laws. ■ To promote safe and healthy working conditions, and health of workers.
PS 3: Resource Efficiency and Pollution Prevention	Recognises that increased economic activity can generate increased levels of pollution and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels.	■ To avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities including pest management. ■ To promote more sustainable use of resources, including energy and water. ■ To reduce project-related greenhouse gas emissions.
PS 4: Community Health, Safety and Security	Recognises that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.	■ To anticipate and avoid adverse impacts on health and safety of the Affected Community during the project life from both routine and non-routine circumstances ■ To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.
PS 5: Land Acquisition and Involuntary Resettlement	Recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land.	■ To avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs. ■ To avoid forced eviction. ■ To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use ■ To improve or restore, the livelihoods and standards of living of displaced persons.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Recognises that protecting and conserving biodiversity, maintaining ecosystems services, and sustainably managing living and natural resources are fundamental to sustainable development	■ To protect and conserve biodiversity. ■ To maintain the benefits from ecosystem services. ■ To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.

Performance Standard	Description	Purpose
PS 7: Indigenous Peoples	Recognises that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalised and vulnerable segments of the population.	■ To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples ■ To anticipate and avoid or minimize adverse impacts of projects on communities of Indigenous Peoples ■ To promote sustainable development benefits and opportunities for Indigenous Peoples ■ To establish and maintain an ongoing relationship based on Informed Consultation and Participation with the Indigenous Peoples affected by a project through the project's life cycle. ■ To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples
PS 8: Cultural Heritage	Recognises the importance of cultural heritage for current and future generations	■ To protect tangible and intangible cultural heritage from the adverse impacts of project activities and support its preservation ■ To promote the equitable sharing of benefits from the use of cultural heritage.

Source: IFC Performance Standards, January 2012.

2.1.3.1 IFC Environmental, Health, and Safety Guidelines

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents that address IFC's expectations regarding the industrial pollution management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimizing, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC PSs, particularly in those aspects related to PS 3: Pollution Prevention and Abatement, as well as certain aspects of occupational and community health and safety. The IFC also has industry sector guidelines that can be used, especially, the Geothermal Power Generation guidelines for this Project. General EHS Guidelines (30 April 2007) also exist, which contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors.

When host country (Dominica) regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required. It is important to note that this is also the case for IDB, AFD and CDB guidelines.

2.1.4 Agence Française de Développement (AFD)

The French Development Agency (Agence Française de Développement (AFD)) gives aid within the framework of the Sustainable Development Goals that have been set by the United Nations for the 2015-2030 period. More specifically, in France, development aid meets four standards:

- Effectiveness: an assessment is made of direct results of the aid, and the specific features of the countries are taken into account.
- Transparency: detailed and updated information on the implemented programs is made available.

- Coherency: this requires taking into account the effects of the aid on all the economic and social policies of the donor countries.
- Accountability: the use of funds and the results obtained must be justified to citizens.

AFD aims to promote sustainable and equitable development in all operations funded, by ensuring that these operations effectively contribute to the objective of sustainable development (combating poverty and ensuring the satisfaction of human needs, strengthening solidarity between human beings and between territories, preserving biodiversity, preserving habitats and natural resources, combating climate change). All operations financed by AFD are required to comply with the national regulations of the country where the operation is implemented, including for environmental and social issues. However, as regulations in the countries where AFD operates are sometimes incomplete or under development, AFD uses as a reference a number of rules, good practices and directives produced by international standard-setting organizations and proven with more than 70 years of experience in the financing of development projects. This mainly concerns:

- The World Bank Safeguard Policies for public sector financing;
- The UN Principles for Responsible Investment (UNPRI); and
- The IFC Performance Standards.

The major international conventions ratified by the countries where AFD operates are also used as references, mainly:

- The United Nations Universal Declaration on Human Rights;
- The International Labor Organization fundamental conventions on labor law;
- The United Nations Convention on the Elimination of All Forms of Discrimination against Women; and
- The Organization for Economic Co-operation and Development guidelines for multinational enterprises.

In terms of Environmental and Social (E&S) risk management, AFD does not have specific E&S Standards and applies World Bank Group Standards including the World Bank E&S Framework and IFC Performance Standards and the related Guidance and Interpretation Notes.

3. PROJECT DESCRIPTION MODIFICATIONS SINCE THE 2018 ESIA

This section provides an updated project description of the design modifications which have occurred since the 2018 ESIA was published. Design modifications include:

- The increase in plant capacity from 7 MW to 10 MW;
- The selection of plant technology type: a Binary Cycle Power Plant utilizing Organic Rankine Cycle (ORC) technology;
- Decrease in number and location of the injection wells, from two injection wells at WWR1 and WWO1 to only one injection well at RVI2[1] (this requires drilling a deviated well, the construction of a well pad, the installation of a reinjection pipeline from the plant to the reinjection well, which was reduced from 4 km to approximately 1.2 km);
- The construction of a new well pad and the drilling of a back-up production well (well RVP2 at Production Pad A)[2]; and
- The reduction of the steam gathering system (SGS) from 3 km to 1 km.

3.1 Project Overview

This Project is being carried out by the DGDC, a private company developed in 2017 by the GoCD. DGDC will continue to own and manage the Project. The DGDC has a provisional Power Purchase Agreement (PPA) agreed with DOMLEC. DOMLEC is Dominica's privately owned electricity generation and distribution company, currently the sole generator and distributor (apart from some small scale solar installations) on the island. GoCD /DOMLEC will be installing the interconnection between the local Laudat hydro station and the Project, as well as any required grid updates to transmit and deliver the electricity.

The objectives of the Project:

- Reduction of high electricity tariff rates.
- Reduction or elimination of use of diesel fuel oil generation.
- Increase price certainty in electricity tariffs – diesel fuel oil varies in cost.
- Overall effect – make Dominica a more attractive place to do business & reduce cost burden to community.
- Increase resilience – Dominica has objective to be World's first climate resilient nation. Geothermal plant must be designed and built with high resilience & high reliability.
- Reduce carbon footprint by maximizing use of renewable energy.

Current restrictions and limitations of the Project include:

- Dominica has network restrictions brought about by sole use of 11 kilo-Volt (kV) for both "network" and distribution.
- Bulk of power distribution and consumption around Roseau. Average load around 11 MW at present, peak at 14.8 MW.
- Very limited ability to move power from south to north over 11 kV.

[1] To be financed by the World Bank.

[2] To be financed by the World Bank.

- Largest generator on island at present is 2.84 MW.
- Only one production well available at present – comfortably produce 7 MW.

3.2 Project Location

The Project is located on the Island of Dominica, in the Roseau Valley, to the southeast of Laudat, at an estimated elevation of 550 meter (m) above mean sea level (amsl) (Figure 3-1).

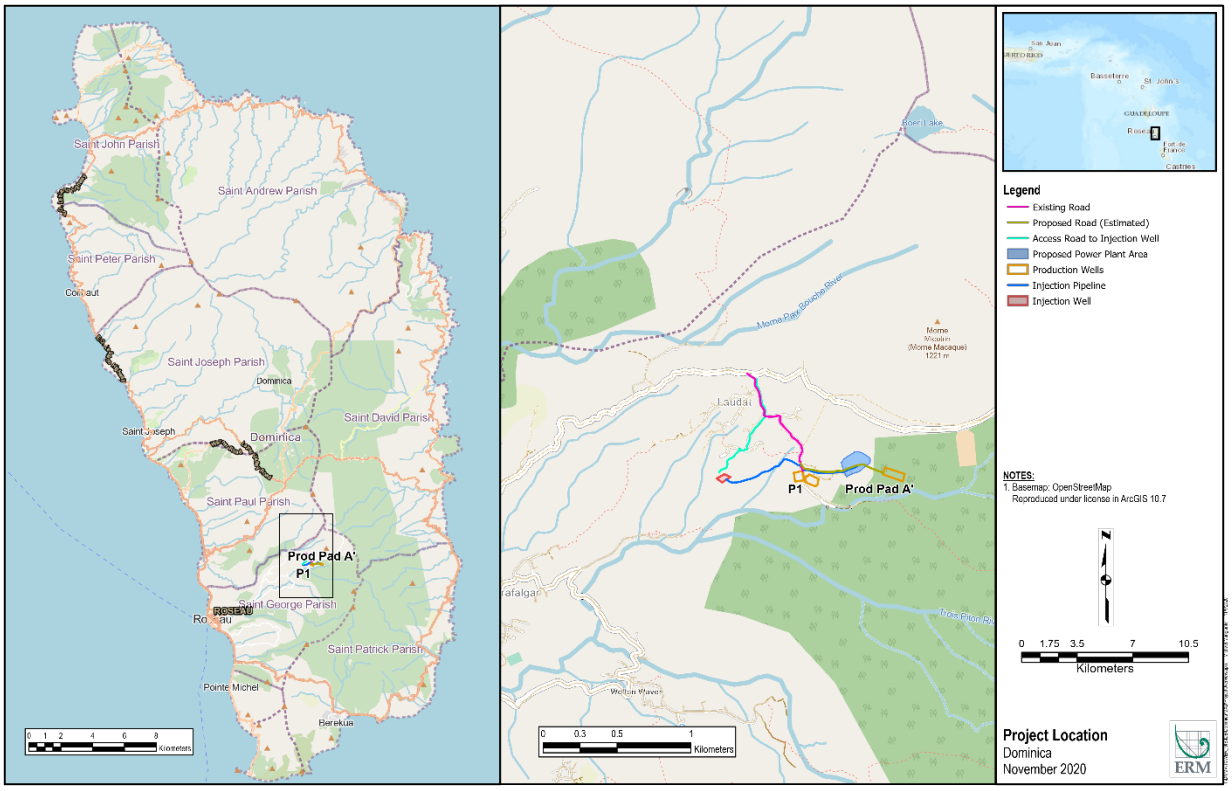


Figure 3-1: Project Location

The Project components will be located in four separate areas: Power Plant Site; Injection Area, Production Well Area, and the back-up Production Pad A. Figure 3-2 depicts the location of these general areas as well as the access roads and the approximate location of the injection pipeline route.

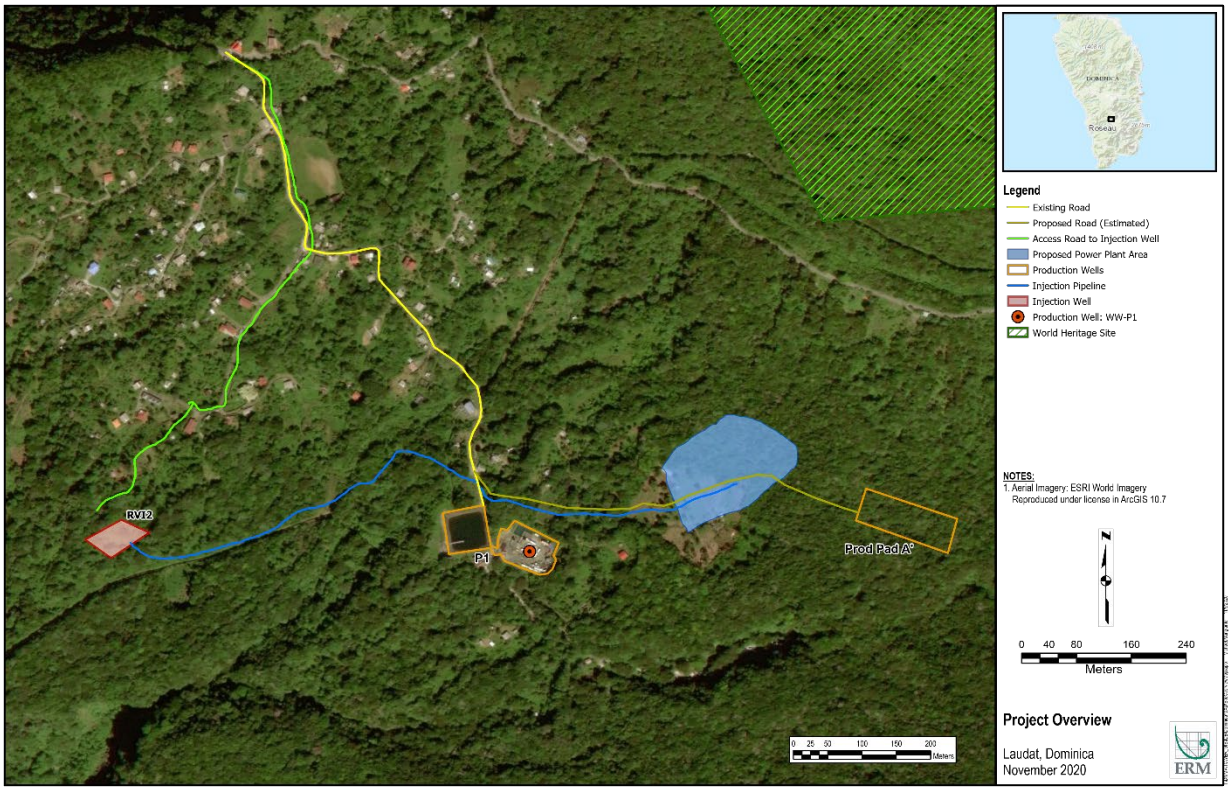
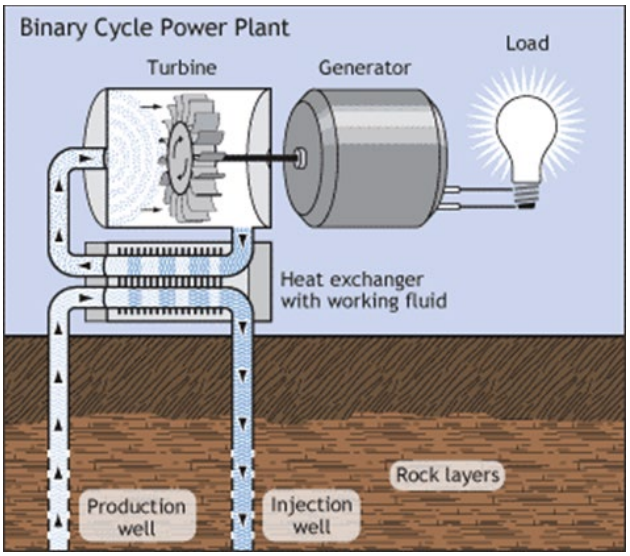


Figure 3-2: Project Component Location

3.3 Process Overview

The proposed Project will be a binary cycle geothermal power plant. A binary cycle power plant is a closed-loop system (with no emissions under normal operating conditions) where the heat from geothermal hot water is transferred to a secondary motive/working fluid via a heat-exchanger and is then reinjected back into the reservoir via injection wells (the working fluid, n-pentane or isopentane, will be an environmentally benign hydrocarbon working fluid with a negligible Ozone Depletion Potential and Global Warming Potential. The heat from the geothermal hot water causes this second fluid to turn to steam, which is used to drive a generator turbine (EERE, 2020). The second fluid is then re-condensed, and the cycle begins all over again as shown in Figure 3-3.



Source: EERE, 2020

Figure 3-3: Typical Binary Cycle

For the Project plant, two turbines and generators (2 x 5 MWe Net) will be installed and connected to the SGS (production well). The system will operate in two separately closed loops: one for the primary thermal fluid extracted from the reservoir and then reinjected back into the reservoir at a different location (the geothermal fluids), and the other for the ORC working fluid which is circulated from the heat exchangers, to the turbines, to the cooling and re-condensing system, and then back to the heat exchangers.

The geothermal fluids drawn from the reservoir will flow through the heat exchangers in the Power Generation Units transferring heat through the heat exchanger to the ORC working fluid, causing it to flash to vapor, and spin the turbines. Once the geothermal fluid goes through the heat exchangers, it will be returned to the reservoir through the injection wells. After passing through the turbines, the ORC fluid in vapor form will be condensed back to liquid form via air cooling and cycled back into the heat exchanger.

The plant design includes a retention (sump) pond capable of accommodating the free flow of a well in the event it is needed for maintenance or bypass issue.

3.4 Project Components

The proposed geothermal facility will consist of the following main components which are explained in more detail in the following sub-sections:

Plant Equipment:

- Production and Injection Wells
- SGS and Brine Reinjection Pipeline and Well Pads
- Turbine Generator
- Heat Exchangers
- Recuperators
- Condensers
- Pumps (feed, wells, ponds, firefighting system)

- Storage Tanks
- Transformers
- Emergency Generator
- Water Tank and distribution system
- Fire Fighting Tank and System
- HVAC System
- Oil System

Facilities:

- Security Building and Parking Lot
- Brine Ponds
- Electrical Building which will include separate areas for offices, kitchen and meeting rooms, workshop and storage, a control room, and a machinery room.
- Septic Tank and Leach Field

Figure 3-4 shows a preliminary plant layout based on site topography and existing components locations for the binary plant. The exact location of these components has not been finalized; however they will be located within the Project footprint depicted in Figure 3-2 above.

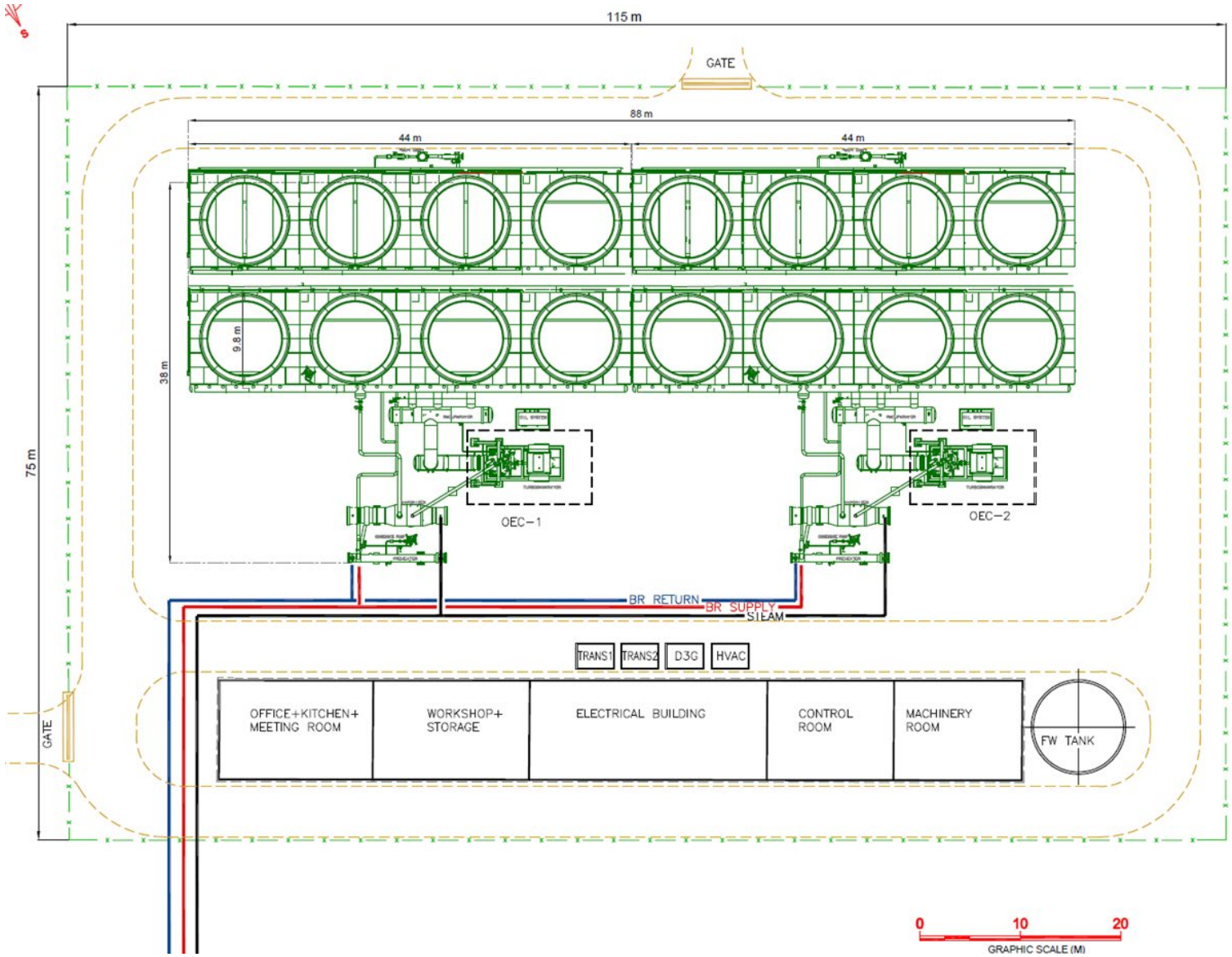


Figure 3-4: Proposed Preliminary Plant Layout

3.5 Production and Injection Wells

As stated in the 2018 ESIA, five wells have already been drilled as part of the exploration phase of this Project. These include three slimhole exploration/production wells (WW-01, WW-02, and WW-03), one standard diameter production well (WW-P1), and one standard diameter injection well (WWR1, will not be used under the current Project configuration). The current Project is proposing to use two of the already existing wells as they are for production (WW-P1 and WW-03) with no modifications, and to install a new well for re-injection (RVI2) as well as a back-up well at Production Pad A (RVP2) (see Figure 3-2). The proposed back-up well at the Production Pad A will be a standard diameter production well. Details for the existing wells are provided in Table 3-1.

Table 3-1: Physical Parameters of the Existing Production Wells

Parameter	WW-P1	WW-03
Wellhead, Easting (m)	679,461	n/a
Wellhead, Northing (m)	1,695,567	n/a
Wellhead Elevation m (amsl)	552	543
Total Depth (mRKB)[3]	1,505	1,613
Azimuth (°)	190	-
Throw (m)	465	-
Casing Size (in)	9 5/8	7
Casing Shoe Depth (m)	726	590.6
Liner Size (in)	7	4.5
Liner Depth (m)	700-1,505	569-1,612

Source: Jacobs, 2018.

Specific details for the proposed new wells (RVI2 and RVP2) are not available yet; however, they will be similar to the existing wells. Current proposed design details for the new wells are provided in Section 3.5.2.1 below.

3.5.1 Well Pads

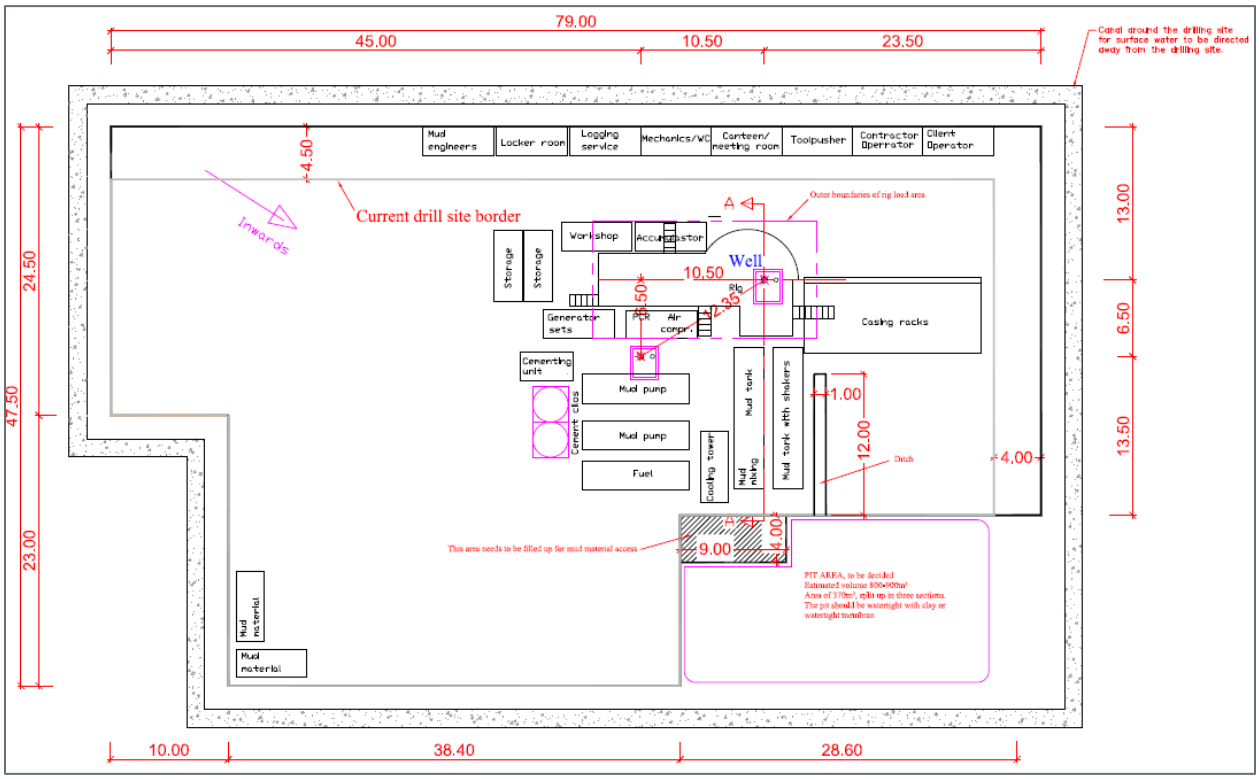
As part of the previous well drilling activities, three well pads have already been constructed; however only one of these will be utilized under the current plant configuration. Site WW-03 pad contains two of the already existing wells: WW-P1 and WW-03; this pad still requires the following activities: site improvement, slope stabilization, drainage works, fencing, and security lighting (Figure 3-5).

[3] mRKB - rotary kelly bushing depth, or the depth measured below the rotary table.

Source: Jacobs 2018

Figure 3-5: Panoramic View of Existing Well Pad from the East

The existing site WW-03 pad occupies (an area of approximately 2,000 m^2 and will be used to contain much of the steamfield equipment, including the separator and rock muffler. Figure 3-6 depicts the existing well layout as proposed during drilling activities. Proposed layouts for the new well pads at the reinjection site and Pad A are not yet available; however, they should be in line with the already existing well Pad.



Source: Iceland Drilling, 2012.

Figure 3-6: Existing Pad Layout

The back-up production well site, Production Pad A, will consist of the following:

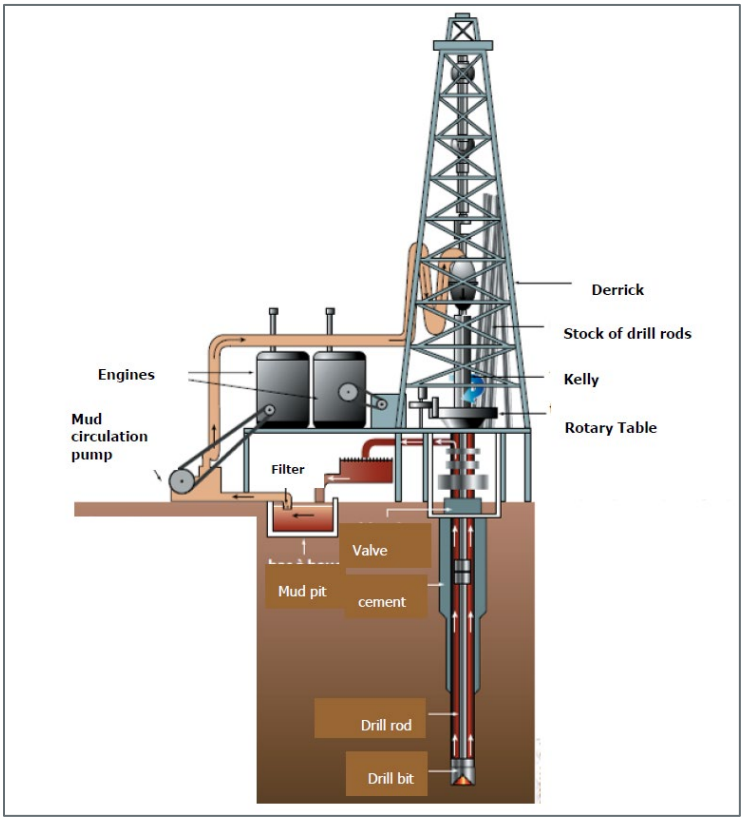
- An area of 4,700 m², stoned and compacted, generally treated as a "heavy roadway".
- A network of gutters arranged around the manufacturing and circulation basins for the drilling mud.

- Watertight basins or sludge tanks intended for the recovery of solid and liquid cuttings produced by drilling as well as geothermal water during the well test phase.
- A cuttings corral under the vibrators of the drilling rig. This structure is intended to be destroyed at the end of the drilling work.
- A reinforced concrete slab 0.30 m thick intended to accommodate the substructure of the drilling machine; this slab is 20 m long and 9 m wide for the construction of a well.
- For each well, a reinforced concrete cellar where the wellhead is located in its center with its stack of safety valves and adapters.

3.5.2 Well Drilling

3.5.2.1 Drilling Equipment

Well drilling equipment is not available on the Island and will have to be brought in via Lorry and boat. For existing wells, a hydraulic rotary drilling technique was used using a Drillmec G-102 drilling rig as shown in Figure 3-7 below.



Source: CGIP, 2013.

Figure 3-7: Schematics of a Typical Drill Rig

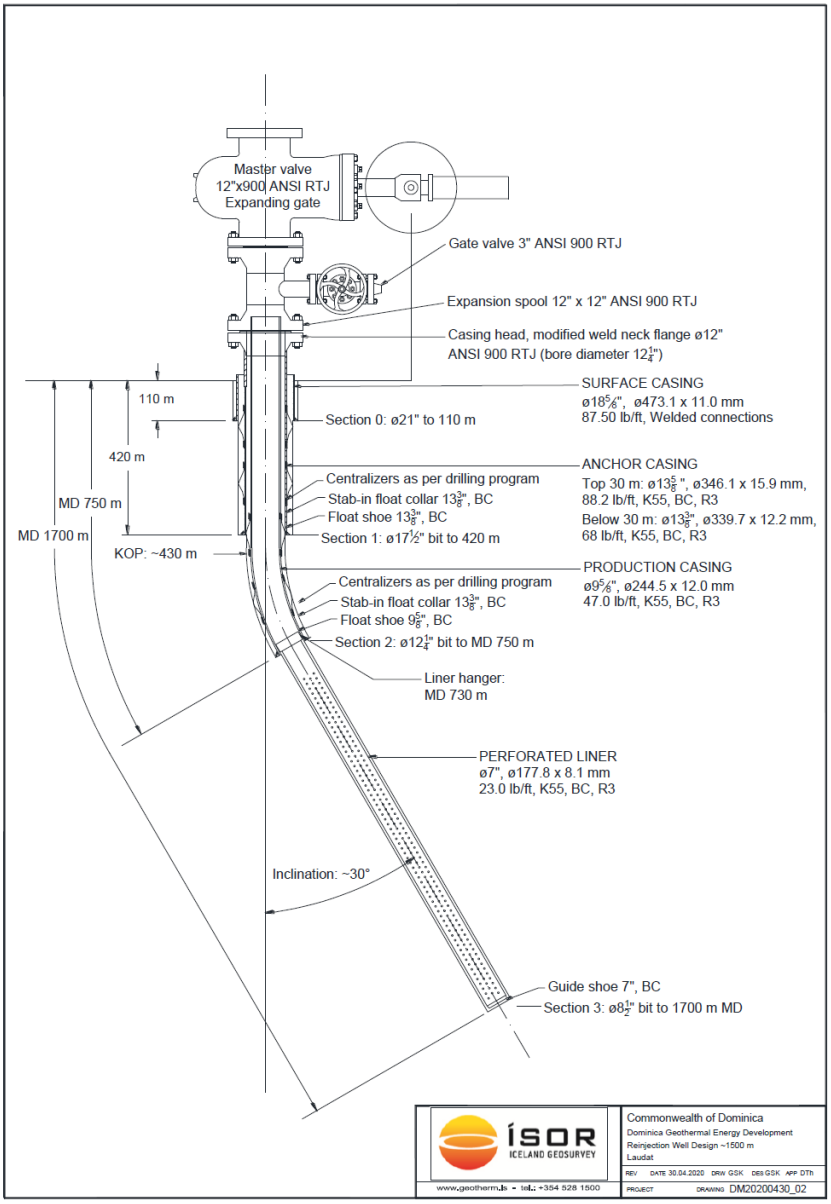
A drill bit bores into the ground (in this case, a roller cone drill bit) lowered on the end of a drill string by fitting additional drill pipes as drilling proceeds. The drill pipes are rotationally driven by the top drive which supports the weight of the drill string and injects drilling muds to lubricate and cool the drill bits and to allow cleaning. The whole drilling assembly is supported from a telescopic derrick installed over the well (CGOP, 2013).

3.5.2.2 Well Specifications

The proposed project involves the drilling of one new reinjection well (RVI2) and one new production well (RVP2). The proposed wells would be drilled to a total added vertical depth of approximately 1,500 m; these will be deviated wells with a maximum inclination of 30°, drilled in four different sections:

1. Vertical section down to 110 m, 26''or 24'' – installing casing 18''5/8 K55 BTC 87.5 lbs/ft and cement.
2. Vertical section down to 430 m, 17''1/3 – installing casing 13''3/8 L55 BTC 68 lbs/ft and cement.
3. Deviated section to a True Vertical Depth (TVD) of 750 m, 12''1/4 – Kick of Point (KOP) 430 m GBU 3°/30 m to 30°, Installing casing 9''5/8 47 lbs/ft and cement.
4. Deviated section to a TVD of 1500 m (1650 m measured depth [MD]), 8''1/2 , installing a 7'' K55 BTC slotted liner, with a liner hanger between 9''5/8 and 7'' casing.

Figure 3-8 shows one of the proposed schematics for a deviated well, although actual depths are as proposed in numbers 1-4 above.



Source: ISOR 2020

Figure 3-8: Schematic of Proposed Deviated Wells

The actual drilling and completion time for all of the existing wells was from 35 to 45 workdays, with well WW-P1 drilled and completed in 47 days (including transportation and rig-up) (ISOR, 2020). It is expected that drilling of the new wells will be completed in the same amount of time.

3.5.2.3 Drilling Fluids and Cuttings

Although the final drilling fluid program is not available at this stage, it is anticipated that drilling fluids will be as utilized for the existing wells at the site. The drilling fluids will be water base muds (WBM), and therefore primarily environmental friendly, the contents consisting mainly of:

- natural clay
- caustic soda

- polymers
- heat protector for polymers
- lubricant
- biocide

The drilling muds are recovered and treated for recycling back into the well. Drilling muds are pumped down the boreholes where they mix with solid elements (cuttings) from the breakdown of the drilled rock formations, circulate back up the borehole where they pass through various separating systems to remove solid particulates:

- Three shale shakers,
- One to two centrifuges, and
- Flocculation unit to minimize the amount of mud to be treated.

The treated mud will be decanted into an impermeable pit to avoid contaminating surface water and/or groundwater, then sent to a suction tank while awaiting re-injection.

A cuttings corral of 150 cubic meter (m^3) will be provided under the shale shakers and flocculation unit to temporarily store cuttings. The cuttings will be subsequently collected in a dedicated lined sump, approximately 1,200 m^3 (5m L x 15m W x 3m D), prior to being transported to suitable disposal facilities. Reclamation for use as backfill may be considered, depending on the material's toxicity. If it is found to be toxic, this waste will have to be sent to disposal facilities for hazardous waste (CGIP, 2013).

During drilling activities for existing wells, substantial amounts of various conditioning materials had been procured by the DGDC; however, very limited quantity of additives was considered necessary during the drilling and therefore not used. A mud-engineer, provided by the drilling company, was on-site during the drilling and monitoring of the drilling mud was carried out at regular intervals. Lignosulfonate was added as an anti-coagulant agent and caustic soda to regulate pH (ISOR, 2020). Controlling the pH of the well helps provide fluid stability, improves polymer hydration and performance, and can treat out contaminants like carbon dioxide (CO_2), hardness, and hydrogen sulfide (H_2S) encountered in mix waters or while drilling (Schlumberger, 2020).

3.5.2.4 Gas Releases

It is already known that potentially dangerous gases are present in the areas of the wells as high levels of H_2S were detected at the Wotten Waven well pad. Although details are currently unknown for the equipment to be utilized to drill the proposed new wells, emissions of H_2S and CO_2 were monitored during drilling activities for the existing wells in order to protect site personnel.

An H_2S detection system was installed with sensors at the borehole, mud treatment units, and the storage unit roofs. These sensors had a warning light and siren that were activated if thresholds of 10 and 15 parts per million were reached. In addition, each employee was also equipped with an individual H_2S detector to wear. Wind socks on site informed personnel of the direction of wind flow in order to inform neighboring communities if necessary.

In addition to monitoring, previous drilling activities also include pH regulation using caustic soda. It is anticipated that proposed drilling activities will include at least the same measures used during previous drilling activities in order to prevent the release of potentially dangerous gases.

3.5.2.5 Blowout Prevention

During drilling activities for existing wells in the area, an over-pressurized feed-zone was encountered in well WW-02 (not part of this Project). It was noted as a sudden gas-kick when drilling was stopped at 903 m to run an inclination survey. Well head pressure quickly reached 32 bar and after pumping on the well with closed pipe-ram blowout preventer (BOP), the pressure faded. The source of the gas was later identified to be from a gas-filled pocket or aquifer at 562 m depth. The geothermal reservoir in Laudat is however generally under-pressurized with respect to a cold-water column.

During the drilling activities for the proposed wells, BOPs will be installed for each drilling section except the first one (to an estimated depth of 110 m). An annular type BOP will be implemented while drilling the second section (21''1/4 or 20''3/4) along with a kill and choke line to be able to kill the well if necessary

For the remaining two sections (diverted wells), a full stack BOP will be implemented with blind rams, variable bore rams, or pipe rams, and an annular preventer.

In addition, in order to control pressure, a choke manifold will be implemented with at least two chokes and two kill lines.

In accordance with American Petroleum Institute standards, the equipment will be tested at the start of a new section, and/or at least every 3 weeks. Functional tests will be carried out at least once a week but no more than once a day.

3.5.2.6 Scaling Control

An important parameter that must be considered for the efficient design and operation of a geothermal plant is management and control of the scaling potential from the produced geothermal fluids. Geothermal fluids are typically at or near supersaturation for various elements, especially calcium, magnesium, silica and iron. As the fluid flows through the wells, temperature and pressure changes can result chemical equilibrium changes that if left untreated can lead to well bore clogging, restrictions in the capabilities of the heat exchangers, and ultimately, complete loss of production from the producing wells, injection wells, or heat exchangers.

Based on Project design and the results of brine testing at the site, no scaling control system will be installed. The reinjection temperature will be kept high enough to avoid scaling issues in the system.

3.5.2.7 Drilling Power

As was the case with the existing wells, power for operating the drilling equipment will provided via onsite diesel powered generators. Diesel used for drilling would be stored in double-walled diesel storage tanks with secondary containment capable of storing 120% of the capacity of the tanks. Diesel will be acquired from sources on the Dominica. The fuel storage tanks and drilling lubricants and additives would be stored in a designated area with impermeable surfaces. The storage area would be bermed to contain potential spills and any contaminated storm water.

3.5.2.8 Well Testing

Well testing will be carried out at the proposed new production well. The length of the testing will be around 48 hours with the actual duration adapted according to the flowrate encountered. Post testing, the fluid produced from the production well will be stocked in a pond (allowing the geothermal fluid to settle) and then reinjected in the new injection well via temporary pipes installed between the two wells. During testing, fluid samples will be collected and analyzed to determine the precise the chemistry of the geothermal fluid.

An injection test will be performed at the proposed new injection well once constructed. Details on testing procedures are not yet available.

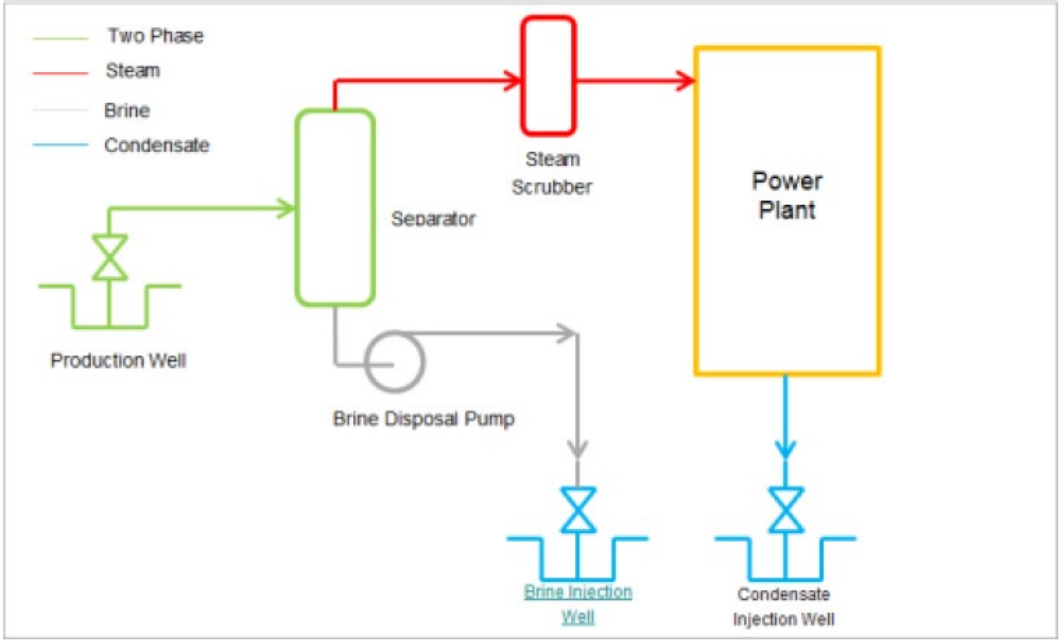
3.5.3 Existing Site Conditions

Studies performed at the site have found the following conditions for the reservoir and the geothermal fluid:

- An injection test was performed post drilling at a previously proposed injection well (not part of this Project), which indicated that the injection well in the Project area has significant permeability.
- The maximum measured temperature was 230.86 Celsius (°C) at 1110.5 m, measured 6-hours after the injection test ended.
- The deep liquid (reservoir liquid) is relatively dilute with Chlorine (Cl) and Sodium (Na) concentrations close to 2,600 milligram per liter (mg/L) and 1,500 mg/L respectively;
- Boiling due to depressurization within the well is expected to cause calcite scaling at or slightly above the boiling level; and
- The overall gas content of the steam at 150°C (4.8 bara) based on calculations from samples was 1.6 wt% (at 4.8 bara) or approximately 8 L gas/kg condensate.

3.6 Steamfield

Once the brine comes up the production wells, the two-phase fluid is sent to a separator where it is divided into steam and brine phases. The steam will be directed to the power plant while the brine is pumped to the injection pipeline. A simplified typical steamfield arrangement is shown in Figure 3-9.



Source: Jacobs, 2018.

Figure 3-9: Typical Steamfield Arrangement

The steamfield, comprised of the SGS, will include the following components as described below:

- Production Wells,
- Two-Phase Piping,

- Two Phase Steam Separator: 7.5-10 m high, 1.5 m diameter,
- Steam Piping,
- Steam Scrubber,
- Brine System consisting of: piping, brine pumping station and all required piping fittings, brine and condensate sumps,
- Atmospheric Flash Tank: 1-3 m in diameter, a vessel used to receive fluid e.g., brine during well testing, start-up or in the event of operational issues. The brine will flash inside the vessel and the steam component will discharge to atmosphere, while the remaining brine is pumped to the reinjection wells for disposal, and
- Control valves and instrumentation.

3.7 Power Plant

Design parameters for the power plant components have not been finalized as of the date of this document. However, the potential impacts of the final design of the power plant are not expected to change the magnitude and significance rating of the impact The proposed binary geothermal plant, would consist of two side by side ORC systems each with their own vapor preheater and vaporizer, turbine coupled to a generator, air-cooled condensers, and a recuperator, using an environmentally benign hydrocarbon working fluid n-pentane or isopentane.

The proposed binary plant layout was presented in Figure 3-4 above.

3.7.1 Geothermal Fluid Cycle

Geothermal production wells deliver a mixture of vapor and brine. This two-phase flow from each well is carried through a two-phase flow pipe into a Vertical Separator where brine and vapor (consisting of steam and non-condensable vapors (NCV)) is separated.

- Vapor - the main use for the vapor portion is to deliver heat for vaporizing and superheating the ORC working fluid in the Vaporizer, and
- Liquid - the liquid from the separator is taken by the brine disposal pump into the preheater and then reinjected into the reservoir through the reinjection well.

Once both flows have been through the complete cycle, they go to the condensate system, which controls what is fed to the reinjection wells.

3.7.2 The Organic Rankine Cycle

Although the proposed plant design has not been finalized, the typical process for the ORC cycle is presented as follows. The systems circulation pumps deliver the high-pressure working fluid first to the shell side of two parallel Recuperators to heat the working fluid downstream at the Expander entering the tube side of the Recuperators. The working fluid feeds the Preheater by increasing temperature of the fluid.

Inside the Preheater the working fluid is heated up to a point close to the boiling point. The heat exchanger has a standard shell and tube design with the working fluid on the shell side, and the resource fluid on the tube side to facilitate cleaning of the tube side.

After the Preheater, the working fluid enters the (tube multi-pass) shell and tube Vaporizer. The boiling working fluid is on the shell side, and the brine and vapor on the tube side. The working fluid evaporates on the outside of the tubes and leaves the Vaporizer in the superheated condition through a Mist Eliminator, which removes any droplets which may be present in the vapor.

The working fluid vapor then enters the turbine or Expander. The Atlas Copco radial inflow expander proposed for the Project has variable guide vanes, which control the flow of the working fluid into the turbine. The variable guide vanes are designed in a way that they ensure best inlet angle of the flow into the expander wheel, regardless of the working fluid flow or turbine load. The variable guide vanes control Vaporizer and Preheater pressure as well.

The ORC working fluid leaves the turbine and enters to the tube side of the recuperator, heating the shell side working fluid coming from the Feed Pump. In the air cooled condensers, the vapor condenses into liquid after exchanging heat with ambient air. The tube surface on the air side is designed with fins to increasing the heat exchange surface area. The Hot Well collects the working fluid condensate and functions as a Buffer Tank with sufficient height to protect the feed pumps from cavitation.

Electrically driven fans ensure adequate airflow over the tube bundles with the pressure controlled working fluid in the Hot Well Tank to eliminate excess sub-cooling.

Finally, the (condensed) liquid working fluid is circulated back into the ORC cycle via the Feed Pumps.

3.7.3 Design Parameters

Although the Plant design has not been finalized, the design life of the Plant shall be 30 years and the design life for all buildings shall be 50 years for the application of the structural design codes. Piping shall be analyzed and designed for a minimum of 7,000 equivalent full temperature displacement cycles.

Design standards and codes shall be as follows, unless stricter requirements or standards are required by Dominica code of practice (see Table 3-2).

Table 3-2: Design Standards

Component	Design Standards
Basis of structural Design	Euro norm (EN) 1990
Actions on structures	EN 1991
Design of concrete structures	EN 1992
Design of steel structures	EN 1993, EN 10025 or EN 10210 (hollow sections)
Design of composite steel and concrete structures	EN 1994
Design of timber structures	EN 1995
Design of masonry structures	EN 1996
Geotechnical design	EN 1997
Design of structures for earthquake resistance	EN 1998
Steel for the reinforcement of concrete – Ribbed bars and welded fabric	EN 10080
Concrete - Specification, performance, production and conformity	EN 206

Component	Design Standards
Foundations for Dynamic Equipment	American Concrete Institute (ACI) 351.3R-04
Connections	Deutsches Institute fur Normung (DIN) 931/EN 24014

Other relevant design requirements include:

- All buildings and sheds shall be designed for expected hurricane loading and other natural hazards and meet Dominica's building code.
- All buildings and sheds shall be made of concrete.
- All building materials and surface coatings utilized shall consider the hostile corrosive environment often involved in geothermal power production due to H_2S.
- Foundations for all buildings, structures and miscellaneous equipment pads shall be selected and designed based on the superimposed loads, and the strength and character of the supporting material as determined by the geotechnical study at site.
- The turbine generator foundation shall be designed by the Contractor for dynamic loading as well as static and environmental loading to limit vibration and avoid resonance.
- Spill containment shall be provided for all oil-filled transformers and as required by applicable local and international codes and regulations.

3.7.3.1 Plant Safety Systems

Plant safety design systems will include:

- Fire Protection System - The fire protection system would consist of a fresh-water tank, an electric firewater supply pump and a jockey pump, fire mains, and local hose and spray stations.
- Pressure Relief System - The ORC cycle will be protected by pressure relief equipment such as pressure relief valves and rupture disks.
- Detectors/Monitors – detectors and monitors will be available throughout the plant. These will include working fluid detectors, fire detectors, windsocks, and hydrogen sulfide detectors.
- Natural Hazard Protection – the plant will be designed in order to withstand natural hazard events, including hurricane winds and flooding, and may include wind protection screens around the air-cooled condenser units to protect them from wind and air-borne debris during hurricanes.

3.7.3.2 Plant Control Systems

Primary operation of the SGS and Power Plant shall be via a fully integrated Distributed Control System (DCS) with operator workstations in the Operator Control Room.

3.7.3.3 Oil System

A lubricating oil system is required for the turbine generator units (one per each unit, see Figure 3-4 above). The system includes pumps, coolers, oil tank, filters and purifiers. As mitigation for leakage or spills, oil containment bunds / trays are normally specified around or under all lube oil equipment to contain at least 110% of the total oil system capacity.

3.8 Pipelines

Current Project design places the plant very close to the production well, with the SGS running for approximately 1 km and the reinjection pipeline's proposed length of approximately 1.2 km. Although final design details are unavailable, Figure 3-10 shows the approximate location of the reinjection pipeline.

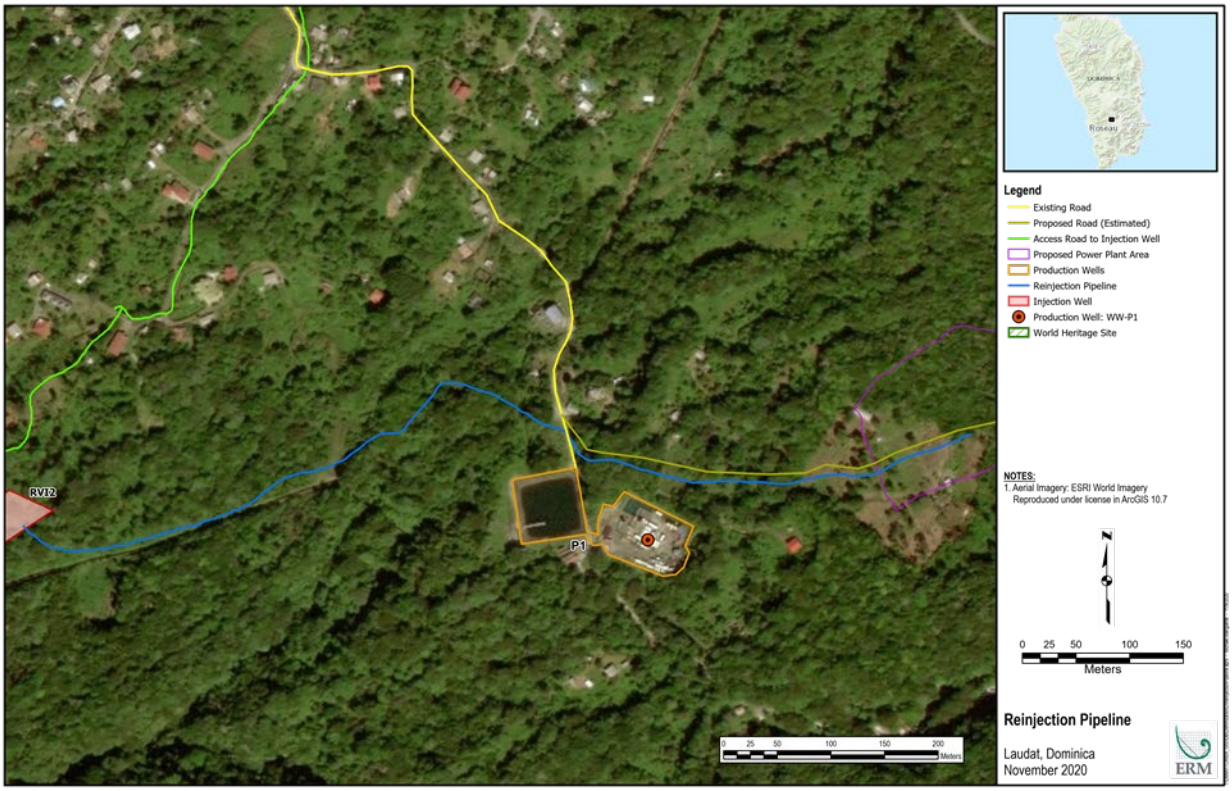


Figure 3-10: Approximate Location of the Reinjection Pipeline

The reinjection pipeline will be an approximately 30 cm wide pipe (final design diameter is unknown at this time) that will require a 10 m wide corridor during construction and a 4 m wide corridor during operation. The pipe will be installed above ground, with a clearance of 1.0-1.5 m under the pipe. A maintenance road will run along the length of the pipeline; however, design details have not been finalized. The potential impacts of the final design of the reinjection pipeline is not expected to change the magnitude and significance rating of the impact

General construction activities will include site improvement and slope stabilization where necessary. This will entail vegetation clearance for the reinjection route and well pad. Earthworks will be required for installation of concrete foundations for the pipeline and the construction of a pipe crossing over the "Ravine Fordie." The work will also include welding and set up of the steel pipes and digging of trenches for drainage.

The injection pipeline will operate at a high temperature and pressure and must be carefully designed with suitable supports and guides which safely allow for thermal expansion of the pipe between its hot and cold states. This will require vertical or horizontal u-bends every 100 m. The reinjection pipeline will be insulated to reduce heat loss, which is necessary to avoid deposition of silica and to protect people and wildlife from burns. It will be clad in aluminum or other appropriate material and may be colored or camouflaged to reduce visual impacts.

Condensate production is associated with the steam pipes as a result of the difference between the walls of the pipelines and the surrounding atmosphere in spite of insulation (Jacobs, 2018). Condensate produced in the steam pipelines will be collected via a condensate collection drain pot, found at local low points on the route. Condensate will either flow through a piped network to downhill storage sumps from where it can then be pumped to the injection well for disposal or will be discharged directly to the ground.

3.9 Brine Ponds

Spills and releases during shutdowns would be contained within a lined containment pond, which should be able to contain several hours of brine flow from both ORC units. The containment pond would be on the lowest topographical area of the site.

Should a fault occur that requires the geothermal plant to be taken offline suddenly, the production wells must be shut down slowly, over a period of two to four hours, to avoid thermal shock to the production and injection wells. In the unlikely event of an outage, fluids would be diverted to the lined containment while the wells are gradually closed. The containment pond would hold the diverted fluids before being pumped to the injection wells and would ensure that no off-site flows would occur during these events.

Lined ponds will also be available at the low points along the reinjection pipeline in order to drain the pipeline during shutdowns if needed.

3.10 Transmission Lines

No above ground transmission lines are proposed as part of the Project. Current design assumes only 1x 11 kV and 2 x 33kV underground cable interconnection to the DOMLEC electricity grid at the power plant site are necessary. These underground cables will be approximately 300 m long to be installed as part of plant construction activities.

3.11 Additional Facilities

3.11.1 Additional Structures

Only one building is currently proposed at the plant site. This Electrical Building will include separate areas for offices, kitchen and meeting rooms, workshop and storage, a control room, and a machinery room. Design details for this facility have not been finalized. The potential impacts of the final design are not expected to change the magnitude and significance rating of the impact.

3.11.2 Hazardous Material Storage

Hazardous materials associated with the Project include the working fluid, oils and lubricants, and could include other chemicals such as sulfuric acid, sodium hydroxide, and hydrogen chloride that would be used to adjust the pH of the geothermal fluids and reduce scale build-up in the wells and heat exchangers. These materials would be stored in designated areas with impervious surfaces designed to contain potential spills. The working fluid for the ORC will be kept in a 30 m^3 storage tank; however, its location within the plant configuration is still unknown.

Workers would be instructed in the hazardous properties of these chemicals, required protective clothing, and in the proper procedures for handling, storing, and eventual disposal of these materials.

Any hazardous waste generated during construction and operation will be handled in accordance with the Hazardous Waste Management Plan (see Appendix A, Section 3).

3.11.3 Site Security

The facility will be gated and completely fenced in with adequate lighting throughout. The contractor shall design, supply and install a 2.5 m high galvanized steel fence around the perimeter of the Project Area. The Project will also include a small security building for a security guard, however, this facility has not been designed yet (see Appendix A – for the site Security Management Plan and Operational Health and Safety Management Plan). The number of guards and their shift information has also not been defined yet.

3.11.4 Site Surface Water Drainage Features

The Contractor shall design, procure and install a storm water drainage system for the plant, capable of handling both storm water from building roofs and run-off from the plant site and applicable surrounds. Under no circumstances shall process effluents, contaminated or greywater be discharged directly into the storm water drainage system.

The storm water drainage system shall include the supply and installation of a storm water pipeline including all fittings, manholes, wells, drains, culverts, pumps, pits, and all other equipment for a fully functional storm water drainage system. Alternative systems, such as gravity drain in concrete channels/ducts, covered with concrete lids and/or hot dip galvanized gratings could also be implemented.

The site drainage shall be designed for the maximum peak rainfall as obtained from the meteorological data of the area and climate change projections.

The drainage pipe system shall have a gradient sized for a velocity not less than 0.7 meter per second (m/s) for self-cleaning with an upper limit of 3.0 m/s. The pipe material shall be consistent with the condition or characteristic of the site and the manholes, pipes and fittings shall comply with apparent standards.

There are no known existing stormwater systems in the immediate vicinity of the site. The Contractor shall design and define the discharge point of the storm water system, to be approved by DGDC.

3.11.5 Water and Utilities

3.11.5.1 Construction

Raw water will be required during construction and ongoing operation and maintenance of the plant. Water abstraction for the Project will require an authorization application to the “Minister for Housing Lands Settlement and Water Resource Management” (Caraïbes Environnement Développement, 2013; see Table 3-3; and Appendix A), as already discussed and included in the Jacobs ESIA.

Table 3-3: Proposed Water Take Limits

Duration	Quantity	Unit
Daily	10,000	Liters
Monthly	200,000	Liters
Maximum Instant	5	Liters/second

Source: Jacobs 2018

Raw water for construction and permanent works shall be drawn from a naturally occurring spring located at a higher elevation above the site (15°19'58.20" N, 61°19'34.22" W, at 623 amsl). Figure 3-11 shows the location of the water source.

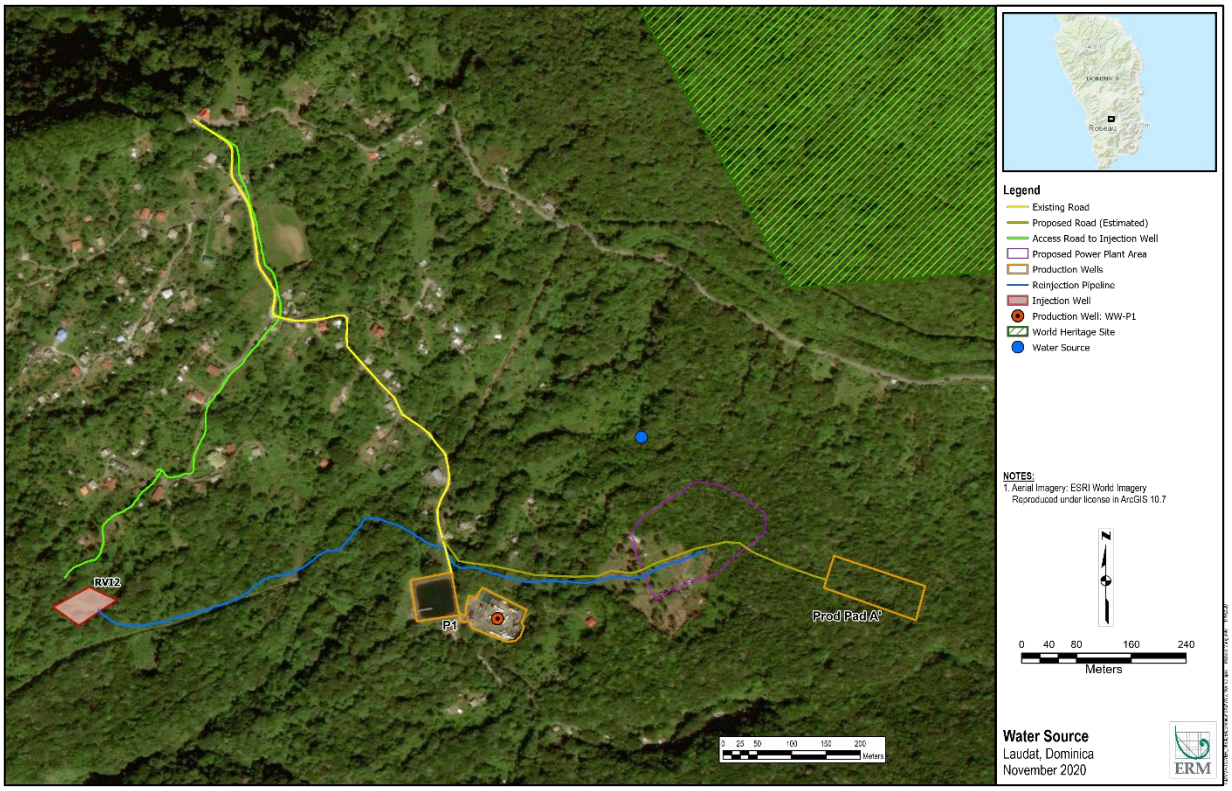


Figure 3-11: Proposed Water Source Location

DGDC shall be responsible for obtaining the permit to use the water for construction and permanent works. The Engineering Procurement and Construction (EPC) Contractor shall be responsible for the design, execution and completion of the raw water intake structure and piping required to transfer to the Site. The proposed raw water sources have not been modified since the Jacobs ESIA and all requirements, impacts and mitigation measures are discussed in that document.

Domestic wastewater from amenities at the power plant site will need be collected and treated in a package plant to meet discharge requirements. The EPC Contractor will need to maintain the package plant and associated effluent disposal system to meet international guidelines discharge criteria (i.e. WBG EHS Guidelines) and to prevent odor or other nuisance to the community during the period of construction. The EPC Contractor will typically be responsible for decommissioning and removing the unit at the end of the construction period.

3.11.5.2 Operation

During Operation, the wastewater system shall be comprised of two separate systems, one handling sewerage from sanitary equipment and kitchen sinks in buildings, the other handling drainage from floor drains in process area and sump pits.

The sanitary sewerage system will be comprised of a septic tank with field drains, sized for 2 months between emptying, connected the plumbing from all occupied areas. Under no circumstance shall process effluents, storm water or contaminated water be discharged into the sanitary sewage system.

The greywater drainage system shall collect contaminated water by connecting drains in all process area and containment of oil spillage and pass it through an oil/water separator prior to discharge into the storm water system.

Potable water to be used at the site during operation will be supplied by Dominica's Water and Sewerage Company Ltd. (DOWASCO). The options currently being considered are:

- Option 1. Extend the existing 2" line to the geothermal plant site. This is about 1,200 m, and would deliver potable water at a rate of approximately 8 cubic meter per hour (m^3/hr).
- Option 2. Pump water from Titou Gorge to the plant site. The water would be extracted below the DOMLEC intake point, to minimize interference with DOMLEC's systems. The flow in the Gorge can support the target flow rate (10 m^3/hr).
- Option 3: Truck water to the site.

Selection of the final option is dependent on water capacity which is currently being assessed by DOWASCO.

3.12 Associated Facilities

Associated to this project, DGDC plans to build an electricity transmission network for connecting the geothermal plant to the existing 11 kV grid and primary load centers. The network consists of 43.5 km of 69 kV, 8.4 km of 33 kV and 0.2 km of 11 kV transmission lines. Six new substation facilities will be built to allow interface of the new lines with the existing 11 kV network. The substations will be on properties owned by either DGDC or the electric utility (DOMLEC). The transmission lines and substation will be evaluated in a separate study.

3.13 Project Phases and Schedule

3.13.1 Construction

Construction activities related to the Project can be broken up in three different areas:

- The plant and associated facilities,
- The reinjection pad[4] and pipeline which would require upgrades of an access road and the creation of a service road along the reinjection pipeline, and creation of a well pad for drilling of the Reinjection well, and
- The back-up Production Pad A and production well[5], which would also require the construction of an access road from the area of the Plant.

3.13.1.1 Site Clearing

Although the designs for the proposed well pads and the plant have not been finalized, the potential impacts of the final design on site clearance for the well pads and plant have been assessed based on the general locations proposed. Design changes are not expected to change the magnitude and significance rating of the impacts as long as all proposed mitigation measures are applied. Below are some estimates of the amount of land that will be required by each of the Project's components based on available information (see Table 3-4):

[4] To be financed by the World Bank.

[5] To be financed by the World Bank.

Table 3-4: Estimated Land Requirements by Project Component

Project Component	Estimated Land Requirement
Power Plant Area	20,609 square meter (m^2)
Reinjection Pipeline and 10 m corridor	9,845 m^2
Injection Well Pad	2,557 m^2
Production Pad A	7,076 m^2
Proposed New Access Roads (width is unknown)	600 m

General construction activities will include site improvement and slope stabilization where necessary. This will entail vegetation clearance for the plant and its facilities (including the brine pond), the reinjection pipe route, well pads, and new access roads. Earthworks will be required for installation of concrete foundations for plant, the well pads, the pipeline and the construction of a pipe crossing over the "Ravine Fordie." The work will also include welding and set up of the steel pipes and digging of trenches for drainage

Foundations

Concrete foundations for the pipeline will be constructed, followed by the set up and welding of steel pipes to transport the separated brine. The volume of water required for these foundations is minimal and will be sourced from local watercourses. Pipe bridges will need to be constructed over the intermittent watercourses within the site as appropriate.

For the well pads, a reinforced concrete slab 0.30 m thick intended to accommodate the substructure of the drilling machine, will be constructed. These slabs will be approximately 20 m long and 9 m wide for the construction of a well; however final dimensions are unknown.

The construction of the plant and associated facilities will also require foundations. Foundations for all buildings, structures and miscellaneous equipment pads shall be selected and designed based on the superimposed loads, and the strength and character of the supporting material as determined by the geotechnical study at site.

Drilling

The following process will be carried out for drilling the new proposed wells:

26'' section

1. Make up bottomhole assembly (BHA) and drill the section to total depth (TD)
2. Short trip and circulate hole clean
3. Pull out of the hole (POOH) BHA and lay down the drill collar (DC)
4. Make up the casing, cement with stinger till observing cement in the cellar – stop injecting cement and start displacement

5. Waiting on cement (WOC), and while WOC – install casing head and annular preventer

17''1/2 section

1. Make up BHA, drill the section to TD
2. Short trip and circulate hole clean
3. POOH BHA and perform open hole (OH) caliper logging
4. Make up the casing, cement with stinger till observing cement in the cellar – stop injecting cement and start displacement
5. WOC and while WOC – install the spool and 13''5/8 BOP Stack

12''1/4 section

1. Make up BHA and drill the section to TD
2. Short trip and circulate hole clean
3. POOH BHA, and perform OH caliper logging, cement bond log (CBL)/ variable-density log (VDL) of the 13''3/8 casing
4. Make up the casing, cement with cement plug
5. WOC

8''1/2 section

1. Make up BHA and drill the section to 1000 m
2. Short trip and circulate hole clean
3. Drill the section to 1300 m
4. Short trip to the previous shoe and circulate hole clean
5. Drill the section to approximately 1650 m
6. Short trip to the shoe and circulate hole clean
7. POOH BHA, and perform OH caliper logging of the 9''5/8 casing and geological wireline logging like Neutron if possible according to the temperature
8. Make up the liner and set the liner in the 9''5/8 casing

Plant Construction

Although design details for the plant have not been finalized, bidding documents estimate at least the following types and number of equipment will be necessary (see Table 3-5):

Table 3-5: Minimum Required Equipment for Construction

Equipment Type	Minimum Number Required
Concrete Batching Plant	1
Concrete Transit Mixer	2

Hydraulic excavator	2
Diesel Welding Machines	4
Hydraulic Crane	2

Additional Facilities

The following temporary facilities will be present and utilized during the construction phase:

- Construction laydown area: At present two flat construction laydown areas are being considered adjacent to the power plant site. The exact location of the two areas is currently unknown; however, it is assumed they will be maintained within the project footprint assessed in this document and their exact location is not expected to change the magnitude and significance rating of the impacts. Other smaller laydown areas may be required along the reinjection pipeline during construction in order to store construction materials.
- Utility services (telecommunications and electricity).
- Water and wastewater systems.

Site Access

Access starts at the Woodbridge Bay Port, through Goodwill (thereby bypassing the city of Roseau), and continues along the “Valley Road” to the entry of the village of Laudat. The existing roads will need to be upgraded and repaired in order to safely move heavy equipment to Laudat, in addition to upgrades necessary to the access to the proposed injection pad (see Appendix A – Transportation Management Plan and Community Health and Safety Management Plan).

An access road from the proposed power plant site to the proposed Pad A will need to be constructed. This road will be approximately 60-100 m long.

Schedule

For the construction of the plant and its facilities, the Project estimates a construction duration of 18 months to 2 years. For the proposed reinjection pad and well as well as the proposed back up production Pad A, the construction phase is expected to be Q1 2021 to Q2 2022.

Workforce

For construction, the contractors will need to have at least the following personnel (see Table 3-6):

Table 3-6: Minimum Required Workforce and their Qualifications

Position	Total Work Experience (yrs)	Experience in Similar Work (yrs)
Project Manager	20	10
Site Manager	15	8
Commissioning Manager	20	10

Health, Safety, and Environment Manager (HSE)	10	5
Operations Advisor	10	8
Maintenance Advisor (Mechanical)	10	5
Maintenance Advisor (Electrical)	10	5

Although exact numbers are still unknown, facilities available during construction will be for an estimated maximum of 50 people.

During drilling, a work team consisting of 6-8 people will work 12- hour shifts. Two teams will take turns to provide staffing around the clock. Other site workers include drilling supervision, testing service providers, and security personnel, although exact numbers are unknown.

3.13.2 Operation and Maintenance

3.13.2.1 Start-up and Shut-Down

Start-up

The injection pipeline will be flushed after construction and as part of a hydro-test. Location of a suitable discharge point will depend on the site piping layout and geometry, but is expected to be into one of the sumps at the injection well pad.

The start-up operation involves the start-up of the production well and the introduction of steam into the piping systems. Process drain valves are generally left open to remove condensate from the pipes and vessels, draining to storage sumps. Brine is discharged to the storage sumps at the power plant and separator station locations. Steam is vented to atmosphere through the steam vent valves located at high point vents as well as at the rock muffler located at the power plant.

Operation

During normal operation minimal steam venting occurs, the production steam is sent to the power plant and brine is sent to injection wells. When all power plant systems are in operation, the power plant generates electricity, which is exported to the grid.

Shut down

Geothermal power plants typically shut down once a year for annual maintenance of the facilities. Shut down may be planned or due to unscheduled maintenance / outage or in some instances may involve a major transmission line outage.

During shut-down the unit(s) stops generating electricity. The power plant vent valves will emit steam until the production wells are trimmed back to match the required remaining station demand. For a complete station shut the steam field will be closed down and the steam field piping systems will be drained to sumps at the well pads as well as to the power plant sump.

The production well will be either shut in or placed on bleed. During scheduled outages, operators would shut in the well gradually, reducing flow through the plant and requiring little or no releases of steam and water from the separator.

If maintenance is required for the vessels containing working fluid, the area to be repaired would be isolated and the working fluid drained and held in drainage tanks. The working fluids would be contained and stored on site and reintroduced into the system when maintenance is completed.

3.13.2.2 Emergency Shut Downs

If conditions arise that requires the power plant to immediately shut down, the plant systems will trip the power plant and steam will be directed away to the vent station. If during the emergency shutdown, the pressure continues to rise in the steam field due to major equipment failure, the bursting discs may activate to release steam vertically to atmosphere. Under this situation, the steam venting from the bursting disc will create a significant noise until the wells are shut in and geothermal fluids stop flowing. This event is considered an emergency and is unlikely.

3.13.2.3 Maintenance

Unit maintenance would be undertaken to meet manufacturers, inspection agency and unit specific requirements. An inspection twelve months after commissioning is an anticipated requirement. Unit specific maintenance cycles will then be developed on the basis of the needs.

3.13.2.4 Well Workovers

After several years of operation, it may be necessary to bring in a “workover” rig to improve the flow of the production and injection wells, remove scale, or replace a downhole pump in a production well. This rig would be smaller than the rotary rig used for the production well, no bigger than 60 to 80-tons. The mast for the rig would be approximately 20 feet high when erected.

3.13.2.5 Workforce

During the operation phase, the plant will require a workforce of approximately 4-6 people. The makeup and requirements of the workforce are still being defined.

3.13.3 Decommissioning

As previously stated, the design life of the Plant shall be 30 years and the design life for all buildings shall be 50 years. Although there are no plans for decommissioning, continuing operations could require modifications to address future reservoir conditions and equipment requirements.

Although geothermal fluids will be reinjected back into the reservoir, they may experience reservoir temperature decline if the volume of the reservoir is small or if production exceeds the ability of the reservoir to recover from the heat extraction process. DGDC would assume all responsibility for continued responsible operations, or, if desired, decommission in accordance with applicable guidance and regulations at the time.

3.14 Alternative Analysis

As previously mentioned, as part of the feasibility campaign for this Project, wells were drilled at multiple locations in the area. Based on the results of well testing, the production well WW-P1 was selected. The Dominica Geothermal Development ESIA of 2018 included an alternatives analysis for the project where multiple scenarios were laid out. This included multiple locations for the Plant (once the production well was selected), as shown in Figure 3-12, and multiple locations for the reinjection wells and reinjection pipelines, as shown in Figure 3-13.

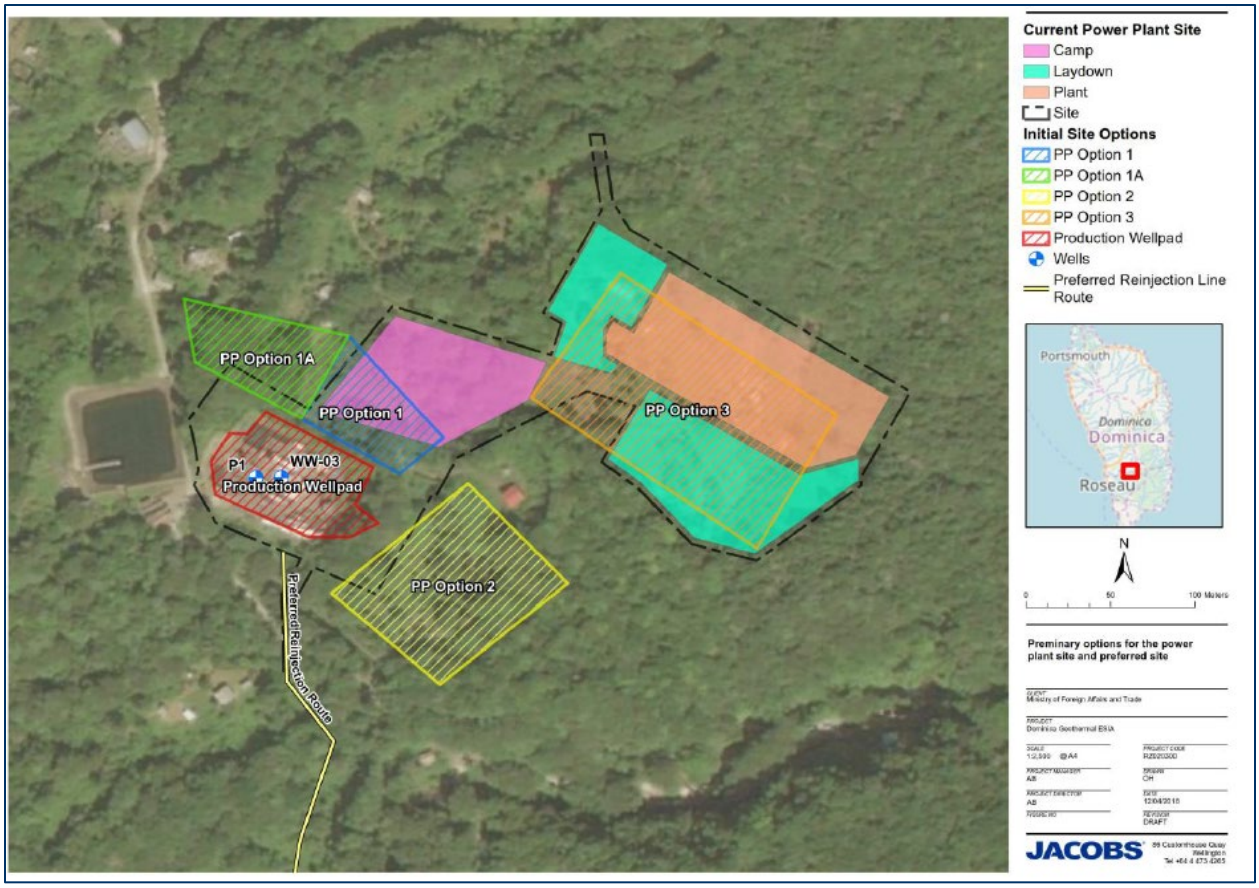


Figure 3-12: Power Plant Location Alternatives

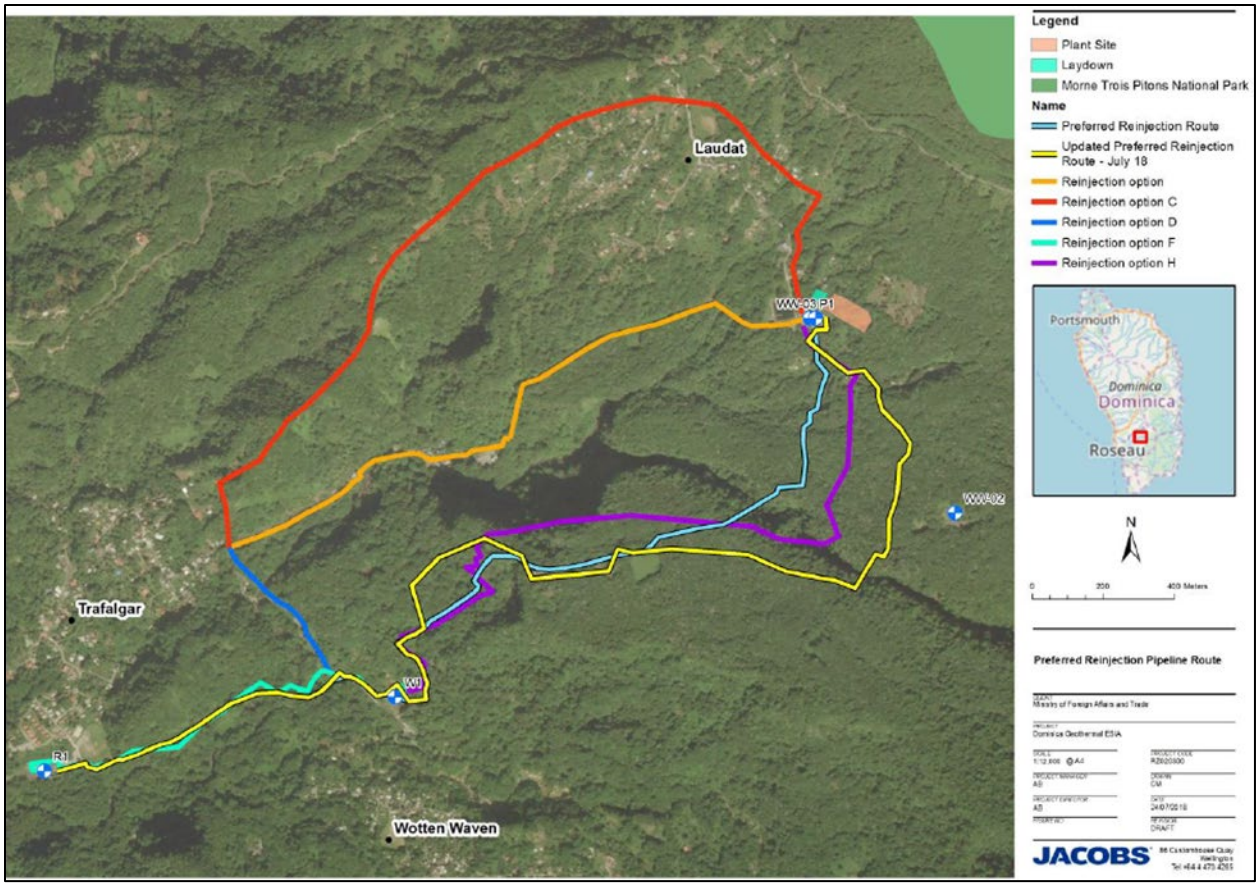


Figure 3-13: Original Reinjection Wells and Pipeline Alternatives

Based on the alternatives analysis performed as part of that ESIA, which included technical and non-technical considerations and public meetings to discuss the alternatives for the projects and to get the community's opinion, a preferred option was selected for the location of the plant. The preferred option had the least number of residential receptors and was in an area of already modified habitat. The alternatives for reinjection, although discussed, could not be finalized since it was determined defining this location would require additional geotechnical assessments and could only be finalized once the preliminary engineering design was ready.

After the completion of the 2018 ESIA, the original alternatives for the reinjection wells and pipelines proved to be financially unfeasible, so new studies were carried out on a new alternative general area. This general area included several new locations for the reinjection well, much closer to the selected production well and plant, as shown in Figure 3-14.

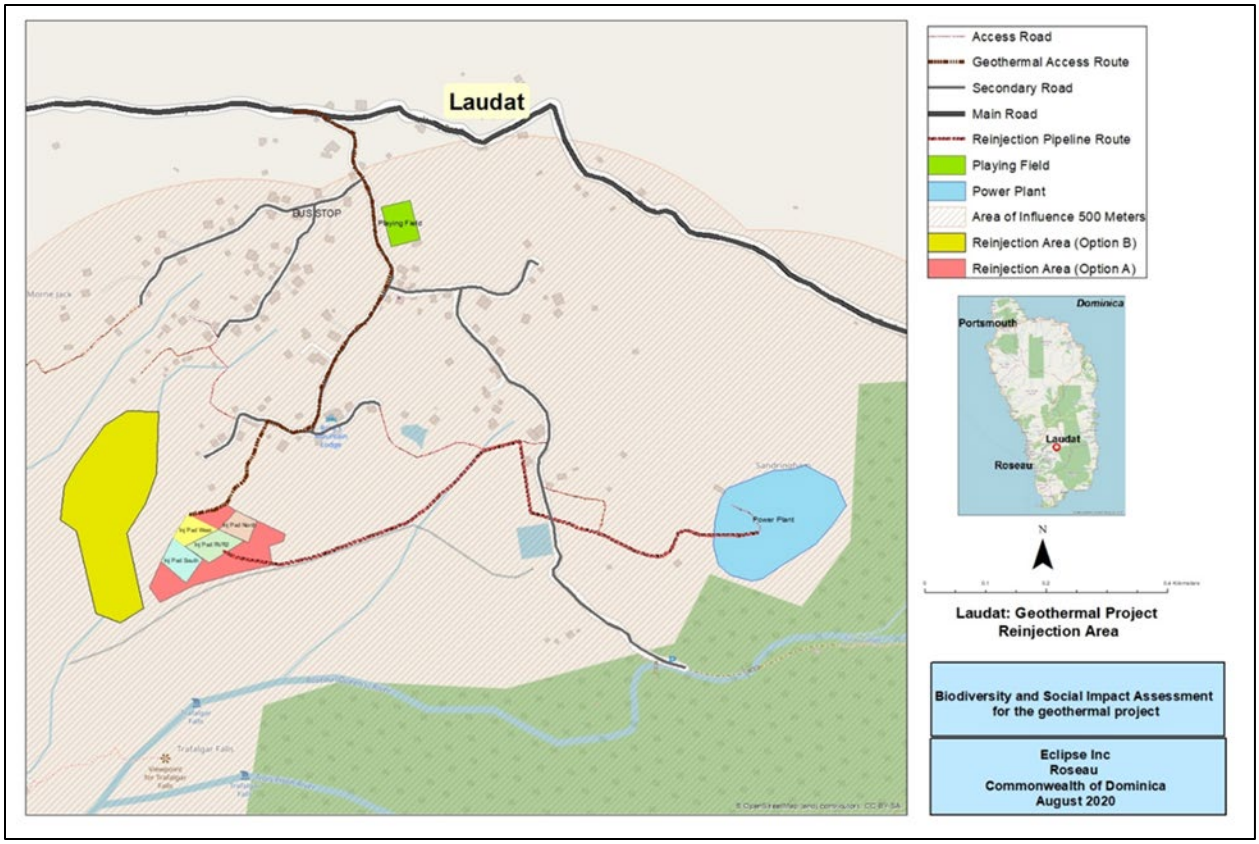


Figure 3-14: Latest Reinjection Well Pads and Pipeline Alternatives

This most recent alternatives analysis provides the basis for the current location of the reinjection pad and pipeline presented in this ESIA Addendum.

4. IMPACT ASSESSMENT METHODOLOGY

4.1 General Methodology

The primary purpose of an ESIA is to predict the impacts resulting from the proposed project. Impacts can be direct, indirect, or induced, as defined in the Table 4-1.

Table 4-1: Impact Designation Definitions

Designation	Definitions
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor (e.g., between disturbance of a plot of land and the habitats on that plot of land that are affected).
Indirect	Impacts that follow from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).
Induced	Impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g., influx of a large Project workforce).
Cumulative	Impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity added to other existing, planned, and/or reasonably anticipated actions, projects, or activities. For practical reasons, the identification, assessment, and management of cumulative impacts are limited to those effects generally recognized as important on the basis of scientific concern and/or concerns of Project-Affected Communities

Source: ERM, 2021.

The assessment of impacts proceeds through an iterative process that considers four questions as illustrated in Figure 4-1.

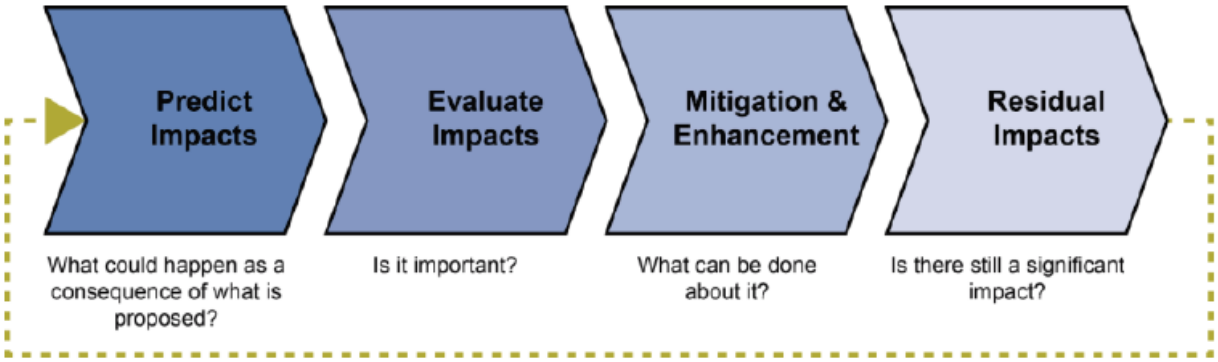


Figure 4-1: Impact Prediction and Evaluation Process

These questions are expanded in Steps 1 through 4 below.

Step 1: Predict Impacts

An ESIA evaluates potential project impacts by predicting and quantifying to the extent possible the magnitude of impacts on resources (e.g., water and air) or receptors (e.g., people, communities, wildlife species, habitats). Magnitude is a function of the following impact characteristics:

- Type of impact (i.e., direct, indirect, induced);

- Nature of the change (what is affected and how);
- Size, scale, or intensity;
- Geographical extent and distribution (e.g., local, regional, international); and
- Duration and/or frequency (e.g., temporary, short term, long term, permanent).

Magnitude describes the actual change that is predicted to occur in the resource or receptor. The magnitude of an impact takes into account all the various dimensions of a particular impact in order to make a determination as to where the impact falls on the spectrum (in the case of adverse impacts) from *Negligible* to *Large*. Some impacts can result in changes to the environment that may be immeasurable, undetectable, or within the range of normal natural variation. Such changes can be regarded as essentially having no impact, and are thus characterized as having a *Negligible* magnitude. In determining the magnitude of impacts on resources and receptors, embedded controls (i.e., physical or procedural controls that are planned as part of the project design) are taken into consideration (e.g., the magnitude of impacts on stream water quality from construction take into consideration the effectiveness of proposed sediment and erosion control measures).

In addition to characterizing the magnitude of impact, the sensitivity/vulnerability/importance of the impacted resource/receptor is characterized. There is a range of factors taken into account when defining the sensitivity/vulnerability/importance of the resource/receptor. Where the resource is physical (e.g., a waterbody), its sensitivity (to change) and importance (on a local, national, and international scale) are considered. Where the resource/receptor is biological or cultural (e.g., the marine environment or a coral reef), its importance (e.g., its local, regional, national, or international importance) and its sensitivity to the specific type of impact are considered. Where the receptor is human, the vulnerability of the individual, community, or wider societal group is considered. Other factors may also be considered when characterizing sensitivity/vulnerability/importance, such as legal protection, government policy, stakeholder views, and economic value.

As in the case of magnitude, the sensitivity/vulnerability/importance designations themselves are universally consistent (i.e., *Low*, *Medium*, and *High*), but the definitions for these designations will vary on a resource/receptor basis.

Step 2: Evaluate Impacts

An ESIA evaluates the significance of a potential project impact by considering, in combination, the magnitude of the impact and the sensitivity/vulnerability/importance of the impacted resource or receptor. The assignment of a significance rating facilitates decision-makers and stakeholders to understand how much weight will be given to the issue in their process. In the case of positive impacts, the significance is assigned as *Positive*.

Significance was assigned for each impact using the matrix shown in Table 4-2. This matrix applies universally to all resources/receptors.

Table 4-2: Evaluation of Significance of Impacts

Impact Significance Matrix		Sensitivity / Vulnerability / Importance of Resource/Receptor		
		Low	Medium	High
Negative Impacts				
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major
Positive Impacts				
Magnitude of Impact	N/A	Positive	Positive	Positive

Source: ERM, 2020.

In terms of what the various significance designations represent, the following considerations are provided:

- An impact of *Negligible* significance is one where a resource/receptor (including people) will not be affected by a particular activity, or the predicted effect is deemed to be imperceptible or is indistinguishable from natural background variations.
- An impact of *Minor* significance is one where a resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently *Small* (with or without mitigation) and/or the resource/receptor is of *Low* sensitivity/vulnerability/importance. In either case, the magnitude will be well within applicable standards.
- An impact of *Moderate* significance has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is *Minor*, up to a level that might be just short of breaching a legal limit. To design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for *Moderate* impacts is therefore on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable. This does not necessarily mean that impacts of Moderate significance have to be reduced to *Minor*, but rather that *Moderate* impacts are being managed effectively and efficiently.
- An impact of *Major* significance is one where an accepted limit or standard may be exceeded, or *Large* magnitude impacts occur to highly valued/sensitive resources/receptors.
- An impact of *Positive* significance is one that has been identified as having a positive effect on the receptor/resource. Generally, this ESIA does not attempt to characterize magnitude for positive impacts.

A goal of an impact assessment is to get to a position where a project does not have any *Major* residual impacts (i.e., after mitigation measures are considered), certainly not ones that will endure into the long term or extend over a large area. However, for some aspects, there may be *Major* residual impacts after all practicable mitigation options have been exhausted. An example might be the visual impact of a facility. It is then the function of the decision-makers and stakeholders to weigh such negative factors against the positive ones, such as employment, in coming to a decision on a project.

Step 3: Mitigation and Enhancement

An ESIA process aims to ensure that project decisions are made in full knowledge of their likely impacts on the environment and society. A vital step within the process for this ESIA was therefore the identification of

measures that could be taken to mitigate potential impacts of the proposed Dominica Geothermal Project (the Project).

The process involved identifying where potentially significant impacts could occur and identifying ways of mitigating those impacts as far as reasonably possible. A mitigation hierarchy was used in which preference is always given to trying to avoid or minimize the impact before considering other types of mitigation (i.e., remedy, compensate, offset). The conventional preferred hierarchy of measures, which was followed in this ESIA, is provided below:

- Avoid — remove the source of the impact;
- Minimize — reduce the magnitude of the impact;
- Mitigate — “repair” the results of the impact after it has occurred; and
- Compensate/offset — address the loss or change to a resource by replacing the loss/change in kind or with a different resource of equal value.

Step 4: Residual Impacts

Once mitigation measures are agreed to, the next step in the impact assessment process is to determine the residual impact significance. Residual impacts are the impacts that are predicted to remain after both embedded controls and committed mitigation has been taken into consideration. In most cases, the sensitivity/vulnerability/importance of a receptor is unaffected by proposed mitigation measures; the mitigation measure is typically intended to reduce the magnitude of a predicted impact, thereby reducing its overall significance.

5. BIOLOGICAL RESOURCES UPDATE

5.1 Biological Setting

Dominica is a volcanic island 46 km in length with a central mountain ridge running from Cape Melville in the north to the cliffs in the south. The island contains the most extensive “almost” undisturbed tropical forest in the Lesser Antilles or Leeward Islands in the Caribbean. Rugged volcanic mountains covered in moist tropical forest characterize this island, with 50 peaks reaching up to 1,446 m at its highest peak of Morne Diablotins.

Dominica suffered peak deforestation due to land conversion for agriculture in the 19th century, however in the past decade reports show low deforestation (FAO, 2015; Steiner, 2003). Despite this, the island of Dominica, as many of the Leeward/lesser Antilles islands, support a significant lack of well-developed rain forest (Beard, 1949). The lack of primary rainforest is attributed to the periodic stand damage from passing hurricanes, which results in uneven forest canopy and an emerging second growth forest habitat. The effect of storms continually molds the forest cover and maintains much of the forest in a pre-climax condition.

Since 1979, tropical storms and hurricanes which have impacted Dominica include David (1979), Gert (1981), Gilbert (1988), Hugo (1989), Iris (1995), Marilyn (1995), Hortense (1996), Lenny (1999), Dean (2007) and Maria (2017) (Jacobs, 2018). Hurricane David in 1979 did significant damage to the forest by damaging 60% of the tropical forests in the southern half of the island. Most of the trees were debranched causing significant loss of habitat and food supplies for wildlife species, which resulted in wildlife mortality (Edwards, 2018). In 2010, the island of Dominica had 70.7 kilohectare (kha) of tree cover, extending over 94% of its land area; with the landfall of Hurricane Marine in 2017 almost 15 kha of primary humid forest was lost, decreasing forest cover by 56%[6].

The Project sits within the Roseau Valley, which is characterized by tropical rainforest, mountain forest, semi-deciduous forest, fumarole vegetation, marshlands, savannas, abandoned cropland, agricultural land and urban landscape, as described in the reports by Caraïbes Environnement Développement & Coll (2015a and b). Agricultural products include bananas, limes and root crops (Edwards, 2018).

5.1.1 Biotic Area of Influence

The biotic area of influence (BAOI) includes the Project area and the surrounding area that has the potential to be impacted by noise and light from the proposed power plant, existing and proposed access roads, the reinjection well, Pad A, production well P1, and the reinjection pipeline (see Figure 5-1). According to Bayer *et. al.,* (2013) and the IFC Environmental, Health, and Safety (EHS) guidelines for Geothermal Power Generation, noise due to drilling and steam venting activities may reach up to 100-120 A-weighted decibels (dBA). Based on IFC EHS noise nighttime guidelines for residential areas of 45 dBA, the BAOI has been established to include a radius of 600 m to capture noise levels as it attenuates to 45 dBA from potential Project noise sources. This distance was established with the assumption that total noise level is 100 dBA at 1 m. The total BAOI is an area of approximately 290 hectares (ha). Unlike humans, there are no standardized noise limits for fauna.

[6] https://www.globalforestwatch.org/dashboards/country/DMA/

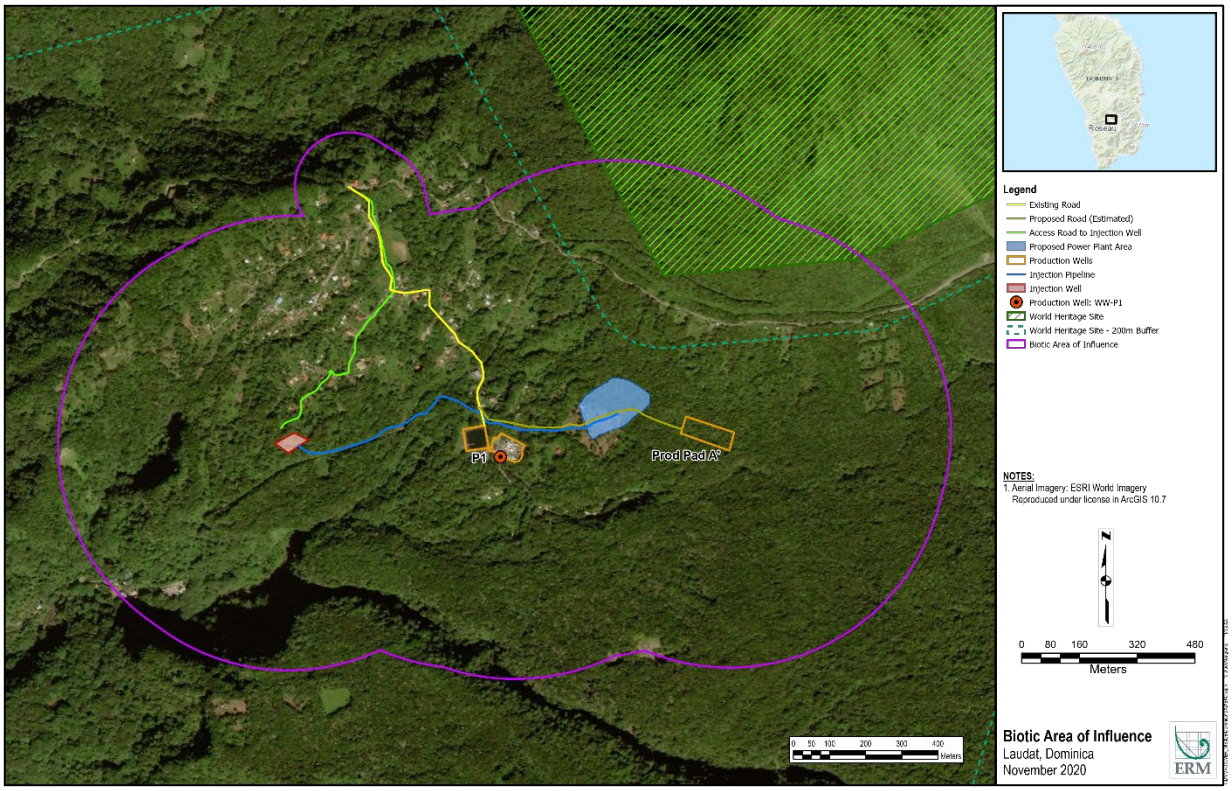


Figure 5-1: Biotic Area of Influence Based on Potential Noise Impacts

5.1.2 Natural Habitat and Modified Habitat Assessment

Within the Project BAOI, the major vegetation types include primary rainforest, secondary rainforest experiencing regrowth from abandoned croplands and damage from Hurricane Maria, agricultural land and urban areas (Figure 5-2). In Table 5-1, these vegetation types have been classified by natural and modified, as per IFC Performance Standard (PS) 6[7]. ERM used current and historical satellite imagery of forest cover and global forest watch data (Hansen et. al., 2010) to identify areas of natural and modified habitat in the BAOI.

[7] IFC PS6 defines Modified Habitats are those that "contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition." Natural Habitats are defined as "areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition." As per Guidance Note 39, "Natural habitats are not to be interpreted as untouched or pristine habitats. It is likely that the majority of habitats designated as natural will have undergone some degree of historical or recent anthropogenic impact."

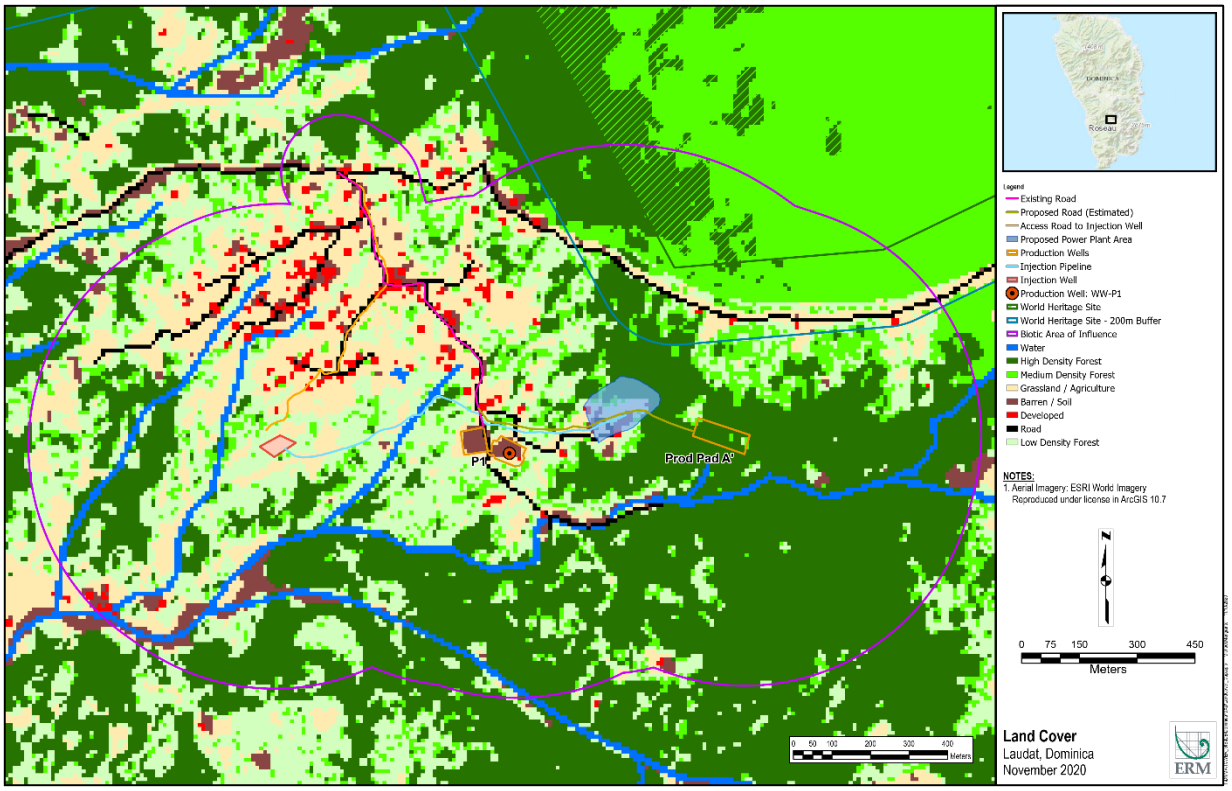


Figure 5-2: Land Cover Types Present in the BAOI

Natural habitat within the BAOI include primary forest and secondary regrowth after hurricane Maria. Land cover analysis distinguished forest into three categories based on densities: low, medium and high. Each forest type represents 21.7 %, 12.9%, and 41.4 % of the BAOI, respectively (Table 5-1, Figure 5-3). The forest has seen major impacts from the recent hurricane; however, much of these areas are experiencing secondary regrowth that maintains connectivity and can support ecological functions of the rainforest ecosystem. Low density forest represents a majority of the secondary forest experiencing regrowth after Hurricane Maria and isolated fragment areas, whereas abandoned agricultural plots with regrowth vegetation yet minimal forest canopy were classified as modified. Modified habitats include abandoned cropland with some secondary vegetation, open pasture grasslands, agricultural land, urban developed areas, bare soil areas, and roads (Table 5-1, Figure 5-3).

Table 5-1: Natural and Modified Habitat types within the BAOI

Habitat Type	IFC PS Habitat Classification	Area (hectares)	Percent (%)
Water bodies	Natural	10.27	3.5
High density forest	Natural	120.03	41.4
Medium density forest	Natural	37.42	12.9
Low density forest	Natural	63.08	21.7
Grassland/cropland	Modified	42.2	14.5
Bare soil	Modified	6.54	2.3

Habitat Type	IFC PS Habitat Classification	Area (hectares)	Percent (%)
Road	Modified	5.58	1.9
Urban developed areas	Modified	5.07	1.7
Total		**290.19**	**100**

The majority of the BAOI is covered in high density forest followed by low density forest, as much of the Project is located on the forest landscape of the south eastern periphery of the village of Laudat, nearby to the Morne Trois Pitons National Protected Area. In total 59 ha (20.5%) of modified habitat and 230 ha (79.5%) of natural habitat make up the BAOI. According to the analysis there is no critical natural habitat in the BAOI (see Section 5.2 for further information).

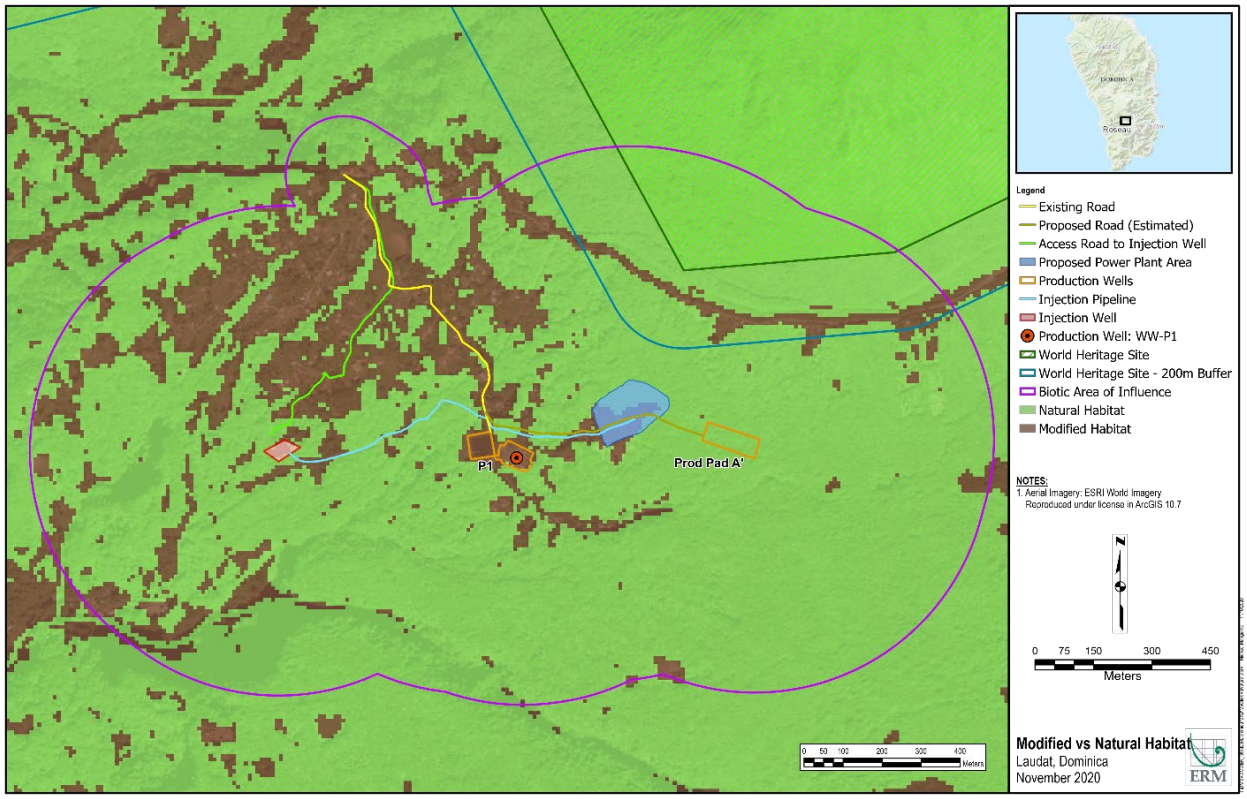


Figure 5-3: Natural and Modified Habitat in the BAOI

Section 5.4 reviews impact and mitigation measures in relation to the amount of natural and modified habitat impacted by the Project footprint. The Project footprint will result in direct impacts to approximately 4.61 ha (not including existing well pad P1 or the existing road).

5.1.3 Protected Areas

The Government of Dominica has established three national parks and two forest reserves to conserve the biodiversity of the island. Morne Trois Pitons National Park was the first unit of the National Park system to be established in July 1975, followed by Morne Diablotin National Park in 2000 under the National Parks

and Protected Areas Act. In 1997, Morne Trois Pitons National Park was enlisted by UNESCO as a "World Heritage Site (WHS)" (see Table 5-2).

Of these, Morne Trois Pitons National Park, the closest protected area, lies approximately 500 m upstream from the proposed Project infrastructure.

Table 5-2: Protected Areas on Dominica

Protected Area	Area (km^2)	Site Status	IUCN Status [a]
Morne Trois Pitons National Park	72.38	National Park	II
Morne Diablotin National Park	33.35	National Park	II
Central Forest Reserve	4.1	Forest Reserve	-
Northern Forest Reserve	54.75	Forest Reserve	-
Cabrits National Park	53.88	National Park/ Marine Reserve	-

Km^2 = square kilometer.
IUCN = International Union for Conservation of Nature.
[a] Refers to internationally recognized protected area classification system by IUCN (2013)[8]. Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

5.1.4 Ecosystem Services

According to the IFC PS6, "protecting and conserving biodiversity, maintaining ecosystem services and sustainably managing living natural resources are fundamental to sustainable development." Ecosystem services are "the benefits that people, including businesses, derive from ecosystems." Ecosystem services are organized into four types:

- Provisioning services, which are products people obtain from ecosystems;
- Regulating services, which are benefits people obtain from the regulation of ecosystem processes;
- Cultural services, which are nonmaterial benefits people obtain from ecosystems; and
- Supporting services, which are the natural processes that maintain other services.

Ecosystem services from the tropical forest of Dominica include provisioning services for food in regard to wildlife hunting, and wood for the use of building materials and charcoal production. The forested areas provide supporting and regulating services for carbon management, watershed management, freshwater, and erosion protection services. Recreational and cultural services are provided for locals and tourism through the National park and WHS for the connectivity and beauty of the rainforest ecosystem and natural pools. In addition, the rainforest habitat provides habitat for wildlife, such as migrating birds and endemic bats.

[8] IUCN. 2013. Guidelines for applying protected area management categories including IUCN WCPA best practice guidance on recognizing protected areas and assigning management categories and governance types. https://www.iucn.org/theme/protected-areas/about/protected-area-categories

5.2 Critical Habitat Assessment Screening

The Jacobs ESIA (2018) Critical Habitat (CH) Screening assessment (Jacobs ESIA, Vol 5 Technical Appendices) evaluated against IFC PS6 CH Criteria, providing a detailed CH analysis for the Red-necked parrot (*Amazona arausiaca, Vulnerable IUCN)*. In total, the CH report screened six species based on threat status and endemism. These include the following species:

- Martinique Robber frog ("tink frog"), *Eleutherodactylus martincensis* - IUCN Near Threatened (NT);
- Dominican ground lizard (*Ameiva fuscata*), Not Assessed;
- Dominica anole, *Anolis oculatus* – IUCN Least Concern (LC);
- Blue-headed hummingbird, *Cyanophaia bicolor* – IUCN LC; and
- Plumbeous warbler, *Setophaga plumbea* – IUCN LC.

The Jacobs CH screening assessment evaluated these species by CH criteria Tier 1 and Tier 2, which have since been updated. Ten individuals of the Red-necked Amazon were observed feeding within the Project area of the reinjection pipeline, with the updated IFC PS 6 (2019) Critical Habitat Criterion, the Red-necked Amazon is a possible CH trigger for Criteria 2 and should be considered a priority species for conservation.

This section is intended to supplement the Jacobs CH screening with species that were not included; however, which are relevant and potentially CH triggering according to The Biodiversity Consultancy (TBC) Biodiversity Screening and Review for the Wotton Waven Geothermal Project (TBC, 2020; included IBAT screening). The TBC report included a list of 28 species that may trigger CH. The below species were selected from this list for further evaluation due to their threat status, restricted range, recorded presence in the direct AOI of the wells and reinjection pipeline route, or sensitivity to potential indirect threats by the Project, such as hunting.

Data evaluated within this CH screening include the Jacobs Dominica Geothermal Development ESIA (2018), the ECLIPSE Drilling Geothermal Well RV-I2 and Reinjection Route ESIA (2020), and The Biodiversity Consultancy (TBC) Biodiversity Screening and additional studies found when conducting a literature review.

The supplemental CH Assessment Screening evaluates species and habitats potentially present in the BAOI that may trigger Critical Habitat as outlined in the PS Guidance Note 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources (version June 2019). The following sections evaluate three species that were not included in the Jacobs CH screening. Here, we evaluate these species for Criteria 1-3 (threatened, restricted range and migratory/congregatory species).

- Mountain Chicken, *Leptodactylus fallax* - IUCN Critically Endangered (CR);
- Black-capped Petrel, *Pterodroma hasitata* - IUCN Endangered (EN); and
- Dominican Myotis, *Myotis dominicensis* - IUCN Vulnerable (VU).

5.2.1 Mountain Chicken, Leptodactylus fallax - IUCN CR

Leptodactylus fallax is one of the most threatened frogs in the Caribbean region and the world (Daltry, 2002). This terrestrial species currently occurs only on the Islands of Dominica and Montserrat up to an elevation of 330-400 m. The International Union for Conservation of Nature (IUCN) lists the Mountain Chicken as Critically Endangered because of two major population declines that occurred on Dominica between 2002-2004 and Montserrat between 2007-2017. Additionally, the two islands support only a small number of mature individuals in each subpopulation with less than 50. Its range is restricted on the western coast of Dominica to an area of around 40 km² and to less than 1 km² on Montserrat, with an extent of occurrence (EOO) of 1,568 km^2 and its area of occupancy (AOO) is approximately 10 km^2 (IUCN, 2020).

Reports from the Forestry and Wildlife division suggest that mountain chickens occupy scattered areas totaling about 25-50 km^2 (Daltry, 2002).

On Dominica it was formerly abundant in suitable habitat, despite heavy exploitation for food with an estimated annual harvest of 8,000-36,000 animals. Reports suggest that the subpopulation suffered a decline of greater than 85% during an 18-month period (2002-2004) due to chytridiomycosis (*Batrachochytrium dendrobatidis)*. However, recent field studies report Bd-negative results from *L.fallax*, suggesting a degree of nascent post-epidemic recovery (Hudson et. al., 2016). The Dominican subpopulation is estimated to contain around 130 individuals (both adults and juveniles), based continuous monitoring efforts (Jameson et. al., 2019).

L. fallax inhabits dense secondary vegetation to old growth forest, hill forest, gauts and has been found in plantations. Optimal habitat for *L. fallax* is likely to be undisturbed, mature forest with permanent watercourses (Jameson *et. al.,* 2019). This nocturnal species hides in burrows during the day in moist forest and appears to be associated with certain soil types that allow the digging of nests. This species lays eggs in foam nests at the bottom of burrows, in which the tadpoles develop terrestrially, not in water (IUCN, 2020).

Ongoing threats include habitat loss for land development and logging, invasive species such as the cane toad and Johnston's whistling frog, volcanic activity and hunting for exploitation. In 1999, the Government of Dominica imposed a total ban on the hunting of *L. fallax* and recently enacted an indefinite ban on the hunting of this species as of April 2004.

During baseline diurnal and nocturnal surveys for amphibians in 2017 (Jacobs, 2018) and in July and August of 2020 (Eclipse, 2020), *L. fallax* was not recorded within the BAOI. The Project components lie at a higher elevation (above 500 m); therefore, the BAOI does not support habitat for this species. *Based on this information and recorded observations from published literature studies, the Project is not considered to be in Critical Habitat for this species under Criteria 1 or 2.*

5.2.2 Black-capped Petrel, Pterodroma hasitata - IUCN EN

The Black-capped Petrel (*Pterodroma hasitata*) is classified as Endangered because it has a very small, fragmented and declining breeding range and population. Declines are likely due to ongoing threats of habitat loss and degradation, natural disasters, hunting and invasive predators (IUCN, 2020). The Petrel is a nocturnal seabird and a Caribbean endemic; it occurs within the inter-island regions, straits, and offshore zones of both the Greater and Lesser Antilles. IUCN reports population estimates of no more than 1,000 breeding pairs, perhaps as few as 500, and a total population of 2,000–4,000 birds with an AOO of 20 km^2 and an EOO of 9,060,000 km^2 (2020). Breeding habitat is located at high elevations (>1,500 m), and most are in inaccessible areas with steep slopes, and heavily forested.

Radar surveys conducted in Dominica in January 2015 strongly suggest that Black-capped Petrels persist on the remote peaks of Dominica; hundreds of petrel-like targets were recorded over 17 separate coastal and inland flight corridors, and eight individual Black-capped Petrels were observed over five locations (Brown, 2015). These data, when coupled with recent observations of downed Black-capped Petrels on the island, suggests that there are still individuals breeding on the island, although the last confirmed nesting date was 1862. A recent acoustic survey (McKown, 2016) deployed acoustic recorders in three survey suites along Dominica from January to August 2015 and detected no Petrel calls. Adults have been reported on the summit of Morne Micotrin; however, no active nests have ever been recorded (Leopold et. al., 2019).

Baseline bird surveys in 2017 (Jacobs, 2018) and in July and August of 2020 (Eclipse, 2020) did not record the presence of the Black-capped Petrel. However, nocturnal radar surveys conducted in 2015 by the research organization EPIC – Environmental Protection in the Caribbean, in collaboration with the Forestry, Wildlife and Parks Division, confirmed the presence of the Black-capped Petrel in the airspace over Laudat.

Based on this information and recorded observations from published literature studies, the Project is not likely to be in Critical Habitat for this species under Criteria 1.

5.2.3 Dominican Myotis, Myotis dominicensis - IUCN VU

The Dominican Myotis (*Myotis dominicensis)* is classified as Vulnerable because it has a very small range known from three locations on two Caribbean islands (Dominica and Guadalupe). Its EOO is around 6,000 km², but it is not found throughout the islands it inhabits. Its habitat is declining due to expansion of human activities and hurricanes. The most recent registered record from the Global Biodiversity Information Facility for the island of Dominica is from 1986, while there are no confirmed records for the island of Guadalupe.

Historical ecological studies of the bats of Dominica recorded *M. dominicensis* from within "Glo Manioc Cave", a cave along a hillside beside the Layou River tributary, mist nests along Clark Hall Estate and the Layou River, and a church bell tower in Portsmouth, in 1929, 1966 and 1978 respectively (Genoways et. al., 2001). These records indicate that this insectivorous bat is a cavity-roosting species that utilizes caves primarily, and tree roosts. Genoways et al. (2001) suggest *M. dominicensis* is broadly distributed and common, but there is little recent information. In 2016, mist netting surveys report 22 captures of this species from private land near Rosalie, southeast of the Project, and 33 from in 2017. After Hurricane Maria, only nine and sixteen captures were reported for 2018 and 2019, respectively. Additionally to 3 *M. dominicensis* captures were recorded from Emerald pool, located north of the Project near Pont Casse (Sims *pers. comm*., unpublished data).

There are no published global or local Dominican population estimates. However, the 2016-2019 bat surveys and records estimate an average relative abundance of 0.26 bats captured/net-night at Rosalie and 0.05 at the Emerald Pool (Sims pers. comm.). However, insectivorous species such as *Myotis* are more difficult to capture as they fly higher to forage and are better at detecting mist nets than frugivores and nectarivores. Forest area that supports foraging habitat for *M. dominicensis* is considered potential suitable roosting habitat (Sims pers. comm.).

Baseline surveys in 2017 (Jacobs, 2018) recorded several species of unidentified insectivorous and frugivorous bat species. The Eclipse ESIA (2020) reported that the equipment and expertise for scientific monitoring of bats in Dominica were nonexistent for the 2020 surveys, albeit, locals reported that the several bat species frequent the BAOI. *Considering this species has been recorded in areas outside of Laudat and utilizes cave habitat for roosting primarily, the Project is unlikely to be in Critical Habitat for this species under Criteria 1 and 2.* However, if future surveys prior to construction record the species or tree roosts within the BAOI, then Critical Habitat status should be re-assessed.

5.2.4 Conclusions

Based on Critical Habitat criterion 1-3 outlined in the IFC Guidance Note 6 (June 2019), there are several threatened and restricted range species that may occur within the Project BAOI, as listed in Table 1 of the TBC biodiversity screening (2020). However, based on occurrence records, population, and ecological habitat preferences of *L. fallax, P. hasitata,* and *M. dominicensis*, it is unlikely that these species meet Criteria 1-3 for CH. With the recorded occurrence of ten individuals of the Red-necked Amazon, this species should be considered a priority species for biodiversity monitoring, conservation efforts, and habitat restoration activities.

Based on Critical Habitat criterion 4, the TBC biodiversity screening (2020) and Section 5.1.2 of this report, concur that the Project components are *unlikely* to trigger Critical Habitat based on sensitive and unique ecosystems, as the secondary growth natural habitat that will be directly impacted by the Project is not considered montane elfin or montane cloud forest (TBC, 2020; Figure 4, page 15).

Therefore, considering the above CH evaluations, as well as the direct loss of habitat by the Project facilities and associated minor geothermal impacts, ERM do not believe it is a concern for critical habitat. If additional field work documents the presence of other threatened and/or restricted range species, ERM recommend CH be re-evaluated.

5.3 Morne Trois World Heritage Site

The Morne Trois Pitons National Park (MTPNP) was established in 1975 under the National Parks and Protected Areas Act and in 1997 established as a UNESCO World Heritage Site. The Park is in the central portion of southern volcanic complex of the island, covering an estimated 6,900 hectare (ha) (17,000 acres) and contains the most extensive "almost" undisturbed tropical forest in the Lesser Antilles (Figure 5-4). It is characterized by its high ecological biodiversity with rare and unique natural features, a variety of natural attractions and a number of watershed areas and domestic water catchments (Edwards, 2018). The park provides habitat for over 45 species of birds, (including the endemic Imperial Parrot and Red-necked Parrot), two species of frog, crabs and crayfish several species of mammals (bats, agouti, opossum and feral cats), species of freshwater fish, four species of snake, at least five types of lizard and a wide variety of insects and other small invertebrates. Birdlife International considers it an "Important Bird Area" supporting one endangered and one vulnerable species of Parrot (*Amazona imperialis* and *A. arausiaca* respectively), and 15 restricted-range species[9].

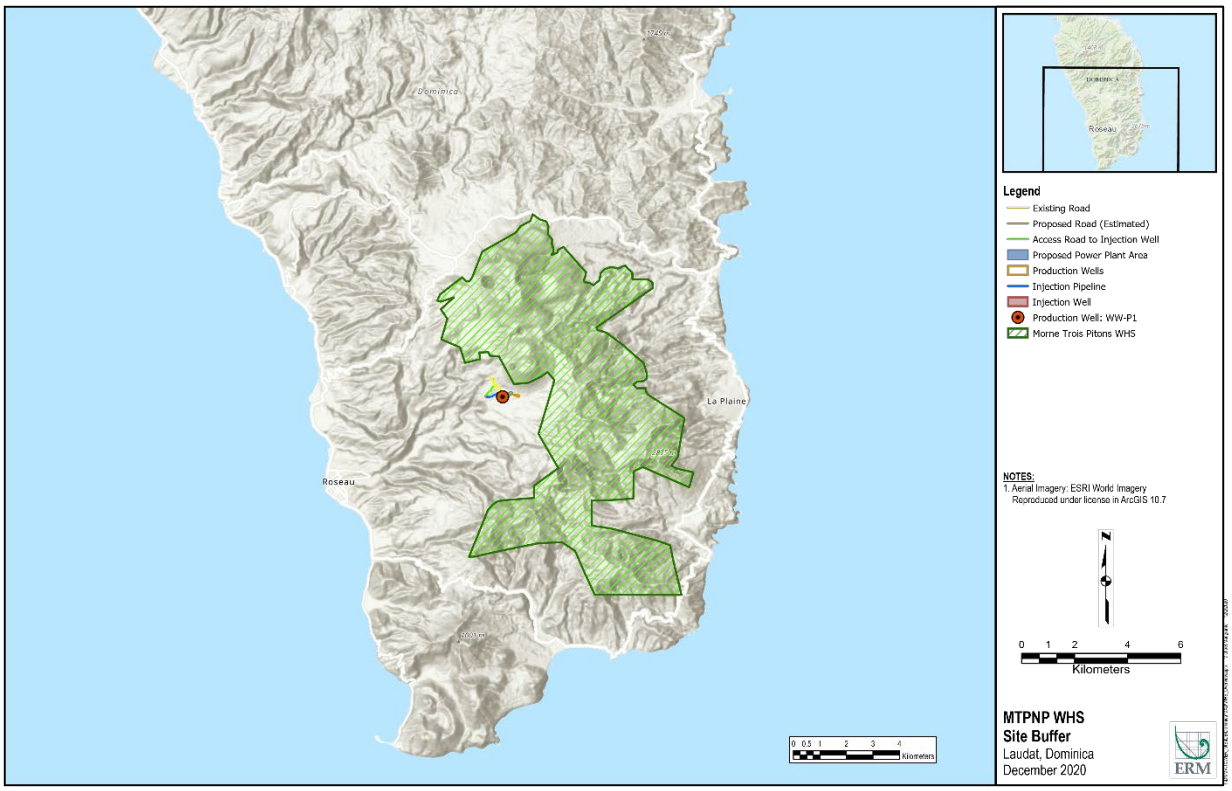


Figure 5-4: Map of WHS boundary for Morne Trois Pitons National Park

In June of 2018, the State Party of Dominica (State Party's Report on the State of Conservation of Morne Trois Pitons National Park) completed a new management plan for the Morne Trois Pitons National Park,

[9] http://datazone.birdlife.org/site/factsheet/morne-trois-pitons-national-park-iba-dominica

which clarified park boundaries, updated buffer zones and proposed a management structure to provide protection and conservation of the National park ecosystems. This management plan fulfills the government's obligation to establish a buffer zone for the MTPNP WHS as per its international commitment to maintain its status as a WHS. Further, the plan re-establishes and clarifies discrepancies of national park boundaries on the ground.

The proposed buffer zone consists of 1232.3 ha with a varying depth of 152.4 m (500 ft) to 305 m (1000 ft), depending on proximity to residential development. Along the western edge of the MTPNP, the State recommends a 200 m buffer zone; this includes the Park area closest to Laudat and the Project site. Activities within the buffer zone must adhere to the proposed collaborative agreement by the state and participatory stakeholders; these activities must be ecologically and economically sustainable and not compromise the natural resources or ecology of the park (Edwards, 2018). The Project components are 300 m from the buffer zone boundary at its closest point. None of the Project lands or areas fall within the proposed buffer area as illustrated in Figure 5-5.

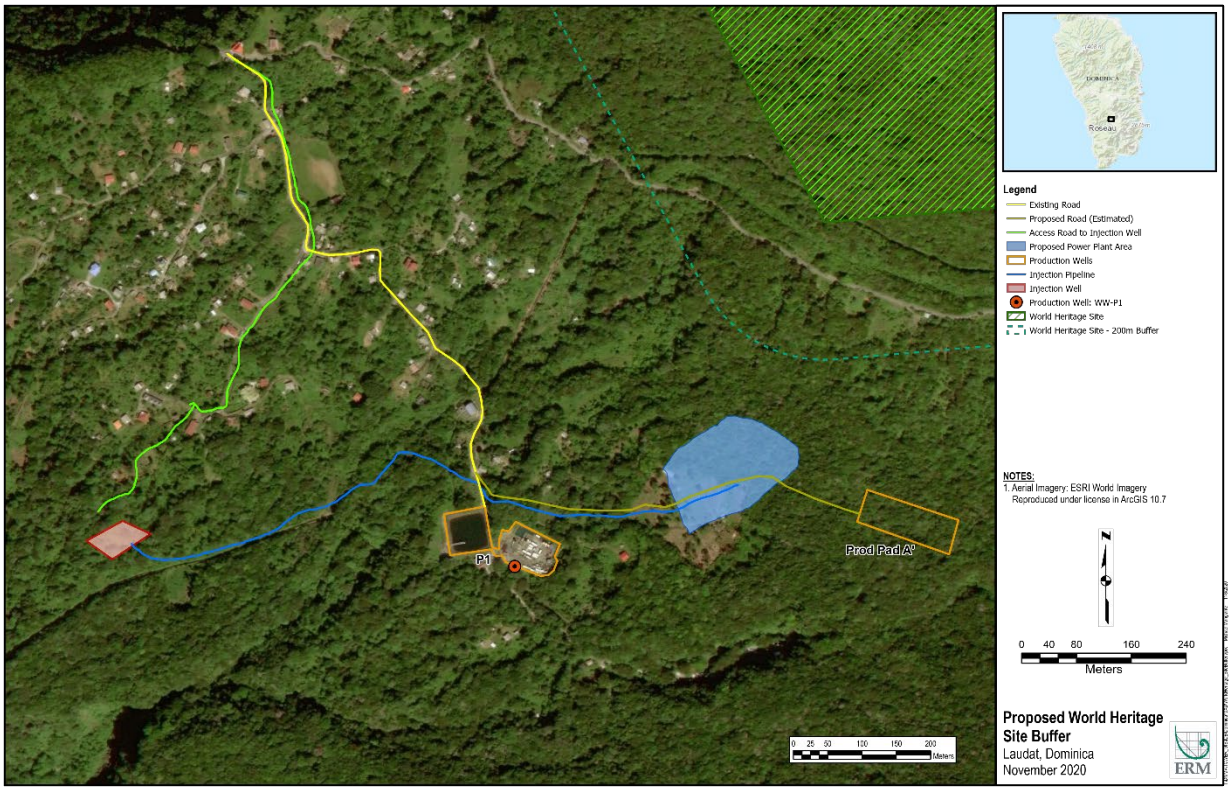


Figure 5-5: Project Components in Relation to the MTPNP WHS and 200 m Buffer

The BAOI of the Project overlaps with 11.8 ha of the MTPNP WHS and an additional 22.7 ha of the buffer boundary. The direct impacts of vegetation clearance and fragmentation due to Project construction will not reduce the ecological connectivity of the WHS, as the Project direct impacts will occur outside of the WHS. However, based on the BAOI Figure 5-1, noise impacts due to well drilling and steam venting may potentially affect the buffer zone and western perimeter of the WHS. Therefore, mitigation measures are proposed to mitigate potential impacts to the WHS are provided in Section 5.4.1 and in Table 5-4.

5.4 Summary Impacts on Biodiversity

The Jacobs ESIA (2018, Section 13.4) and ECLIPSE ESIA (2020, Section 9.7) identified Project impacts from the geothermal development, reinjection well and pipeline and associated infrastructure. Information within Project Description (Jacobs 2018, Vol 1. Section 3; ECLIPSE 2020, Section 3,), and Terrestrial Ecology Biodiversity Baseline (Jacobs 2018, Section 3.12; ECLIPSE 2020, Section 5.11), were used to assist the evaluation of the potential impacts and their significance.

Potential impacts due to construction and operations phase of the Project may occur within the Project BAOI, which covers approximately 290 ha. The impacts to biodiversity consider the pre-existing state and baseline influencing factors such as modified and previously cleared well pads.

The most significant Project impacts on terrestrial biodiversity would occur during the construction phase, which includes onsite vegetation clearing, an increase in noise and vibrations, the potential to injure or kill wildlife species, and the potential for harassment of flora/fauna by the construction/operation employees. During operations, the most significant Project impact to flora and fauna biodiversity is an unlikely scenario of a well blowout, which would cause additional direct impacts of disturbance, injury and/or mortality of terrestrial wildlife species. Indirect biodiversity impacts to surroundings areas of the WHS, which include artificial light, hunting, increased human activity, noise, and waste, will be the most significant throughout construction and operations.

The modifications of the Project design will clear a total of approximately 4.6 ha (46,158.5 m^2), which includes 2557 m^2 for the new reinjection well (RVI2), 20,609 m^2 for the power plant site, 9845 m^2 along 10 m of reinjection pipeline Right-of-Way (RoW), 7076 m^2 within the Pad A production well (RVP2) and about 6072 m^2 along the new access road. Total area of impacts to natural habitat is 2.7 ha, and 1.9 ha of modified habitat (Table 5-3). According to the analysis, there is no critical natural habitat in the BAOI (see Section 5.2 for further information).

Table 5-3. Impacts in Surface Area (m^2) to Vegetation Types by Project Component

Vegetation Type	Power Plant	Reinjection Well	Reinjection Pipeline	Access Road to Power Plant	Production Pad A	Total
Water body	0.0	0.0	531.6	0.0	0.0	531.6
High Density Forest	7560.7	0.0	681.6	1814.8	6311.9	16369.0
Medium Density Forest	1533.5	10.5	529.8	350.9	563.4	2988.2
Grassland / Agriculture	6237.5	1637.7	3541.2	1689.0	0.0	13105.3
Barren	2602.2	0.0	541.0	513.7	0.0	3656.9
Developed	395.7	0.0	0.0	58.5	0.0	454.2
Road	1073.2	0.0	380.1	452.1	0.0	1905.4
Low Density Forest	1206.2	908.8	3639.8	1192.7	200.3	7147.8

Modified	10308.6	1637.7	4462.3	2713.3	0.0	19121.9
Natural	10300.4	919.3	5382.9	3358.4	7075.6	27036.6
Total	**20,609.0**	**2557.0**	**9845.2**	**6071.7**	**7075.6**	**46,158.5**

The proposed modifications and updates to the Project design would decrease the impacts of vegetation removal by 5.4 ha (1.4 ha cleared for power plant and 4 ha for the 10 m RoW reinjection pipeline) as discussed in the Jacobs ESIA (2018). Portions of the Power Plant area will be used for a temporary laydown area and will be replanted with native vegetation. The modifications do not change the magnitude of the impact which was considered *Minor*.

With the drilling of an additional production well (Pad A) and reinjection well (RVI2), noise levels will range from 75-110 dBA causing potential impacts of disturbance and injury to wildlife due to construction noise and ground vibrations. These modifications increase the magnitude and significance of the impact to a *Moderate* significance.

5.4.1 Mitigation Measures and Monitoring

Table 5-4 provides a summary of mitigation measures that supplement the measures listed in the Jacobs ESIA (Section 13.4) and ECLIPSE ESIA (Section 9.7.1). Detail information on the mitigation measures monitoring frequency, parameters, including key performance indicators are provided in Appendix A – Biodiversity Management Plan.

Table 5-4: Impacts and Mitigation Measures for Project Modifications and Updates

Impact	Sensitivity	Magnitude	Duration	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Direct: Ground works would result in the direct loss and disturbance of vegetation (loss of 2.7 of primary and secondary rainforest, natural habitat)	High	Medium	Permanent	Moderate	■ Demarcate construction areas. ■ Revegetate temporary laydown areas with native species. ■ Implement best practices when clearing vegetation and trees and provide wood to community for use as fences or for charcoal production. ■ Implement a restoration and reforestation measures in areas impacted by Hurricane Maria, focusing on stabilizing bare slopes and riparian forests.	Minor
Direct: Mortality and Injury to fauna due vegetation clearing and habitat loss	Medium	Medium	Short-term	Minor	■ Conduct pre construction field screening to repel, rescue and relocate fauna from area of direct influence. ■ Implement a chytrid protocola when handling of amphibians and clean bottom of boots after	Negligible

Impact	Sensitivity	Magnitude	Duration	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
					construction activity to avoid spreading Chytrid fungus. ■ Avoid clearing vegetation during bird breeding season.	
Direct: Habitat loss for wildlife due to construction within the road improvement/ expansion locations, reinjection and production well pads, reinjection pipeline, power plant area and immediate surrounding areas	Medium	Medium	Long term/ Permanent	Minor	■ Minimize Project footprint to the maximum extent feasible. ■ Avoid removal of trees where possible. ■ Revegetate temporary laydown areas.	Minor
Indirect: Operation of the drill rig and related drilling and testing activities would generate air emissions, the accumulation of which could inhibit growth of vegetation	Medium	Negligible	Medium-term	Negligible	■ Monitor air quality to meet IFC EHS standards. ■ Implement air quality management plan.	Negligible
Indirect: During construction of the drill rig, blow testing, and other construction activities, the Project will generate high noise levels causing wildlife displacement and mask acoustic calling, thus affecting mating and feeding behaviors, within the BAOI.	Medium	Medium	Medium-term	Moderate	■ Implement pre-construction surveys to relocate ground dwelling wildlife from the activity sites to the extent practicable. ■ Assess the need of a shock absorber, or damper on the drill ■ Install silencers to vehicles and heavy equipment.	Minor

Impact	Sensitivity	Magnitude	Duration	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
					■ Survey areas for existing bat roosts and implement humane physical or acoustic exclusion measures to keep bats away from site. ■ Avoid drilling and steam blow testing, as feasible, between April and August to avoid impacts on maternity colonies of bats, and bird breeding season. ■ Evaluate need to install temporary sound barriers, if construction is outside of hurricane season.	
Direct: Fragmentation of habitat and reduction of ecological connectivity	Medium	Small	Permanent	Minor	■ Ensure sufficient clearance under the pipeline to allow for safe animal crossing underneath. ■ Revegetate temporary laydown areas and temporary RoW of pipeline.	Negligible
Direct: Mortality or injury to fauna due to open geothermal brine ponds	Medium	Small	Long-term	Minor	■ Installation of screen or nets over the brine collection pond to prevent wildlife contact with fluids.	Negligible

Impact	Sensitivity	Magnitude	Duration	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Indirect: Project-related activities would result in the temporary degradation of habitat quality within the nearby MTPNP WHS	High	Small	Long-term	Moderate	■ Ensure Project areas are appropriately demarcated. ■ Ban hunting and harassment of wildlife. ■ Minimize the amount of artificial lighting used at the pad sites, use directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. ■ Avoid drilling during bird and bat breeding and nesting season (April-August). ■ Evaluate the need to install sound barriers outside of hurricane season. ■ Implement waste management plan.	Negligible

[a] sampling protocol for amphibian Chytrid fungus to detect the infectious disease.

Further monitoring to assess effectiveness of mitigation measures and evaluate impacts on flora, fauna, and the MTPNP WHS. Monitoring should include the following:

- Monitoring health of water courses and riparian areas during and after construction (refer to Water Management Plan, Appendix A);
- Monitoring of flora and fauna, with special focus on Red-necked Amazon (*Amazona arausiaca)* prior to and after construction (see Biodiversity Management Plan in Appendix A);
- Monitor habitat use of wildlife and potential impacts to MTPNP WHS with areas in BAOI; and
- Monitor reforestation and restoration efforts annually.

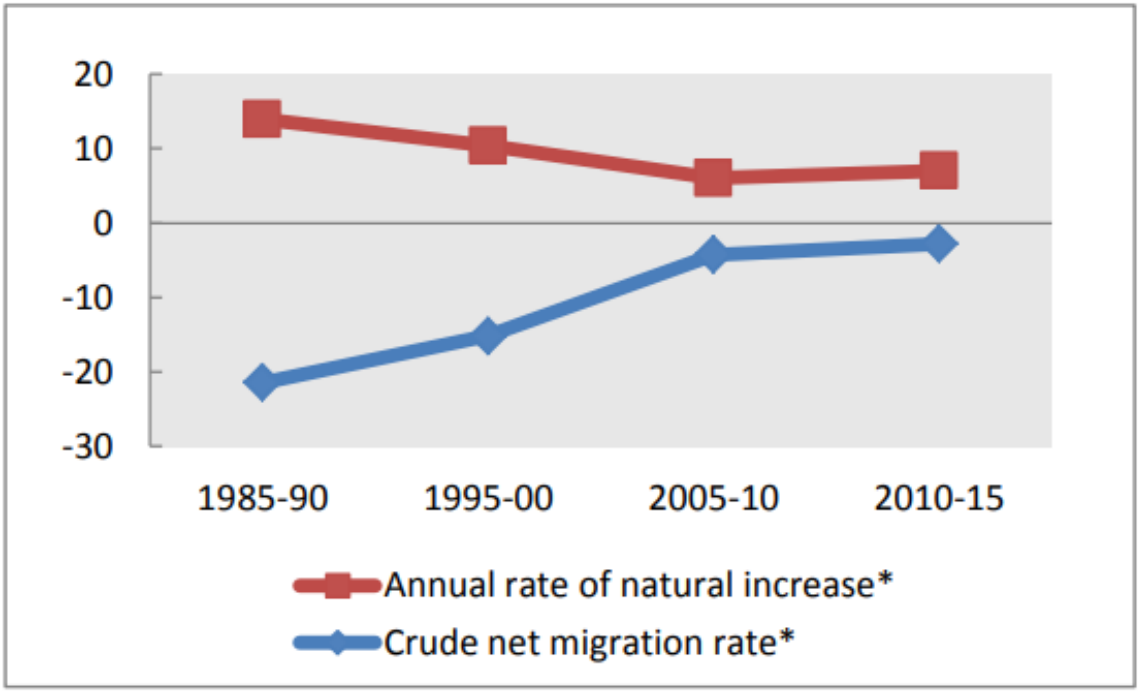
6. SOCIOECONOMIC RESOURCES UPDATE

6.1 Socioeconomic Baseline

6.1.1 Migration

Dominica has been ranked among the top five countries in the world having the highest rates of net migration, with a record high in 1989 of -32.7 per thousand of the population. Over the last hundred years, Dominicans have migrated in ever-increasing numbers in search of employment opportunities, as was the case in the early nineteenth and twentieth centuries, and more recently in pursuit of higher education (T. Fontaine, *Tracing the Diaspora's Involvement in the Development of a Nation: The Case of Dominica*). In fact, Dominica has even developed a Diaspora Policy to tap into potential in Diaspora communities and promote the social and economic development of all citizens to encourage their partnership in the development of the country (Government of the Commonwealth of Dominica, Ministry of Trade, Employment, Industry and Diaspora Affairs, Diaspora Policy, 2010).

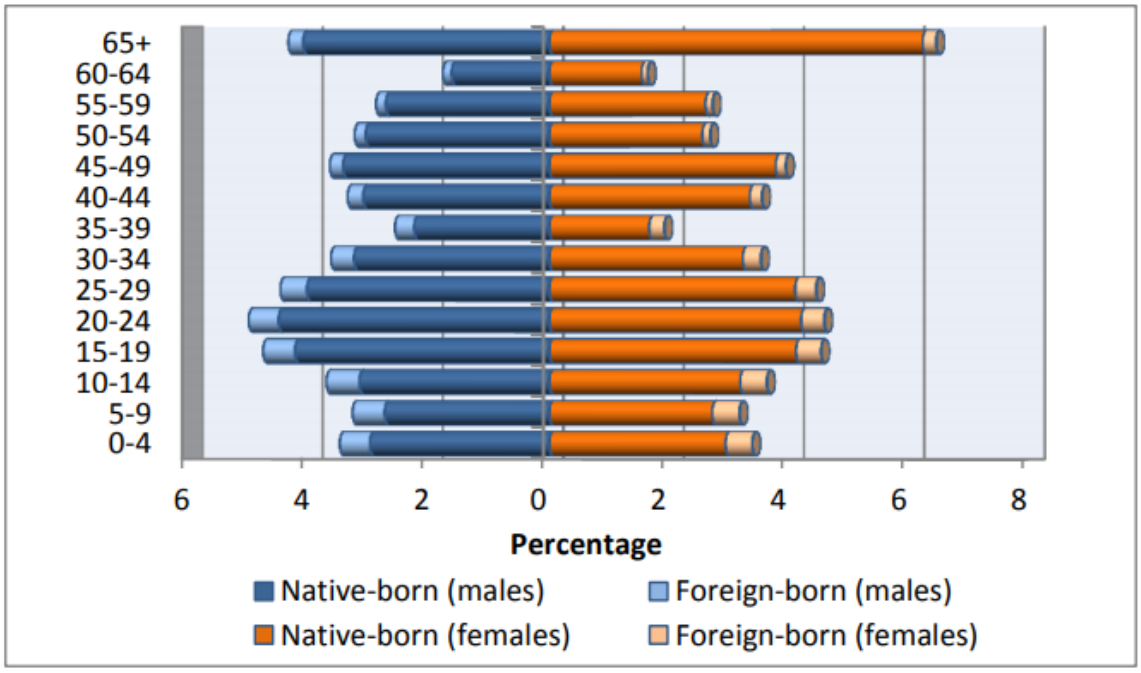
However, it should be noted that in recent years Dominica's migration rates have decreased (see Figure 6-1). According to UNICEF's Migration Profile for Dominica, the island's crude net migration rate has changed from -21.43 in the late 1980s to -2.80 between 2010 and 2015. This translates to a net migration of -1 person per 1,000 inhabitants for the period 2010-2015. In absolute numbers, data from the World Bank Group and United Nations Department of Economic and Social Affairs shows that in 2018, Dominica's total population was 73,543 and the total immigrant population was 7,000 (or 9.5% of the total population), with 3,325 (or 4.5%) constituting the female immigrant population.



Source: UNICEF Migration Profiles, Dominica.

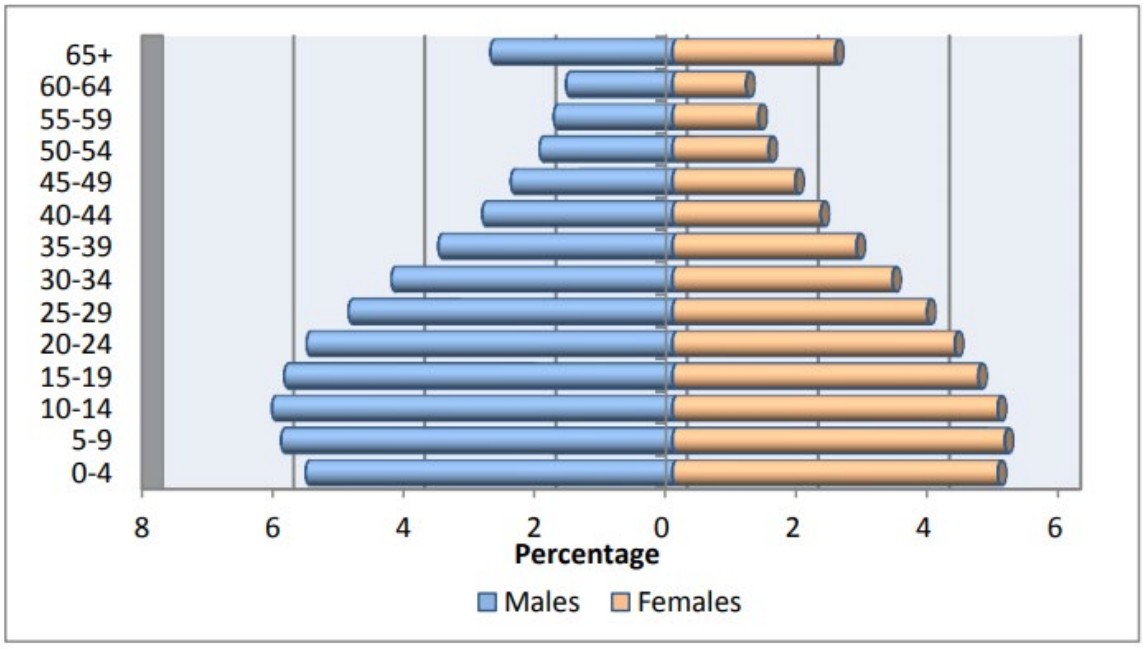
Figure 6-1 Migration Rate Dominica (1985-2015)

Figures 6-2 and 6-3 show total population by age and sex vs migrant stock by age and sex for 2013 in Dominica.



Source: UNICEF Migration Profiles, Dominica

Figure 6-2 Total Population by Age, Sex and Origin (2013)



Source: UNICEF Migration Profiles, Dominica.

Figure 6-3 Migrant Stock by Age and Sex (2013)

Tables 6-1 and 6-2 show migrant stock by origin and destination for 2013 for the top five countries or areas of origin / destination.

Table 6-1 Migrant Stock by Origin (2013)

Countries or Areas	Total
Guadeloupe	1,403
United Kingdom of Great Britain and Northern Ireland	587
United States of America	577
Antigua and Barbuda	469
Trinidad and Tobago	283
Total	**3,319**

Source: UNICEF Migration Profiles, Dominica

Table 6-2 Migrant Stock by Destination (2013)

Countries or Areas	Total
USA	35,425
United States Virgin Islands	6,547
France	6,336
United Kingdom of Great Britain and Northern Ireland	5,043
Antigua and Barbuda	4,624
Total	**57,975**

Source: UNICEF Migration Profiles, Dominica.

It is important to keep in mind that the crisis in Dominica after Hurricane Maria highlighted the importance of accounting for the migration aspects of disaster events, as its effects on mobility patterns were made evident through the immediate need to track displaced persons, and the subsequent need to recruit foreign labor to assist with reconstruction efforts; however, the long-term effects of this crisis have not yet been determined with certainty (International Organization for Migration, Migration Governance in the Caribbean: Report on the Island States of the Commonwealth Caribbean, 2018).

Lastly, the Dominica Association of Industry and Commerce (DAIC) has recently discussed the existing negative perceptions of immigrants in Dominica, emphasizing the positive impact that immigrants can have on Dominica through economic consumption.[10]

6.1.2 Gender

The 2018 Jacobs ESIA includes information on gender by population and women's perceptions of priority needs post-Hurricane Maria. This section will provide additional details on gender in Dominica.

The Dominica Country Gender Assessment (CGA), commissioned by the CDB in 2014, provides a gender analysis of the economic, social and governance sectors in Dominica. The CGA indicates that Dominica's gender inequality index, which measures three aspects of gender inequality – reproductive health, empowerment, and economic activity – has not been calculated by the United Nations Development Programme (UNDP), because of the unavailability of relevant country data.

In terms of legislation, Dominica has neither signed nor ratified the Protocol to the Convention on the Elimination of All Forms of Discrimination against Women (Gender Equality Observatory for Latin America and the Caribbean). The most recent legislation with regard to gender equality has been the Protection against Domestic Violence Act, in 2001 and amendments to the Sexual Offences Act in 1998 and 1992. The law does not prohibit sexual harassment. Civil society groups reported it was a pervasive problem (US State Department Human Rights Report for Dominica, 2019). With regard to domestic violence, the most recent data reports that two women died from domestic violence at the hands of their partners in 2015, one died in 2014 and one died in 2009 (Gender Equality Observatory for Latin America and the Caribbean). In 2010, there were 177 cases of reported child abuse against girls, vs 39 against boys (CGA). The Bureau of Gender Affairs did not disaggregate reported cases of gender-based violence, but there were 391 reports between 2011 and 2013 (CGA).

The US State Department Human Rights Report for Dominica, 2019 states that: "The law criminalizes rape of men and women, including spousal rape. Although the maximum sentence for sexual molestation (rape or incest) is 25 years' imprisonment, the usual sentence in 2019 was five to seven years. Whenever possible, female police officers handled rape cases involving female victims. Women were reluctant to report domestic violence to police. The only shelter for victims of gender-based violence remained closed after suffering damage during Hurricane Maria in 2017. Civil society reported that sexual and domestic violence was common. The government recognized it as a problem, but according to civil society groups, recognition of gender-based violence, particularly domestic violence, as a problem was low among the general population. Although no specific laws criminalize spousal abuse, spouses can bring battery charges against their partner."

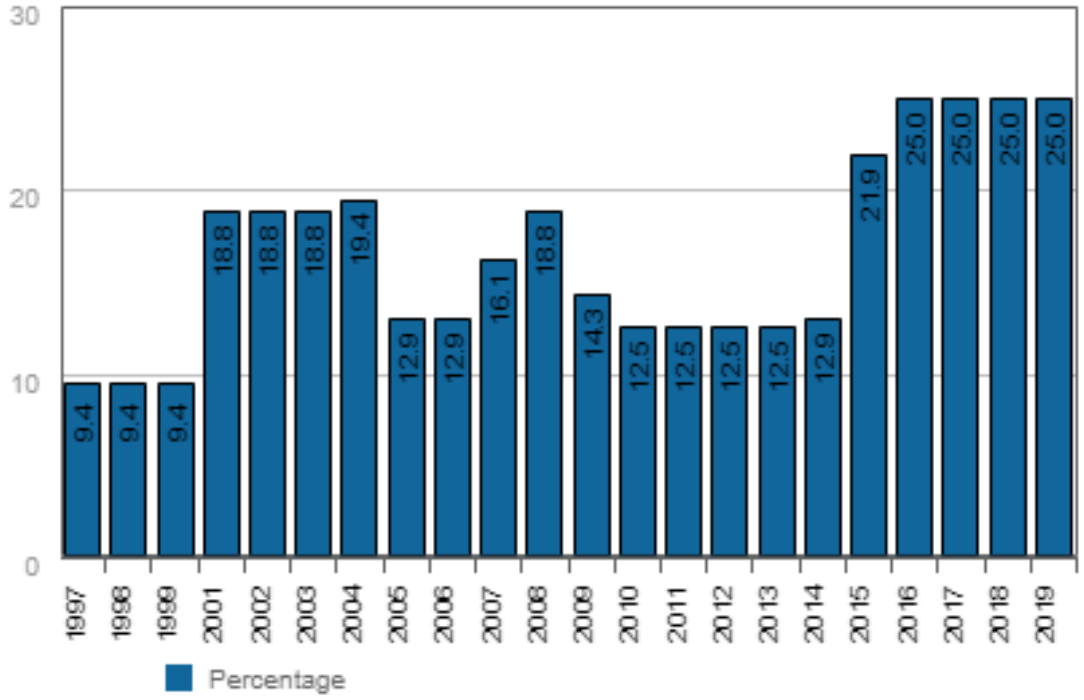
With regard to teen pregnancies, it has increased in recent years, going from 17.5% in 1981 to 40.3% in 2009 (Gender Equality Observatory for Latin America and the Caribbean and CGA). This represents a significantly high incidence of teenage pregnancy. Data from the Gender Equality Observatory for Latin America and the Caribbean shows that 100% of births in Dominica are attended by skilled health personnel. The country's maternal mortality rate of 222.3 per 100,000 women (2010) represents a high rate, placing Dominica at 53rd in the global ranking (CGA).

In terms of education, secondary school enrolment for 2011/2012 was slightly higher for males (50.7% for males vs 49.3% for females) but the number of women in tertiary level education is significantly higher than the number of males (62.5% vs 37.5%) (CGA). For labor participation, 58.4% of the labor force in 2011 was

[10] Dominica Vibes, DAIC Speaks on Issues of Migration in Dominica, January 22, 2020 accessed at: https://www.dominicavibes.dm/business-261845/

composed of males and 41.6% of females; however, the unemployment rate in 2011 was slightly higher for males than females, standing at 12.3% vs 9.9% (CGA).

When it comes to autonomy in decision-making and women's participation in government, Dominica exhibits male dominance in Parliament, with a male: female ratio of 87.5%: 12.5% in 2014 (CGA). For 2013, the number of male vs female village councilors was 59% vs 41%, and the number of male vs female chairpersons of village councils was 71% vs 29% (CGA). The number of women legislators are illustrated in the Figure 6-4 for the years 1997-2019 (Gender Equality Observatory for Latin America and the Caribbean).



Source: Gender Equality Observatory for Latin America and the Caribbean.

Figure 6-4 Number of Women Legislators (Percentage)

6.1.3 Human Rights

Dominica's human development index (HDI) value (0.745) is in the 'high' human development category, which positions the country at 72 out of 187 countries and territories globally (CGA). According to the United States State Department's 2019 Human Rights Report for Dominica, significant human rights issues included: criminalization of libel; and criminalization of consensual same-sex sexual activity between adults, although there were no reported cases of enforcement during the year. The government took steps to prosecute officials who committed human rights abuses, but some cases remained unresolved. The report also states that inadequate prosecutorial and police staffing, outdated legislation, and a lack of magistrates resulted in backlogs and other problems in the judicial system.

Local media and opposition leadership continued to raise allegations of corruption within the government. Civil society groups staged a protest alleging the government had misappropriated one billion Eastern Caribbean dollars ($370 million) in revenues from the Citizenship by Investment program (US State Department Human Rights Report for Dominica, 2019). A December 2019 Al Jazeera video documented allegations of government officials selling diplomatic passports (US State Department Human Rights Report

for Dominica, 2019). The government denied the allegations of misappropriation and continued to deny allegations of selling diplomatic passports (US State Department Human Rights Report for Dominica, 2019).

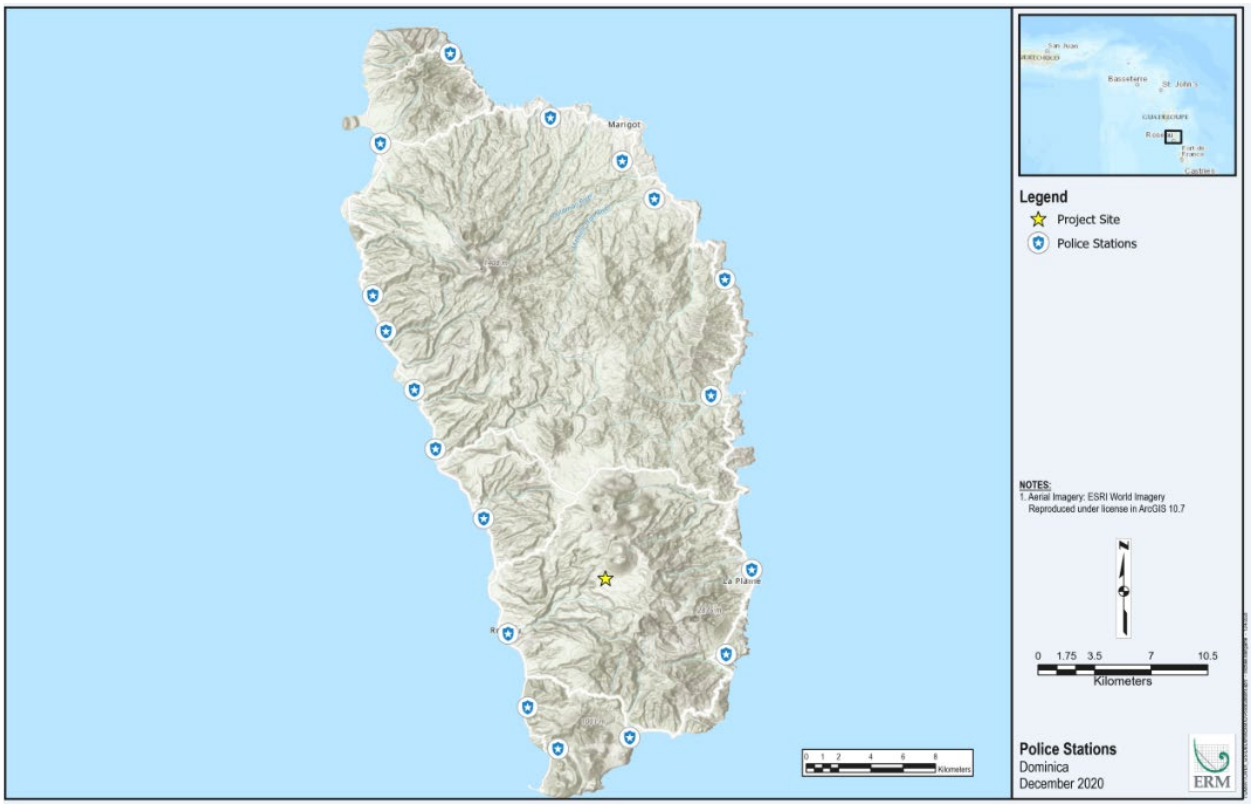
According to the government and civil society, child abuse remained a pervasive problem. The government maintained a Child Abuse Prevention Unit responsible for protecting children from all forms of abuse. The unit supported victims by providing counseling, psychological assessments, and other services such as financial assistance to abused children and to family members (US State Department Human Rights Report for Dominica, 2019).

Lastly, Dominica has no legislation for human trafficking (International Organization for Migration, Migration Governance in the Caribbean: Report on the Island States of the Commonwealth Caribbean, 2018). Dominica has experienced difficulties in identifying victims of trafficking and has not yet conducted any investigations or recorded any cases of trafficking in persons within their borders (International Organization for Migration, Migration Governance in the Caribbean: Report on the Island States of the Commonwealth Caribbean, 2018). The country has not implemented any awareness campaigns regarding human trafficking at national or local levels (International Organization for Migration, Migration Governance in the Caribbean: Report on the Island States of the Commonwealth Caribbean, 2018).

6.1.4 Emergency Services and Security

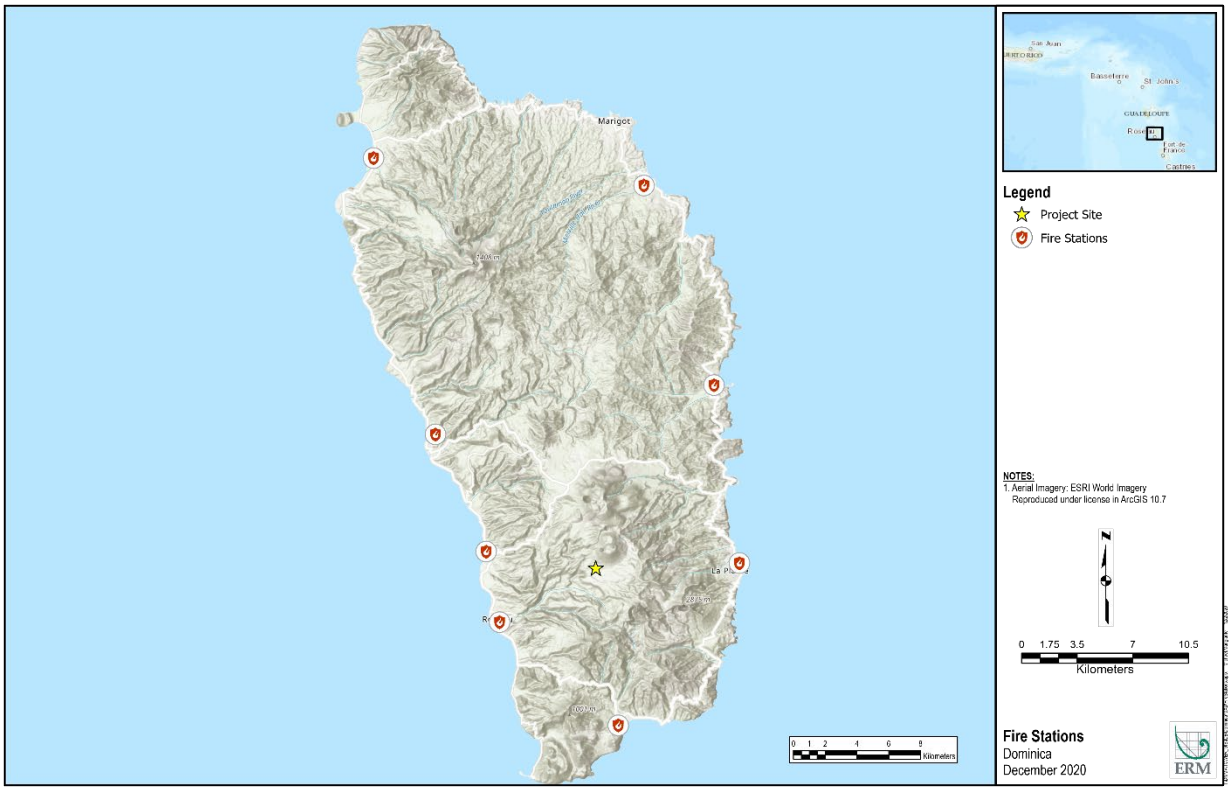
6.1.4.1 Emergency Services

There are eighteen police stations and eight fire stations on the island. These are shown in Figure 6-5 and Figure 6-6.



Source: ERM, 2020.

Figure 6-5 Police Stations



Source: ERM, 2020.

Figure 6-6 Fire Stations

6.1.4.2 Security

Control Risk's Country Profile for Dominica states that there are low levels of political and social unrest. The Country Risk Profile suggests that structures in some areas of the island remain damaged and recovery efforts persist in the wake of the 2017 Atlantic hurricane season. The Country Profile also states the following: "Although violent crime rates are low, petty crime poses a risk. Pickpocketing and bag-snatching are common, and the level of petty crime increases during popular annual events such as the Carnival in February and the Creole Music Festival in October. Business personnel can be targeted due to their perceived wealth, but violent crime does not often affect foreigners, and is mostly confined to the local community. Organized criminal groups have taken advantage of Dominica's strict bank secrecy laws, as well as its Citizenship by Investment Programme, which grants Dominican passports without proper names or identification. Dominica has traditionally been attractive for criminals involved in money laundering because of weak law enforcement. Despite the high media coverage received by the protests that took place ahead of the December 2019 election, civil unrest remains highly unlikely. At their most intense, protests in Dominica were small (less than ten people) and largely focused on blocking streets, as opposed to engaging in violence or vandalism."

6.1.5 COVID-19

Dominica has lifted stay at home orders, and resumed some transportation options and business operations (US Department of State). In June 2020, the government stated that it would not be extending the state of

emergency and the curfew that had been in place to curb the spread of COVID-19.[11] The Center for Disease Control and Prevention states that Dominica's COVID-19 risk is moderate as of December 1, 2020. As of November 21, 2020, Dominica had reported a total 77 cases of COVID-19 since the beginning of the pandemic, with 63 recovered cases, 14 active cases and 0 deaths (Dominica Ministry of Health, Wellness and New Health Investment Response to COVID-19).

6.1.6 Land Use and Acquisition

The Jacob's ESIA (Jacobs, 2018) and the updated ESIA (ECLIPSE, 2020) for the drilling of geothermal well RV-I2 new reinjection pipeline route include information on land use. From the new reinjection pipeline route, eight out of the twelve plots will be partially acquired, with the acquisition of a 10-m corridor that includes the area for the pipeline itself and a buffer zone. These plots include secondary forest and abandoned agriculture. Therefore, four plots will be fully acquired. One of the plots which will be fully acquired has some active subsistence farming. There will be no physical displacement. It is relevant to note that there will be a temporary change in land use to these plots while construction activities are ongoing.

There are no indigenous populations that will be affected by the Project's land acquisition.

Figure 6-7 shows the location of the plots that will be affected along the reinjection pipeline route.

Source: DGDC

Figure 6-7 Properties Neighboring Preferred Reinjection Line

[11] CARICOM, Dominica Lifts Curfew, State of Emergency (June 2020) accessed at: https://today.caricom.org/2020/06/30/dominica-lifts-curfew-state-of-emergency/

6.2 Impacts and Mitigation

6.2.1 Gender

The Project will likely affect men and women differently. This is because the type of employment opportunities provided by the Project are more likely to be directed towards men. Women typically benefit from any tourism-related impacts or opportunities that the Project may result in, as they are more likely to work in the tourism sector than the construction sector. Therefore, it is unlikely that women will benefit from the limited construction and operations-related employment opportunities that will be created by the Project, which risks creating gender-based exclusion.

Studies on gender equality in the construction sector have shown that the majority of men and women working in the construction industry get to know about job openings through friends and relatives (International Labor Organization (ILO) Country Office for Pakistan, Baseline Study to Assess Gender Disparities in Construction Sector Jobs, 2011, from now on “ILO Baseline Study”). The survey shows that most women cannot avail job opportunities in the construction sector, as they do not possess the necessary social connections (ILO Baseline Study). This finding highlights the need to mainstream job information for construction-related jobs, so that women can also have access to this information.

Further, women often lack relevant skills due in part to either the lack of information about training opportunities, or the actual lack of training opportunities, which means that they cannot compete in the job market with their male counterparts (ILO Baseline Study). This phenomenon ultimately leads to a situation where women are less visible (ILO Baseline Study). Prior to mitigation, gender-related impacts could be considered to be *Moderate.*

Therefore, the Project has the potential to contribute towards gender equality by mainstreaming job opportunity information and emphasizing that they are open to women applicants, so women know that they can apply. Additional mitigation measures are listed below. After these measures, gender-related impacts will be *Minor.*

- Possible negative impacts that DGDC’s actions may generate will be identified, not only in relation to human life, but also in relation to gender;
- The cultural factors of each area will be prioritized, to evaluate important issues such as:
  - Ensuring an active female voice;
  - Addressing women's loneliness in the case of male migration to work; and
  - Addressing the types of help and assistance required these women to become an active voice in employee engagement.
- A safe environment for women in the communities will be created for them to express themselves without fear of reprisal;
- All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and older focus groups, if necessary;
- A welcoming environment will be created for motherhood needs (e.g., take her child to a meeting);
- No woman, child, or elderly person will be put at risk or suffer any kind of reprisal;
  - All of DGDC’s partnerships on the construction site will have contractual clauses to the detriment of:

- Zero tolerance for moral and sexual harassment in the workplace and with the community (Anti-Harassment Policy);
- Minimum percentage of training and local female workforce in construction and project development;
- Specific personal protection equipment for women's work; and
- Flexible working hours if women are breastfeeding.

- The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.).
- DGDC will monitor and oversee the handling of complaints of gender-related discrimination.

Key performance indicators (KPIs) should include, but not be limited to:

- Number of women employed by the Project (target of 15%);
- Number of women engaged by the Project;
- Non-discrimination and gender-based violence (zero tolerance of any discrimination of any type); and
- Track and evaluate grievances related to gender-issues through the Grievance Mechanism (100% reported, evaluated and solved grievances regarding discrimination complaints and gender-based violence in a timely manner).

6.2.2 Worker Influx

The Jacobs ESIA states that “It is likely that 30 to 40 workers will be at the power plant site at the peak of construction and a team of 10 to 15 working on the pipeline. These workers are likely to be sourced from outside of Dominica, depending on the selection of the final Engineering, Procurement, and Construction Contractor (EPC). This total could be slightly larger at times if more locals are required to support with construction equipment in difficult locations.” Further, the ESIA also states that: “The majority of employment during construction is likely to be short-term and significant employment opportunities for local communities would be limited” and “the ability to acquire a position, and successful performance once hired, will favor experienced (skilled) personnel for professional roles, the majority of whom would likely come from abroad. Therefore, operational employment opportunities are likely to be sourced from outside the local community”. However, the Project will have a Local Hiring Management Plan and DGDC will undertake vocational training to assist local people in obtaining jobs with the Project. In addition, the Contractor shall, where practical, maximize the use of local Dominica labor, suppliers and services during the execution of the project. Local Dominican labor shall include non-skilled, semi-skilled and skilled labor as well as Dominica-based service providers. Service providers shall include labor hire companies, local civil contracting companies, catering and transport services and the like. Furthermore, Bidders shall provide a methodology statement on how local labor, suppliers and services will be sourced and engaged as well as the proposed conditions of engagement.

Despite this, given the migration context discussed in Section 6.1.1, this may pose a significant influx for the island. Further, influx may also result from increased expectations around Project activities, such as the expectation of employment. An increase in prostitution around Project sites and accommodations where foreigners are residing for extended periods is also common on construction projects, which may result in an increase in communicable disease rates amongst both foreign and local populations. This would result in *Moderate* impacts.

Therefore, mitigation measures should include:

- Implement Project Grievance Mechanism.

- Evaluate need of security guards, fencing, and/or other security measures. As part of this evaluation, it is also important to consider training (e.g., in human rights and use of force, among others), whether private or public security guards will be used, and whether firearms will be warranted.
- Code of Conduct for all Project employees and contracted staff including zero-tolerance policy for drug use, sale or purchase, or participation in illegal activities. The Code of Conduct will be available for all employees on site.
- Project should issue a policy statement regarding sexually transmitted infections including HIV/AIDS, and this policy would be communicated internally to staff, and externally to Contractors.
- Develop a Socioeconomic and Community Health and Management Plan to manage influx and recreation risks.
- Workers Accommodation Plan and Checklist.
- Local Hiring Plan and Local Supplier Plan
- Develop and implement vocational training for local communities.

KPIs should include, but not be limited to:

- Engage monthly with local NGOs, civil society leaders and/or church leadership on local perceptions related to influx.
- Document number of consultations and trainings with local communities on grievance mechanism.
- Track and evaluate monthly grievances related to crime, prostitution, conflict and against Code of Conduct (target of 100% resolution). Ensure that the community is aware that these occurrences can be reported via the Grievance Mechanism.
- Liaise monthly with local health officials and police stations to track and evaluate any increase in crime and/or prostitution within the Project area.
- Document number of workers and contractors who have signed Code of Conduct and zero-tolerance policy (target of 100%).
- Track and evaluate monthly internal and external grievances related to workers' accommodation.
- Track and evaluate percentage of local hiring and suppliers.
- Number of inhabitants of Laudat, Trafalgar and Wotten Waven who have received training, and nature of training received.
- Number of inhabitants of Laudat, Trafalgar and Wotten Waven hired by the Project.

After mitigation measures, worker influx impacts would be expected to be *Minor*.

6.2.3 Land Acquisition, Resettlement and Livelihood Restoration

The Jacobs ESIA of 2018 includes information on the power plant and the updated drilling and reinjection pipeline ESIA (ECLIPSE) includes information on the reinjection pipeline route with regard to land acquisition, resettlement and livelihood restoration. They also include an Abbreviated Resettlement Action Plan (2018 ARAP) which is being updated as a Resettlement Action Plan (RAP or 2021 RAP).

Construction of the reinjection pipeline route corridor would consist of an approximately 10 m wide corridor. For construction of the power plant, reinjection route and associated infrastructure, seven full properties at the power plant, four full properties for the reinjection pad (RVI2), a portion of eight other properties along the reinjection line, a portion of three properties for widening access to RVI2 and a portion of one property for production pad A (RVP2) would need to be acquired. This would include three structures, one of which

is classified as residential, one intended for residential use, and one used for livestock. The RAP considers 25 properties with 24 Project Affected People (PAP) in total.. Two PAPs will lose farmland. Only one is an active farmer on a portion of land and one other earns income from produce on the land. There will be no physical displacement from the reinjection pipeline route. As part of this addendum, the RAP has been updated by DGDC. No indigenous populations will be affected by economic or physical displacement. Prior to mitigation measures, these impacts would be expected to be *Moderate* in significance.

. After the mitigation and compensation measures included in the RAP, these impacts would be expected to be *Minor* in significance. The RAP is included in Appendix B. The principles in the RAP will guide land acquisition and displacement compensation.

6.2.4 Impacts Summary

Table 6-3 summarizes the socioeconomic impacts included in this Addendum.

Table 6-3: Impacts and Mitigation Measures for Project Modifications and Updates

Impact	Sensitivity	Magnitude	Duration	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Gender	High	Medium	Short-term	Moderate	■ DGDC will work to identify possible negative impacts that DGDC's actions may generate in relation to gender. ■ DGDC will prioritize the cultural factors of the region to evaluate important issues in relation to gender. ■ A safe environment for women in the communities will be created for them to express themselves without fear of reprisal; ■ All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and elders, if necessary. ■ A welcoming environment will be created for motherhood needs (e.g. take her child to a meeting). ■ No woman, child, or elderly person will be put at risk or suffer any kind of reprisal. ■ The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.). DGDC will monitor and oversee the handling of complaints of gender-related discrimination. ■ KPIs will include gender metrics.	Minor
Worker Influx	High	Medium	Short-term	Moderate	■ Implement Community Grievance Mechanism.	Minor

					■ Evaluate need of security guards, fencing, and/or other security measures. ■ Code of Conduct for all Project employees and contracted staff including zero-tolerance policy for drug use, sale or purchase. ■ Project should issue a policy statement regarding sexually transmitted infections including HIV/AIDS, and this policy would be communicated internally to staff, and externally to Contractors. ■ Develop a Socioeconomic and Community Health and Safety Management Plan to manage influx and recreation risks. ■ Workers Accommodation Plan and Checklist. ■ Local Hiring and Supply Plan, training for local communities	
Land Acquisition, Resettlement and Livelihood Restoration	High	Medium	Permanent	Moderate	■ Implement the RAP , see Appendix B.	Minor

7. CUMULATIVE IMPACT ASSESSMENT

This chapter focuses on potential cumulative impacts from the Project. Cumulative impacts are defined as the successive, incremental, and/or combined effects of a Project or activity, accumulated with other Projects or activities. Given that the Project is complying with the IFC PS, potential cumulative impacts are evaluated pursuant to IFC's Cumulative Impact Assessment (CIA) guidance - Good Practice Handbook - Cumulative Impact Assessment and Management: Guidance for Private Sector in Emerging Markets (IFC, 2013).

7.1 Key Terminology

The following are definitions for key terminology used in the CIA.

Cumulative Impact: Impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity added to other existing, planned, and/or reasonably anticipated actions, projects, or activities. For practical reasons, the identification, assessment, and management of cumulative impacts are limited to those effects generally recognized as important on the basis of scientific concern and/or concerns of Project-Affected Communities (PACs)[12].

CIA: Process to identify and evaluate cumulative impacts.

Other Projects: Existing, planned, or reasonably expected future developments, projects and/or activities potentially affecting Valued Environmental Components (VECs).

External Drivers: Sources or conditions that could affect or cause physical, biological, or social stress on VECs, such as natural environmental and social drivers, human activities, and external stressors. These can include climate change, population influx, natural disasters or deforestation, among others. These are typically less defined and planned than Other Projects.

Valued Environmental Components (VECs): Environmental and social components considered as important by the scientific community and/or potential PACs. VECs may include:

Physical features, habitats, wildlife populations (e.g., biodiversity, water supply);

Ecosystem services (e.g., protection from natural hazards, provision of food);

Natural processes (e.g., water and nutrient cycles, microclimate);

Social conditions (e.g., community health, economic conditions); and

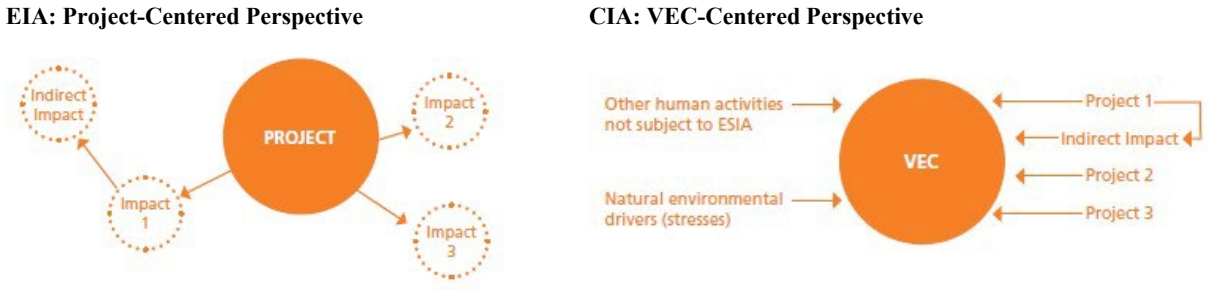
Cultural heritage or cultural resources aspects (e.g., archaeological, historic, traditional sites).

VECs reflect the public and scientific community's "concern" or special interest about environmental, social, cultural, economic, or aesthetic values (IFC, 2013). According to the IFC's methodology, VECs are considered the ultimate recipients of cumulative impacts because they tend to be at the ends of ecological pathways.

7.2 Approach

Unlike an ESIA, which focuses on a project as a generator of impacts on various environmental and social receptors, a CIA focuses on VECs as the receptors of impacts from different projects and activities (see Figure 7-1). In a CIA, the overall resulting condition of the VEC and its related viability are assessed.

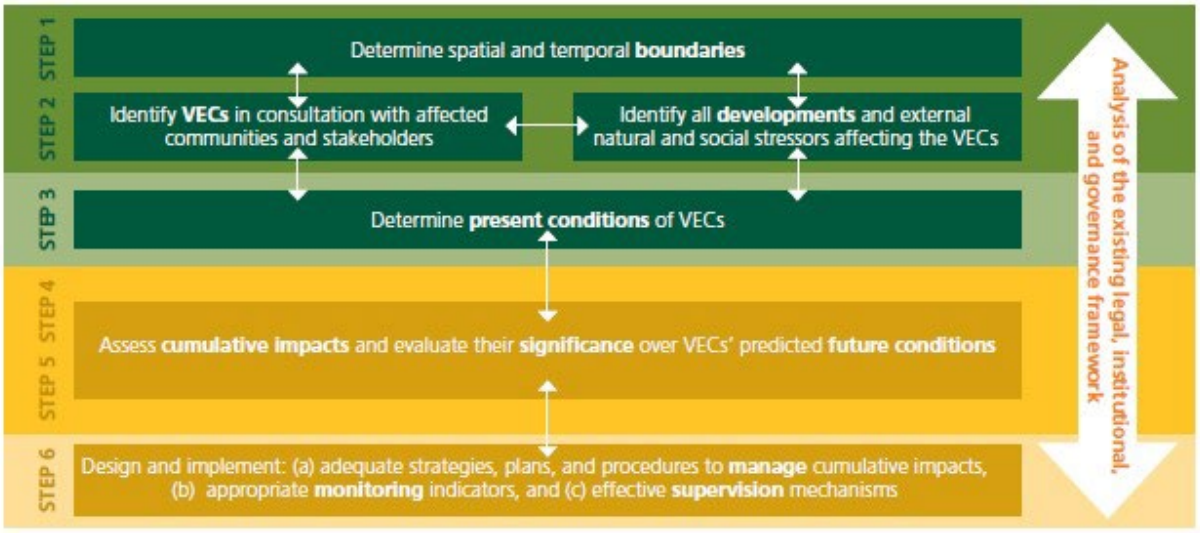
[12] PACs are defined as local communities potentially directly affected by the Project (consistent with IFC Performance Standard 1, paragraph 1 [IFC 2012a]).



Source: IFC, 2013.

Figure 7-1: Comparing ESIA and CIA

The CIA was derived from desktop reviews of publicly available information, information obtained during the ESIA process, and information provided by DGDC. The assessment follows the six steps for a CIA (see Figure 7-2). The process is iterative and flexible, with some steps having to be revisited in response to the results of others. For example, the VEC selection step usually needs to be adjusted after the potential impacts of the Project are identified. The steps are described in detail below.



Source: IFC, 2013.

Figure 7-2: Summary of the Cumulative Impact Assessment Methodology

7.3 Limitations

The IFC CIA Handbook methodology takes into consideration the limitations that a private developer may face carrying out a CIA. The limitations applicable to this CIA include: (1) incomplete information about other projects and activities (e.g., the information is not available in the public domain); (2) uncertainty with respect to the implementation of future projects; and (3) difficulty in establishing thresholds or limits of acceptable change for VECs, and therefore the significance of cumulative impacts.

7.4 Determination of Spatial and Temporal Boundaries

The Project includes a Geothermal Plant, with an associated reinjection pipeline and steam gathering system (SGS). The components are located within the Roseau Valley. The reinjection pipeline will extend

for approximately 1.21 km and the SGS will run for approximately 1km. The proposed route for the reinjection pipeline will go through several plots, described in the RAP.

Based on an assessment of the VECs for the CIA, it was determined that using the island of Dominica will be appropriate to serve as the spatial boundary of the CIA, in that it covers: (1) the extent of the selected VECs, and (2) the extent of the potential impacts from the Project, other projects, and external drivers. Roseau is the largest town within the CIA area.

Temporal delimitation for a CIA is future focused and therefore frequently a challenge due to the uncertainty inherent to potential future other projects. For this reason, good international industry practice suggests consideration of a three-year temporal boundary when conducting a CIA (IFC, 2013), and revisiting the CIA periodically (every 3-5 years) to identify changes in proposed projects and external drivers and therefore expected cumulative impacts. Based on the expected timeline of the Project, the construction of the plants and its facilities is estimated to take between 18 to 24 months, with an estimated construction phase of Q1 2021 to Q2 2022. The CIA uses an extended five-year temporal boundary, 2022 – 2027, to cover the Project construction and initiation of Project operation activities.

7.5 Other Projects

Through a thorough review of publicly available information and interviews with DGDC personnel, ERM identified existing and future planned projects located within the spatial and temporal boundaries of the CIA, having the potential to result in cumulative impacts on identified VECs. The sources researched to identify other existing or planned projects for this CIA included:

- IDB website
- CDB website
- Organization of Eastern Caribbean States (OECS) website
- World Bank Group website
- Development Finance Corporation website
- GlobalEnergyObservatory.org

There are no other major developments of this type (geothermal project) in Dominica and impacts of the Project are anticipated to be fairly unique to the development itself. Due to the effects of Hurricane Maria, there are multiple restoration efforts underway in the island for existing buildings that suffered damage.

In addition, other projects that have been identified nearby are:

- Hospital expansion (Dominica-China Friendship Hospital)
- Renovation and expansion of Fort Young Hotel
- West Coast Road Rehabilitation Project (rehabilitation of damaged areas along the 45 km of West Coast Road to include construction of three new bridges)
- Reconstruction of EC Loblack Bridge
- Installation of Bailey Bridges (island-wide)
- Construction of Roseau River Walls (river training walls and related road and drainage works along the Roseau River, including relocation of utility infrastructure, construction of sidewalks, installation of street lighting)
- Construction of River Wall in Colihaut (Reinforced concrete river wall, curb wall and reinstatement of collapsed roadway and guard rails)

- Water Area-1 Network Upgrade (CDB)
- Rehabilitation and Reconstruction of Dominica Electricity Services Limited (CDB)
- Housing Recovery Project (World Bank)

It is important to note that the government may evaluate an expansion of this current or future geothermal Projects, including expansion of transmission to Martinique. Currently, there are plans for a Phase II, which would include a transmission line that runs from the geothermal power plant to an east coast substation (approximately 9 km). This is expected to be finalized by mid-2022. This expansion may incur many of the same impacts or additional impacts (therefore exacerbating cumulative impacts).

In addition, a World Bank "Regional Air Transport Connectivity Project" was identified in Dominica, but there was not sufficient information on the activities that the project would encompass for it to be included in the CIA. However, if more information becomes available at a later date, the CIA should be updated to reflect this project.

7.6 External Drivers

ERM identified the following external drivers: natural hazards and climate change. Please see the Jacobs ESIA (Jacobs, 2018) ESIA, Section 3.9 for a description of natural hazards including hurricanes, landslides, volcanic eruptions, flooding and induced seismicity and subsidence. Further, the design parameters of the plant and ancillary facilities will take into consideration natural risk hazards associated to climate change projections.

With regard to climate change, the Climate Investment Funds states that Dominica is on the frontlines of climate change, with sea level rise and extreme weather threatening its population.[13] In fact, 62% of Dominica's 71,000 inhabitants live in the low-lying coastal areas vulnerable to hurricanes, storm surges and high winds.[14]

Further, the UNDP Climate Change Adaptation provides the following information regarding climate change in Dominica:

"The country's main economic sectors are rain-fed agriculture (with major crops including bananas, citrus and coconuts.), government services, banks and insurance, wholesale and retail trade, and transport (Bellot and Parr, 2001). Climate change is expected to impact on this sector in three ways:

- Temperature changes affecting range of species, water flow in watersheds, reduced food availability for wildlife and increased forest pests, disease and vulnerability to extreme climate events.
- The threat presented by sea level rise to the coastal habitats (e.g., coastal freshwater ponds, brackish water systems, mangroves and arable floodplains) is substantial. Increasing pressure on forest reserves due to loss of coastal agricultural lands by salinization. Loss of coastal forests due to inundation and increasing storm events (e.g., mangroves and low lying tropical dry forests). Migration or loss of wildlife species from altered habitats.
- There is also the potential for greater frequency and intensity of storms in the Caribbean leading to the risk of landfall. Terrestrial ecosystems are severely affected by tropical disasters.

Alongside these effects, the coastal ecosystem faces additional stresses while the beaches also experience erosion and inundation. Elevated sea temperatures can also impair the coral reefs of Dominica through

[13] Dominica Climate Investment Funds, accessed at https://www.climateinvestmentfunds.org/country/dominica#:~:text=Small%20island%20nation%20Dominica%20is,not%20just%20an%20environmental%20concern.
[14] Ibid.

bleaching. Studies done by the Fisheries Development Division in 1998, reported that approximately 15% of the coral showed sign of bleaching (Guiste, 2000, personal communication). Moreover, as sea levels rise, there will be destruction of mangroves reducing the availability of fresh water for keeping the salinity balance. Dominica's fresh water supply is also vulnerable to major hurricane impacts as water quality is affected through landslides, gully erosion and flooding.

As much of Dominica's important infrastructure is located along the coastline, close to the present sea level, this makes them vulnerable to flooding and storms. Furthermore, 90% of the population is dispersed among coastal villages, with the main population center, Roseau, located along the leeward coast. Most settlements have very little room for expansion except through hillside residential development, or density increases in already built up areas. As a result, population increase in certain districts is leading to the increasing emergence of hillside developments on the fringes of the existing towns and on small coastal headlands. These areas are highly susceptible to the ravages of extreme events such as hurricanes.

While it is difficult to quantify the impacts of climate change on Dominica's agriculture, banana - as the most significant crop in Dominica - is very sensitive to levels of precipitation. A stark contrast in optimal productivity is observed when the above average rainfall production is compared to drought production levels. There was a 17- 37% difference in the 1970's and a staggering 53-60% difference in the 1980's. In addition, crops such as vegetables are extremely sensitive to the fluctuations in precipitation. Excess rainfall tends to increase the incidence of pest and diseases leading to declining productivity, whilst drought conditions lead to reduced yields. Extreme events inflict damage directly on food systems through the destruction of crops and livestock and the erosion of farmlands."

Consequently, climate change impacts could be negative and widespread for Dominica. The island is working hard to increase its climate resilience through, for example creating a new government agency to mainstream resilience into all areas of the country's growth.[15]

7.7 VEC Selection and Description

7.7.1 Selection of VECs

To be included, VECs must also be reasonably expected to be affected by both the project under evaluation (i.e., geothermal plant) and some combination of other projects and external drivers. The identification of VECs was based on social and environmental receptors identified in the assessment of impacts of the ESIA, other known activities in the project area, supplemented with information obtained during the baseline, and the consultation process.

The Jacob's ESIA and the additional studies conducted as part of this addendum concluded that most of the resources affected by the Project will incur *Minor* or *Negligible* impacts that were very localized in extent and duration. The major environmental and social concerns related to the Project include the risk of flooding for the reinjection pipeline; and community health and safety related to traffic and land acquisition. Chapter 5 of this Addendum describes the baseline conditions and impacts to biological resources, and Chapter 6 describes the baseline and impacts to socioeconomic resources, complementing Volume 2 and Volume 3 of the Jacobs ESIA.

All potentially eligible VECs were analyzed against the following criteria: (1) confirmed to be valued by an identifiable stakeholder group; (2) reasonably expected to be impacted by the Project (i.e., at least one potential impact significance rating of Minor or above); ***and*** (3) reasonably expected to be potentially

[15] Devex, Dominica determined to become World's First Climate-Resilient Nation, April 16, 2020 accessed at https://www.devex.com/news/dominica-determined-to-become-world-s-first-climate-resilient-nation-96999

impacted by some combination of other projects and external drivers. To be included in the CIA, the VEC had to meet all three criteria. Table 7-1 presents the results of this analysis, and highlights the VECs that are selected in the CIA.

Table 7-1: Selection of VECs

VEC	Valued by Stakeholders	Potentially Affected by the Project [a]	Potentially Affected by the Project expansion	Potentially Affected by One or More Other Projects	Potentially Affected by One or More External Drivers
Terrestrial and Aquatic Biota (flora and fauna)	Yes	Yes	Yes	Yes	Yes
Land Traffic	Yes	Yes	Yes	Yes	Yes
Community Health and Safety	Yes	Yes	Yes	Yes	Yes
Landscape Aesthetics	Yes	Yes	Yes	Yes	Yes

[a] *At least one potential impact significance rating of Minor or above.*

7.7.2 Description of VEC Conditions

The baseline conditions of the selected VECs were previously described (see Chapters 6 and 7 of the Addendum and Volumes 2 and 3 of the Jacobs ESIA). The VEC baselines provide information on the VECs' current conditions, the anticipated resilience against external stressors and potential impacts (cumulative impacts and sources of stress), and thus provide an indication of their viability and sustainability.

7.8 Assessment of Cumulative Impacts

CIAs are future-oriented and Project contributions are assessed as the difference between the expected future condition of the VEC in the context of all possible known stressors and that condition plus the Project under evaluation. This step of the CIA assesses the future conditions of the VECs, considering the impacts from the Project, other projects, and external drivers. The potential impacts to VECs were established from the results of the Project ESIA and Addendum and other available information. If no impact information was available (e.g., for other projects), ERM assumed common sector-based impacts.

The results of the CIA are presented in tabular format. The significance of cumulative impacts is not evaluated in terms of the magnitude of change but in terms of VEC response and the resulting condition and sustainability. If cumulative impacts do not exceed the VEC threshold, the development of the project under assessment is considered acceptable. Given the intrinsic limitations of Project-driven CIAs, the present assessment was not intended to obtain sufficient baseline information to establish thresholds of the selected VECs and therefore establish the significance of the cumulative impacts. Instead, based on the publicly available information and the findings of the stakeholder interviews, cumulative impacts were categorized by priority using the following definitions:

High Priority: The VEC is expected to or is currently being adversely impacted by other projects and/or external drivers and the future addition of the Project could incrementally contribute to the adverse impact. Actions will be implemented in the short term to mitigate potential adverse cumulative impacts on the VEC.

Medium Priority: The VEC could potentially be impacted by other projects and/or external drivers, and the Project could potentially contribute to the adverse impact. Actions will be implemented in the medium term to mitigate potential adverse cumulative impacts on the VEC.

Low Priority: The VEC is not expected to be potentially impacted significantly by other projects and/or external drivers, and therefore the Project impacts will not be expected to contribute to an adverse cumulative impact. No actions are required to mitigate potential adverse cumulative impacts on the VEC beyond proposed Project mitigation measures.

Table 7-2 summarizes the results of the assessment of cumulative impacts identified for the selected VECs. For the CIA, the potential impacts from the current Project and the expansion are discussed separately given their differences in geography and potential impacts. The potential impacts from other projects that are within the same industry or sector are discussed together. Based on the potential cumulative impacts, a priority ranking is established for each VEC.

In summary, one High priority cumulative impact was identified for terrestrial and aquatic biota, linked to the transmission line component for the expansion of the Project. A medium priority cumulative impact was identified for landscape aesthetics. All other VECs are deemed as Low priority cumulative impacts.

Table 7-2: Summary of Cumulative Impact Assessment

VEC	Potential Impacts from the Geothermal Plant Component of the Project	Potential Impacts from the Expansion of the Project	Potential Impacts from Other Projects	Potential Impacts from External Drivers	Cumulative Impact	Priority Ranking
Terrestrial and Aquatic Biota (flora and fauna)	During Construction, activities such as pipeline installation, vegetation removal, soil movement, and use and storage of hazardous waste and materials may result in distribution and habitat changes for terrestrial fauna, death of fauna from collision with vehicles and elimination of terrestrial flora within the Project's layout including access roads and laydown area. During Operations, activities such as routine maintenance, reception and delivery of materials, generation of electricity, storage and use of hazardous waste and materials, could cause the following potential impacts: hazardous materials spills on the ground, habitat loss, increased noise and vibrations, air emissions, and increased exposure to light. The disturbances described above could result in vegetation cover loss and distribution changes for the fauna found in the Geothermal Plant area. Mammals and birds are largely mobile, and most of the bird species identified during the baseline are considered migrant species, which makes them less vulnerable to anthropogenic intervention. Therefore, it is not expected that the Geothermal Plant construction and operations phases will result in an overall reduction in their abundance and diversity. The impact is considered **Minor.** Potential impact on less mobile species will be considered **Moderate**.	During an expansion and the construction of a transmission line, activities such as soil movement and compaction, and transportation of machinery, equipment and parts could result in loss of vegetation cover. The Phase II transmission line was routed to run through the Morne Trois Pitons National Park, a designated UNESCO World Heritage Site (WHS), which was likely to trigger the exclusion list criteria for destruction of Critical Habitat. However, because of these impacts, the TL will be rerouted. The impact is therefore considered **Moderate** until the TL is defined.	*Hospital and Hotel Expansions*: Construction activities could disturb fauna in the area causing distribution and habitat changes from altered terrestrial habitats. The movement of trucks and heavy machinery could result in collisions with fauna. After construction, potential impacts include artificial lights that can attract birds. *Road Network Improvement:* During Construction, activities such as soil movement and compaction, and transportation of machinery, equipment and parts could result in loss of vegetation cover. Because the roads that are being improved are already existing roads, the impact on vegetation cover loss is considered **Negligible.** *Bridge Reconstructions and River Walls:* Construction activities could disturb fauna in the area causing distribution and habitat changes from altered terrestrial and aquatic habitats. The movement of trucks and heavy machinery could result in collisions with fauna. After construction, potential impacts include collisions with project vehicles or disruptions to aquatic fauna during maintenance work. *Electricity Services Reconstruction:* Construction activities on infrastructure could disturb fauna in the area causing distribution and habitat changes from altered terrestrial habitats. The movement of trucks and heavy machinery could result in collisions with fauna. During Operations, potential impacts include collisions with project vehicles. *Water Area-1 Network Upgrade:* establishing a new intake on Check Hall River; the construction of diversion dam upstream of the existing Springfield Intake; network transmission and distribution system upgrades; and the construction of new reinforced concrete distribution tanks could all contribute to disturbing fauna in the area causing distribution and habitat changes from altered terrestrial and aquatic habitats. The movement of trucks and heavy machinery could result in collisions with fauna. During Operations, potential impacts include collisions with project vehicles or disturbance of aquatic fauna during maintenance on the dam and intakes. Potential impacts are likely to be **Moderate** before mitigation measures. *Housing Recovery Project:* Construction activities could disturb fauna in the area causing	*Climate Change and Natural Hazards*: Rising temperatures associated with longer-term global climate change could potentially affect some special status species' ranges. Changes in precipitation and natural disasters could also affect vegetation growth and/or result in vegetation removal.	The Project, other projects, and external drivers could have potential negative impacts on terrestrial flora and fauna. Effects and disturbances caused by the plant construction activities will be short-term and reversible. The Project embedded controls and management plans, including the vegetation plans related to visual impacts, will mitigate potential impacts to an acceptable level (mostly **Minor** or **Negligible**). Additionally, the potential impacts are localized to the Project area within the larger CIA spatial boundary. However, the TL is yet to be defined, resulting in a conservative estimation of **Moderate** impacts. In sum, the current Project could potentially contribute incrementally to the adverse impact, but further VEC conversion and/or degradation is not likely to occur, and once the TL is defined the Project's contribution will be expected to be Minor to negligible.	**High**

			distribution and habitat changes from altered terrestrial habitats. The movement of trucks and heavy machinery could result in collisions with fauna. *Transmission Lines and Substations:* Removal of vegetation to clear ROW and substation areas, with resulting effects on wildlife habitat. Project concept focuses on routing along existing corridors and siting substations in parcels already cleared.			
Land Traffic	During Construction, which is expected to last 18 to 24 months, there will be an increase in the volume of land traffic, consisting of cars and light trucks transporting equipment and parts. This increase in road traffic can affect the conditions of road infrastructure, disturb users of adjacent properties, lead to traffic delays, and possibly have public safety implications. However, high volume of traffic is not expected during the Construction phase. The impacts during Construction will be **Minor**. During Operations: Most traffic will be related to routine maintenance and regular operations activities, including daily commute of plant personnel which will be a maximum of 6 roundtrips per day. The impacts during Operations will be **Negligible**.	During Construction of the TL, there will be a light increase in the volume of traffic. This increase in road traffic can affect the conditions of road infrastructure, disturb users of adjacent properties, lead to traffic delays, and possibly have public safety implications. The impacts during Construction will be **Minor**. During Operations: Most traffic will be related to routine maintenance. The impacts during Operations will be **Negligible**.	*Hospital and Hotel Expansions:* Construction activities could cause increased vehicle traffic for a defined period of time. *Bridge Reconstructions and River Walls:* During construction, transport of personnel, heavy trucks delivering or picking up equipment and machinery, and maintenance vehicles could cause congestion. *Road Network Improvement:* During construction some roads may be partially closed or block, increasing traffic through other roads for a defined period of time. *Electricity Services Reconstruction:* During construction, transport of personnel, heavy trucks delivering or picking up equipment and machinery, and maintenance vehicles could cause congestion. *Water Area-1 Network Upgrade:* During construction, transport of personnel, heavy trucks delivering or picking up equipment and machinery, and maintenance vehicles could cause congestion. *Housing Recovery Project:* During construction, transport of personnel or materials may cause congestion and increased vehicle traffic. *Transmission Line and Substations:* Temporary, localized effects during construction.	*Climate Change and Natural Hazards*: To the extent the frequency or intensity of severe storms and flooding could be influenced by climate change, these could potentially damage some roads. Natural disasters may also result in damaged roads.	The Project and other projects could contribute to the potential negative impacts on this VEC by increasing land traffic. The external driver could exacerbate traffic due to potential damages to road infrastructure. The mitigation measures proposed by the Project will appropriately mitigate the negative impacts and contribution (**Minor** for the short-term construction and then **Negligible** for operation). In sum, the Project could potentially contribute incrementally to the adverse impact, but VEC conversion and/or degradation is not likely to occur, or the Project's contribution will be expected to be negligible.	**Low**
Community Health and Safety	During Construction, air quality could be negatively affected by activities related to earth movement and terrain preparation, movement of heavy machinery and increased land traffic in surrounding areas. These activities could increase the amount of dust and certain gases (CO_2 and H_2S) in the environment. These potential impacts will be localized and short term, and with the application of the proposed	During Construction, air quality could be negatively affected by activities related to earth movement and terrain preparation, movement of heavy machinery and increased land traffic in surrounding areas. These activities could increase the amount of dust and combustion gases from diesel engines (i.e. CO, SO_2, NO_x, $PM_{2.5}$, PM_{10}, VOCs) in the environment. These potential impacts will be localized and short term, and with the application of the proposed mitigation measures, the impact will be **Negligible**.	*Hotel and Hospital Expansions:* During Construction for the expansion projects, air quality could be negatively affected by activities related to earth movement, which will generate dust, and by emissions from diesel engines combustion gases. During Operations, no additional impacts are expected. *Bridge Reconstructions and River Walls*: During Construction, air quality could be negatively affected by activities related to earth movement, which will generate dust, and by emissions from diesel engines combustion gases.	*Climate Change and Natural Hazards*: Rising temperatures associated with longer-term global climate change could potentially affect the dispersion and thermodynamics of pollutants emitted to the air.	The Project, other projects, and external drivers could contribute to the potential negative impacts on this VEC: decreased quality of the air shed. However, the other projects are already in operation and therefore their impacts are already considered in the Project baseline and residual impact assessment. The Project's embedded controls and mitigation measures proposed will appropriately mitigate the negative impacts and contribution (**Minor** or **Negligible**). In sum, the Project could potentially contribute incrementally to the	**Low**

	mitigation measures, the impact will be **Minor**. During Operations, there will be no emissions that will negatively affect air quality, apart from workers' travel to the site, which is consider **Negligible**. However, if the injection well has to be shut down during an emergency, there may be additional air emissions. Due to the extraordinary nature of this circumstance, it is expected to be of a low occurrence. Therefore, the impact will be **Minor or Negligible**.	During Operations, the main source of emissions that could negatively affect air quality will be combustion from diesel engines from maintenance trucks transiting the line if applicable. The impact will be **Negligible**.	*Road Network Improvement:* During Construction, air quality could be negatively affected by activities related to earth movement, which will generate dust, and by emissions from diesel engines combustion gases. *Electricity Services Reconstruction:* During Construction, air quality could be negatively affected by activities related to earth movement, which will generate dust, and by emissions from diesel engines combustion gases. *Water Area-1 Network Upgrade:* During Construction, air quality could be negatively affected by activities related to earth movement, which will generate dust, and by emissions from diesel engines combustion gases. *Housing Recovery Project:* During Construction, air quality could be negatively affected by activities related to earth movement, which will generate dust, and by emissions from diesel engines combustion gases. *Transmission Line and Substations:* Moderate to minor effects on air quality and noise during construction. Project design should consider safety measures to manage energized lines.		adverse impact, but further VEC conversion and/or degradation is not likely to occur, or the Project's contribution will be expected to be negligible.	
Landscape Aesthetics	During Construction, the landscape will be affected by site-clearing activities, construction equipment and construction-related traffic. Of these, the only permanent effect will be site-clearing, new infrastructure and the associated loss of flora. The Project has mitigation measures for visual impacts. During Operations, there will be no further effects to landscape aesthetics. After mitigation measures, the impact during Construction will be **Moderate to Minor**.	During Construction, the landscape will be affected by construction equipment and construction-related traffic. The TL is not expected to be underground at the moment. Therefore, the TL's impact on landscape aesthetics is expected to be **Minor**.	*Hotel and Hospital Expansions:* During Construction, the landscape will be affected by site-clearing activities, construction equipment and construction-related traffic. Of these, the permanent effects will be site-clearing, new infrastructure and the associated loss of flora. *Bridge Reconstructions and River Walls*: During Construction, the landscape will be affected by site-clearing activities, construction equipment and construction-related traffic. Of these, the permanent effects will be site-clearing, new infrastructure and the associated loss of flora. *Road Network Improvement*: During Construction, the landscape will be affected by construction equipment and construction-related traffic. Given that the roads that are being improved are already in existence, there are expected to be no permanent negative impacts to landscape aesthetics. *Electricity Services Reconstruction:* During Construction, the landscape will be affected by site-clearing activities, construction equipment and construction-related traffic. Of these, the permanent effects will be site-clearing,	*Climate Change and Natural Hazards:* Changing temperatures and higher risk of drought could lead to vegetation loss.	The Project and other Projects will contribute to the potential negative impacts on this VEC by reducing flora. Additionally, landscape aesthetics was identified as a highly valued VEC by stakeholders. The Project could potentially contribute incrementally to the adverse impacts that already exist, and some degree of VEC conversion and/or further degradation or perception of degradation is likely to occur. Actions will be implemented in the medium term to mitigate potential adverse cumulative impacts on the VEC. Effects in the TL area are expected to be **Minor**.	**Medium**

			new infrastructure and the associated loss of flora. *Water Area-1 Network Upgrade:* During Construction, the landscape will be affected by site-clearing activities, construction equipment and construction-related traffic. Of these, the permanent effects will be site-clearing, new infrastructure, particularly the concrete distribution tanks, water intakes and dam diversion, and the associated loss of flora. *Housing Recovery Project:* During Construction, the landscape may be affected by site-clearing activities, construction equipment and construction-related traffic. Of these, the permanent effects will be limited to any new housing projects, since existing housing that is restored will not incur additional impacts. *Transmission Line and Substations:* Visual changes due to the presence of the facilities.			

7.9 Cumulative Impacts Management Framework

Although there are other power sources on the island, the Project area is largely isolated and development of a 10 MW power plant is not anticipated to result in significant cumulative social impacts.

However, given the relatively pristine nature of the Roseau Valley, the importance of ongoing proper stakeholder engagement, understanding of community concerns, and the provision of (where possible and appropriate) training and employment opportunities to community members becomes paramount.

Internationally recognized good practices for managing cumulative impacts include:

- Effective application of the mitigation hierarchy (avoid, reduce, and remedy) in the environmental and social management of the specific contributions of a project to expected cumulative impacts; and
- Undertaking best efforts to engage, leverage, and/or contribute in multi-stakeholder collaborative initiatives or discussion groups to implement management measures that are beyond the capacity and responsibility of any individual project developer. (IFC, 2013).

The embedded controls and management measures included in the ESIA and the Addendum provide a means to mitigate the specific contributions of the Project to effects on VECs, following the mitigation hierarchy. Supplementing these controls and management measures, the CIA provides a framework of additional actions that DGDC will apply in the regional and Project context to manage potential cumulative impacts on these VECs.

7.9.1 Project Level

Effective application of the mitigation hierarchy (avoid, reduce, remedy) to manage individual contributions of cumulative impacts will be applied as best practice. DGDC has incorporated a number of physical or procedural embedded controls in the Project design. These are considered from the very start of the impact assessment process as part of the Project, and are factored into the pre-mitigation impact significance ratings. In addition, a number of mitigation measures detailed in the ESIA and Addendum have been proposed to address potential impacts from the Project. The ESIA and Addendum also include an Environmental and Social Management Plan (see Appendix A), which summarizes the mitigation and monitoring measures for all environmental parameters, including the VECs assessed in this CIA.

At the Project level, the above measures are considered sufficient to address the contributions of the Project to cumulative impacts on the identified VECs related to landscape aesthetics.

With regard to impacts on biota, it is highly recommended that the Project expansion, if and when carried forward, relocate the transmission line to avoid any impacts to Critical Habitats. Potential options include:

- Proposed transmission corridors follow a west and then north direction, away from the WHS and along existing corridors.
- The substations will be on properties owned by either DGDC or the electric utility (DOMLEC).

7.9.2 Regional Level

Ultimately, the management of cumulative impacts is the responsibility of government and regional planners. However, it is considered best international practice that private-sector developers make best efforts to engage relevant stakeholders and promote management of cumulative impacts in their project areas (IFC, 2013; Franks, 2010).

The CIA identified medium and high priority cumulative impacts on the following VECs: Terrestrial and Aquatic Biota and Landscape Aesthetics. Therefore, the development and implementation of a multi-stakeholder collaborative management framework, to the extent possible, is recommended. DGDC has

agreed to foster such collaboration by participating, to the extent feasible and practicable, in working groups and/or industry organizations aimed at addressing management of potential impacts on regional resources to which DGDC's Project could incrementally contribute with respect to cumulative impacts.

Here are some initiatives that DGDC will take to strengthen a collaborative management framework for the VECs that the Project could contribute cumulatively with medium priority:

Landscape Aesthetics

- Promote the creation and maintenance of green spaces around the Project and other project areas.
- Promote the use of colors for Project components that blend into the natural surroundings.

Terrestrial and Aquatic Biota

- Promote information sharing related to impacts from the Project and the other projects to enrich common information and identify potential synergies on information gathering and mitigation measures.
- Evaluate opportunities to use shared access roads with other projects in the vicinity.
- Promote the creation and maintenance of urban green spaces around the Project and other project areas.
- Recommend the collaborative monitoring of impacts on biota among the projects, with adaptive management.

8. CONCLUSION

The results of the environmental and social impact assessment presented in this Addendum to the ESIA are valid insofar as the design of the Project remains the same. Should the design of the Project or any of its components change, then the results presented in this Addendum may have to be updated to reflect the changes.

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Appendix A Environmental and Social Management Plan (ESMPs)

Environmental and Social Impact Assessment (ESIA) Addendum – Environmental and Social Management Plans

Proposed Dominica Geothermal Development Project

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Environmental and Social Impact Assessment (ESIA) Addendum – Environmental and Social Management Plans

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ACRONYMS AND ABBREVIATIONS

°C	Degree Celsius
ACC	Air Cooled Condensers
ADI	Area of Direct Influence
AII	Area of Indirect Influence
AOI	Area of Influence
AVR	automatic voltage regulator
BAOI	Biotic Area of Influence
BMP	Biodiversity Management Plan
BOP	Blow Out Preventer
BOPE	Blow Out Prevention Equipment
CBD	Convention on Biological Diversity
CDB	Caribbean Development Bank
CFCs	Chlorofluorocarbons
CH4	Methane
CHS	Community Health and Safety
CIA	Cumulative Impact Assessment
CITES	Convention on the International Trade in Endangered Species
CO	Carbon Monoxide
COVID-19	New Coronavirus
CR	Critically Endangered
dB	Decibels
dBA	A-weighted decibels
dBC	C-weighted decibels
DD	Data Deficient
DDR	Daily Drilling Report
DGDC	The Dominica Geothermal Development Company
DGR	Daily Geological Reports
DOA	Department of Agriculture
DOE	Department of Environment
DOMLEC	Dominica Electricity Services Limited
DOWASCO	Dominica's Water and Sewerage Company Ltd.
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
ESG	Environmental, Social and Governance
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plans
ESPII	Public Health Emergency of International Importance
EU	European Union
F	Fahrenheit
ft	Feet
ft msl	Feet Mean Sea Level
GHGs	Greenhouse Gases
H&S	Health and Safety
H_2S	Hydrogen Sulfide
Ha	Hectare
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
IBAs	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
IDB	Inter-American Development Bank
IFC	International Finance Corporation

IFC PS	International Finance Corporation Performance Standards
ILO	International Labor Organization
IPPC	International Plant Protection Convention
km²	Kilometers squared
KPIs	Key Performance Indicators
kW	Kilowatt
kWe	Kilowatt Electric
kWhr	Kilowatt-hours
LAeq	levels as equivalent
lbs	Pounds
LEL	Lower Explosive Limit
Leq	Sound Level
m	Meters
m3	Cubic meters
m3/year	Cubic meters per year
Mg	Milligrams
mm/year	millimeter per year
mph	Miles per hour
MPL	Maximum Permissible Limits
MTPNP	Morne Trois Pitons National Park
MW	Megawatt
MWe	Megawatt Electric
NCG	Non-Condensable Gas
NGOs	Non-Governmental Organizations
NIOSH	U.S. National Institute for Occupational Safety and Health
NO2	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NT	Near threatened
ORC	Organic Rankin Cycle
OSHA	U.S. Occupational Safety and Health Administration
PEC	Predicted Environmental Concentration
PEL	Permissible Exposure Limits
pH	Potential of hydrogen
PM	Particulate Matter
PM 2.5	Particulate Matter 2.5
PM10	Particulate Matter 10
ppb	Parts per billion
PPE	Personal Protective Equipment
ppm	Parts per million
PS	Performance Standard
REL	Recommended Exposure Limits
SDS	Safety Data Sheet
SEP	Stakeholder Engagement Plan
SO2	Sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
STIs	Sexually Transmitted Infections
TWA	Time Weighted Average
US	United States
UV	Ultraviolet
VU	Vulnerable
µg/m3	Microgram per cubic meter air

1. BIODIVERSITY MANAGEMENT PLAN

1.1 Introduction

The following Biodiversity Management Plan (BMP) establishes a framework for minimizing impacts of the Dominica geothermal power plant (the Project) on terrestrial biodiversity. Some of the Project area has already been cleared (existing injection pad); however, for any additional clearance (for the plant site, pipelines, new pads, and access/maintenance roads), the following management plan will be implemented. The BMP's purpose is to set forth procedures that DGDC will implement to manage and monitor terrestrial biodiversity during construction and operations of the Project. This will allow compliance with legal requirements and guidance standards for the environmental coordinator and the hired Contractors to avoid, minimize, and reduce adverse effects to terrestrial biodiversity receptors within the Project's BAOI. This BMP is based on the impacts and mitigation measures for terrestrial biodiversity values identified and described in the Project Description and the impact assessment provided in the Jacobs ESIA (2018), and the ECLIPSE (2020). The current document compiles and summarizes relevant documentation regarding impacts and mitigation measures for terrestrial biodiversity which includes the Habitat and Biodiversity Management and MTPNP Monitoring Plan (ESMS-DGDC-ENV-005) and provides a summary of the best management practices. Where necessary, supplemental measures are provided.

The mitigation activities presented in this plan are aligned with the Environmental and Social Standard 6 (ESS6) Biodiversity Conservation and Sustainable Management of Living Natural Resources (WB, 2016) and Performance Standard 6 of the IFC, *Biodiversity Conservation and Sustainable Utilization of Living Natural Resources* (IFC, 2012). It is anticipated that the BMP will be periodically updated as the Project design advances and as improvements and adaptive management are identified through all stages of the Project.

The key objectives of this Plan are:

- Follow the guidelines of international best practices, legal requirements and commitments; and ensure these are met throughout the construction and operation activities that relate to management of biodiversity impacts;
- Define and implement the roles and responsibilities, training and scheduling towards avoiding, minimizing, reducing, and mitigating impacts on terrestrial biodiversity in the Project's BAOI; and
- Define the Key Performance Indicators (KPIs) that will be used to assess the effectiveness and success of the Plan at managing biodiversity impacts.
- Specify requirements for biodiversity management during construction and operations, as per the ESMP

1.2 Scope

This plan is part of DGDC's Environmental and Social Management System (ESMS). This Plan covers all DGDC activities with the potential to impact terrestrial biodiversity. It includes activities carried out on DGDC's behalf by contractors and subcontractors. The plan does not substitute any other legal means.

1.3 Key Impacts

Direct and indirect impacts to biodiversity can occur during the following Project Construction and Operation activities.

Construction phase:

- Construction activities for Power Plant and temporary laydown areas, production well pad, reinjection well pad, reinjection pipeline right-of-way (RoW), and access road to power plant, which will result in vegetation and habitat loss, fragmentation, noise, erosion and sedimentation, wildlife disturbance and displacement;
- Operation of the drill rig and steam blow testing, which will create noise, vibration and related wildlife disturbance;
- Operation of heavy machinery and vehicles for transportation, which will create noise, vehicular mortality, accidental fuel spills, and related wildlife disturbance;
- Accidental spills of uncontrolled discharges of geothermal fluids and other hazardous wastes,
- Erosion and sedimentation of water courses;
- Introduction of invasive species during vegetation removal and transportation of vehicles, equipment and soil; and
- Use of artificial night light during construction activities, which will create wildlife disturbance and mortality.

Operations phase:

- Operation of the air cooler condenser fans, which will create continuous noise and related wildlife disturbance;
- Brine ponds to collect geothermal fluids, which may create wildlife injury and mortality;
- Use of artificial night light during operations, which will create wildlife disturbance and mortality; and
- Unexpected event of well blow out, which will result in vegetation loss and disturbance, noise, wildlife displacement, injury and mortality.

The most significant Project impacts on terrestrial biodiversity will occur during the construction phase, which includes onsite vegetation clearing, an increase in noise and vibrations, and the potential for accidental spills of geothermal brine fluid. During operations, the most significant Project impact to flora and fauna biodiversity are noise, fragmentation/reduction in ecological connectivity, and an unlikely scenario of a well blowout vapor explosion, which will cause additional direct impacts of disturbance, injury and/or mortality of terrestrial wildlife species.

The primary species of concern with respect to direct mortality and injury include:

1. Endemic amphibian and reptiles present in the BAOI that will be subject to injury or mortality during ground disturbing activities, such as Martinique Robber Frog (*Eleutherodactylus martinicensis, NT)* and the Dominica ground lizard (*Ameiva fuscata*).
2. Threatened birds species present in the BAOI, such as the Red-necked Amazon (*Amazona arausiaca,* VU), the Imperial Parrot (*Amazona imperialis)* and endemic bird species such as the blue-headed hummingbird (*Cyanophaia bicolor*), and plumbeous warbler (*Dendroica plumbea*). These bird species regularly use or have been recorded within the Project area; foraging and nesting areas may be impacted by vegetation clearing.
3. Bats that regularly forage in the Project area that may include the Dominican Myotis *(Myotis dominicensis*) a Dominican endemic.

1.4 National/International Standards

National standards and action plans relevant to biodiversity protection and management that are established under the **Dominica** laws and regulations include the following:

- Forestry and Wildlife Act No 12 (1976): 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.
- Forest Act (1959): 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.
- National Parks and Protected Areas Act (1975): 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.

Dominica is a signatory to various international conventions related to biodiversity:

- **The Convention on Biological Diversity (CBD):** Objectives of the CBD include conservation and sustainable use of biological diversity, access to and equitable distribution of the benefits of genetic resources, and appropriate transfer of technology.
- **The Convention on the International Trade in Endangered Species (CITES):** CITES's goal is to safeguard against threats to the survival of listed species arising from international trade in specimens, parts, or products of those species.
- **The International Plant Protection Convention (IPPC):** IPPC is an intergovernmental treaty with the goal of protecting the world's plant resources from the spread and introduction of pests and promoting safe trade.
- **UN Framework Convention on Climate Change**: International environmental treaty addressing climate change, negotiated and signed by 154 states at the United Nations Conference on Environment and Development, informally known as the Earth Summit, held in Rio de Janeiro from 3 to 14 June 1992.

In addition to the above international conventions, the World Bank Performance Standard 6 (WB PS 6) analogous to the International Finance Corporation's Performance Standard 6 (IFC PS6) requires that project sponsors avoid, minimize, and restore threats to biodiversity arising from their operations. WB PS 6 specifies that mitigation measures should be designed to achieve 'no net loss' of biodiversity and favor impact avoidance and prevention over reduction and compensation (offsetting). WB PS6 also requires project developers to develop and implement a monitoring and evaluation program to document the project's progress at implementing the agreed-upon controls, restoration, and mitigation measures, and their effectiveness at mitigating for impacts.

DGDC will contract at least one qualified biologist to lead and manage the mitigation measures described below.

1.5 Mitigation Measures

1.5.1 Minimize Project Footprint

According to the Jacobs ESIA (2018) and Eclipse ESIA (2020), DGDC has redesigned the Project footprint and proposed equipment to minimize overall Project impacts with the reduced reinjection pipeline length and drilling of a closer reinjection well. The Project modifications consist of minimizing the Project footprint and vegetation clearing from 5.4 ha (1.4 ha cleared for power plant and 4 ha for the 10 m RoW reinjection pipeline) to 3.57 ha.

Habitat cleared will be the minimum possible, with any RoW area required maintained at the minimum width necessary. Temporary fencing will be used to prevent inadvertent damage outside designated construction areas.

1.5.2 Pre-clearing Surveys, and Rescue and Relocation

Once the area slated for vegetation removal has been demarcated, terrestrial plant and fauna specialists will conduct pre-vegetation clearing surveys. Specialists with demonstrated experience and knowledge of terrestrial plant and fauna species will be required to confirm whether any endangered or endemic fauna are present in the area to be cleared, and to be handled appropriately. The following management measures will be utilized:

- Acoustic deterrents will be used to disperse terrestrial ground-dwelling and flying fauna;
- Specialists will record any fleeing fauna by type and number of individuals, as feasible, to supplement baseline records;
- Bat specialists will survey the Project area demarcated for vegetation removal as well as a 50 m buffer for roosts to be humanely excluded from the area;
- Any reptiles, amphibians, or small mammals remaining in the area slated for vegetation removal will be captured, photographed, measured, and relocated to suitable nearby habitat. This will be performed by specialists and trained locals. Suitable habitat will be determined prior to clearing surveys and will be within similar ecological characteristics and requirements;
- A chytrid protocol (see https://amphibiaweb.org/chytrid/swab_protocol.html) will be utilized when handling all amphibians due to previous reported cases occurring within the Mountain Chicken Frog *(L. fallux*). Separate containers and gloves will be utilized by specialists when handling amphibians and boots will be washed after each rescue and relocation period to avoid spreading the invasive fungus (*Batrachochytrium dendrobatidi*s).
- If Project vegetation removal and ground-disturbance activities cannot avoid the bird-nesting and bat-breeding season (April through August), pre-clearing surveys will identify features to be avoided and 20 m buffers will be set up around sensitive areas during the construction phase. In this situation, the Environmental Coordinator will be notified and specialists will be contacted to identify species and determine how to avoid or relocate;
    - Examples of sensitive features and areas are active endemic or threatened bird nests, maternal bat roost colonies and other microhabitats that are being use for reproduction and raising young.
- Rescue and relocation efforts will be recorded within a monitoring database. Every individual rescued will be provided an ID number. Rescue and relocation records will include a photograph, time, date, collector, and location coordinates and mortality (if any).

1.5.3 Best Practice Vegetation Removal

DGDC will implement and manage activities related to the vegetation removal and tree felling process. The specific objectives of this project are to implement best-practice vegetation clearing methods. To minimize impacts, DGDC will implement the following best-practice measures:

- Technical delimitation of authorized clearing areas, using security tape at a height of 1.5 m, visible enough to isolate the intervention area, and implementation of enforcement measures to avoid footprint "creep" into surrounding areas;
- Minimize cleared areas and any temporary work camp sites;
- Maintain vegetation barriers and trees where feasible;
- Inspection of each target tree to identify risks and potential emergency situations, considering the location, inclination, physical state, extraction trails, wind conditions, and determination of the desired fall path;
- Completion of vegetation removal and tree felling by workers with experience and training in tree felling;
- Biologist identification of any sensitive fauna species in the area where tree felling will occur;
- Tree felling during a time when impacts to fauna (breeding birds and bats) are minimal;
- Whenever possible, vegetation clearance activities should commence outside the breeding season of the key threatened species. The breeding season or the key bird species are between January and August; Bats breed between April and August; Amphibians breed year round, but primarily between May and July. Advice should be sought from local authorities and experts on this matter;
- One days prior to tree felling and vegetation removal, fauna dispersal utilizing noise (i.e., horns, machine equipment-chainsaws or other appropriate measures, etc.); Refer to section 1.5.2 above;
- Presence of wildlife specialist onsite as observers during vegetation removal to capture and relocate fauna offsite to undisturbed nearby habitat;
- Use of low-impact and directed logging techniques;
- A phased, directional approach to tree felling to allow mobile animals to escape from forest clearing activities; trees will be felled in a direction that will minimize damage to neighboring vegetation;
- Avoid piling of clear-felled vegetation on standing live vegetation, and
- Manage cleared material to minimize potential bush fire sources.

1.5.4 Revegetation of Temporary Areas

DGDC will support measures designed to conserve and revegetate as much cleared vegetation as possible within the Project Area. The details of these measures are described herein:

- Rehabilitation of all disturbed areas (e.g., temporary laydown areas) will be undertaken following construction. This will be done in such a way as to facilitate natural regeneration of vegetation;
- Specialists will determine selection of native trees and shrubs to replant to ensure appropriate succession of native trees and reduce the potential for bush fires;
- In appropriate areas, native and endemic trees that may be used as food sources by native bats and birds will be planted in temporary cleared areas; and

- Habitat will also be restored and/or enhanced to increase the value to wildlife. For example, rocks and woody debris can be added to areas to increase availability of wildlife refuges.

1.5.5 Habitat Management Biodiversity Offset

DGDC will implement a Habitat Management Procedure (HMP) to offset impacts to terrestrial natural habitat by the Project components. The Project modifications consist of clearing vegetation within 4.62 ha, of which 2.7 ha is natural tropical forest habitat.

The objectives of the HMP is to i) provide enhancement measures for post-Maria terrestrial biodiversity of the area, and ii) establish biodiversity offset required to achieve No Net Loss of Natural Habitats, with input from local specialists and stakeholders as appropriate.

The activities to be undertaken include:

- Plant native tree species and native grasses with organic fertilizer in areas where trees have fallen to stabilize ground conditions on bare slopes, improve ecological resilience, and reduce rainwater run-off and erosion;
- Plant native tree species in areas surrounding well pads and other infrastructure to reduce erosion and improve landscape connectivity;
- Support local nurseries to grow more trees to be planted and used by local community, as possible;
- Restore river courses by planting native trees, removing fallen trees and large rocks that may cause flooding and increased erosion; and
- Create microhabitats and hibernacula for animals impacted by the loss of tree canopy cover.

DGDC will identify degraded areas due to Hurricane Maria for restoration based on reduced and broken habitat cover, bare exposed ground, downed or damaged trees, and areas of debris build up due to Hurricane Maria. DGDC will restore 2.7 ha to compensate for the loss of natural habitat, and adhere to the "like-for-like or better" principle. Additional areas for restoration include sloped areas without trees or vegetation exposed by Hurricane Maria and landslides, as well as restoring connectivity of forest fragments to WHS.

1.5.6 Habitat Fragmentation Management

DGDC will manage activities to mitigate fragmentation and reduce ecological connectivity by the RoW of the pipeline, power plant, new access road, well pads and other associated infrastructure. DGDC will implement the following:

- The pipeline design establishes a clearance of 1 to 1.5 meters. To provide sufficient opportunities for wildlife crossing under the pipeline, at least every 300 meters along the pipeline, the clearance will be a minimum of 1.5 meters under the pipeline, for a minimum of 10 meters of pipeline length to ensure safe passage of the small mammals in the island (see http://www.bda-inc.com/wordpress/BDA-Resources/FINAL_BDA%20Wildlife%20Crossings%20Handbook_032510.pdf and https://open.alberta.ca/dataset/0f2c4421-7a65-4656-a3ff-360e5c69836f/resource/7bb5dc14-884c-4ef8-be1e-dd1cf5900c58/download/2014-Above-Ground-Pipeline-Wildlife-Crossing-Directive-Updated-Feb-03-2014.pdf).
- Tree barriers surrounding the perimeter of Project components will be maintained; and
- Temporary laydown areas will be replanted with native species as soon as possible after construction

1.5.7 Artificial Lighting Management

Impacts due to artificial lighting at night for wildlife are wide ranging. In the natural world, light serves as an information source to wildlife and artificial lighting can provide misleading cues (Gaston et al., 2013)[1]. Impacts include changes to behavior that occur at night, such as foraging, reproduction and migration of fauna, such as the endangered Black-capped Petrel. Artificial nighttime lighting can also disrupt plants through disruption of the natural day-night cycle and can affect the circadian rhythms of animals. Night lighting can cause significant mortality to insects (Longcore and Rich, 2004)[2] and even negatively impact pollination, resulting in less fruit production and impacts on the terrestrial food chain as well as ecosystem services (pollination benefits to people). While exact impacts to particular species are often unstudied, it is reasonable to assume that adding significant amounts of nighttime light to a formerly dark area will result in some ecological impacts.

The Project will implement measures to minimize the impacts due to artificial nighttime lighting, which will be designed to ensure lighting is placed strategically and implemented throughout the duration of the Project lifetime. The Project will consider light intensity and configuration, spacing, height, and directionality to reduce the intensity and spillage of light to minimize overall illumination. The following measures will be implemented to minimize the impacts of artificial nighttime lighting:

- Reduce the duration of light to extent possible via the use of timers and motion detectors;
- Avoid ultraviolet (UV) light and shorter wavelength light;
- Use low wattage lamps (<70 Watts (W));
- Use yellow light or red light that does not contain blue, violet, or UV wavelengths, as these attract fewer insects than UV or bluish/white lights;
- Plan and design light intensity and configuration, spacing, height, and directionality to reduce the intensity and spillage of light to minimize overall illumination;
- Use light only when needed and preferably turn off lights during times of peak bird migration;
- Ensure there are light-exclusion zones within the Project property;
- Avoid upward pointing lights and install directional accessories on existing light units to direct light away from sensitive areas and minimize light spill, if necessary; and
- Adapt mitigation measures if lights are shown to have an impact based on bird, bat, and invertebrate monitoring reports.

1.5.8 Noise and Vibration Mitigation

Noise impacts from the Project construction is expected to impact nearby fauna due to its magnitude and duration, which will occur for at least one reproductive cycle. Therefore, the Project will implement measures to minimize the impacts due to noise and vibration for each Project phase.

[1] Gaston, K.J., Bennie, J., Davies, T.W., Hopkins, J. 2013. The Ecological impacts of nighttime light pollution: a mechanistic appraisal.

[2] Longcore, T. and Rich, C. Ecological light Pollution. Frontiers in Ecology and the Environment. Vol. 2. 191-198.

During Construction phase:

- Implement Noise Management Plan to provide a framework for addressing construction noise levels within IFC EHS limits;
- Adopt construction works Best Management Practice (BMP) and Best Available Technology practices;
- Use well maintained equipment to reduce noise emissions;
- Implement noise screening in areas where sensitive receivers are located, and assess the use of sound barriers when not simultaneous to hurricane season;
- Maintain existing trees and vegetation along Project boundaries and undeveloped areas;
- Restrict high noise activities to daylight hours (7 am to 5 pm), where possible;
- Sequence drilling operations so that the vibration-intensive activities do not occur simultaneously;
- Install sound-suppressive devices such as silencers and mufflers on heavy equipment and trucks as necessary;
- Install shock absorbers on drill machinery, as necessary; and
- Where applicable, avoid well blow venting and drilling during breeding season of birds and bats (end of January to August).

During Operations Phase:

- Adjust air-cooled condenser units speed drives to reduce noise if necessary;
- Ensure and maintain all fixed and mobile equipment in good working order; and
- Maintain tree barriers and plant dense vegetation near air cooler condensers.

1.5.9 Invasive Species Management

Invasive species are considered the greatest threat to biodiversity in geographically and evolutionarily isolated systems such as islands of the Caribbean, due to their unique endemism and high vulnerability (Kairo *et al.,* 2003)[3]. Several examples of invasive species that have been brought to the island include lemon grass (*Cymbopogon citratus,* wild ginger (*Hedychium coronarium)* and the Puerto Rican Crested Anole (*Anolis cristatellus).* Early detection and control of species invasions are more likely to prove effective and sustainable than remediation measures. Following with Article 8 of the Convention of Biological Diversity, DGDC will implement measures to “prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species” (CBD, 1992).

In addition to following the Dominica entry port control measures and regulations against pests and invasive species, the Project will implement the following measures to avoid and mitigate possible introductions of invasive flora and fauna:

- Machinery and vehicles will be cleaned upon entry/exit, and any soil brought on or off site screened for invasive species or plant pathogens.
- Disturbed areas will be rehabilitated at the earliest opportunity with native and endemic species to minimize the establishment of invasive plant species;

[3] Kairo, M., Ali, B., Cheesman, O., Haysom, K. and Murphy, S., 2003. Invasive species threats in the Caribbean Region. Report to the Nature Conservancy, Arlington

- Source areas such as vehicle parking and construction lay down areas will be kept clean of invasive plants to minimize the presence of seeds that can be dispersed unintentionally;
- Prohibit the use of pesticides or herbicides on site; and
- Regular and ongoing monitoring of the presence of invasive plant species will be conducted within construction and rehabilitated sites and removal operations implemented according to the results.

1.5.10 Worker Education and Conduct

To minimize disturbance and harassment to wildlife or extraction and damage to plants, DGDC will implement the Workers Safety, Health and Environmental Policies and Procedures and train workers regarding the importance of limiting interactions for with plants and animals.

The Workers Safety, Health and Environmental Policies and Procedures establishes Health and Safety instructions and regulations in regards to hunting and harassment, prevention of wildlife vehicle collisions, and safety procedures when finding injured, sick or trapped wildlife. These measures are included in the mitigation measures below.

To mitigate potential impacts of increased access to the Project site and a potential increase in hunting of wildlife, the following management and mitigation measures will be implemented:

- Inductions/tool-box talks for staff will include reference to measures required to protect biodiversity, including:
  - Restrictions and prohibitions on harassment, hunting, trapping, gathering, buying, and/or selling of flora and fauna species (included contractors) on the project site;
  - Construction workers should be oriented not to engage in any illegal hunting or poaching in the project area and must be made aware of Dominica's Wildlife Laws;
  - Information on species present within the area, especially endangered or threatened species;
  - Procedures regarding how to proceed if alive, injured, or dead animals are found;
  - Delimitation of work areas; and
  - Information regarding appropriate behavior prior to beginning construction.
- Install signs along roads which indicate speed limits, as well as speed bumps;
- Along roads frequently crossed by animals, DGDC and its contractors will install wildlife crossing signs within the Project;
- Prohibit the possession of personal firearms or other hunting weapons by personnel and contractors within the Project area; and
- Procedures for flora and fauna incident reporting and follow up.

1.5.11 Protected Area and Area of Conservation Importance

The Morne Trois Pitons WHS has been designated for its OUV, including as 'one of the very rare and largely intact forest areas remaining in the Insular Caribbean', within 'a largely undisturbed setting of stunning scenic value' (TBC 2020). Although the Project will not directly impact the Morne Trois Pitons National Park (MTPNP) and World Heritage Site (WHS), as the footprint falls outside of this protected area, potential impacts may be received due to noise and potential increases in hunting. The UNESCO Mission Report (UNESCO, 2017b) considered that habitat loss required for the construction of the power plant and installation of the pipeline could negatively impact the red-necked parrot, and potentially other threatened species. Mitigation measures will minimise habitat loss in the vicinity of the Project infrastructure and no

habitat loss will take place within the WHS. Ongoing close engagement with the World Heritage Commission is recommended to ensure concerns are appropriately considered and addressed.

The Project will commit to the following actions:

- Participation and collaboration with the Management Committee and western sub-committee of the Park to maintain a buffer zone management plan for MTPNP WHS;
- Support proposed activities and programs to implement the objectives of the buffer zone;
- Participation, collaboration and support of an initiative to restore bare ground and forest cover; and
- Collaborate and support community awareness programs and monitoring of key biodiversity values within the buffer zone and WHS.

DGDC will monitor flora, mammals, birds, amphibians, reptiles, fish and aquatic invertebrates with special focus for species of concern listed in section 1.3 within the BAOI (refer to details in section 1.8). As the BAOI includes 11.8 ha of the MTPNP WHS and an additional 22.7 ha of the buffer boundary, monitoring will include the presence of at least four additional priority species supported by habitat in MTPNP and considered threatened by IUCN, the giant ditch frog (*Leptodactylus fallax)*, imperial parrot (*Amazona imperialis*), forest thrush (*Turdus lherminieri*), and a species of tree frog (*Eleutherodactylus amplinympha*).

1.6 Roles and Responsibilities

All contractors are required to incorporate these mitigation measures and management controls into their own procedures and work plans. The Engineering, Procurement and Construction (EPC) for each Project component (well pads, reinjection pipeline, power plant, and associated infrastructure) and all operation mitigation measures recommended in the ESIA will be the responsibility of the Operation and Maintenance (O&M) Contractor. DGDC's Environmental Coordinator will be responsible for verifying monitoring of mitigation measures implemented.

DGDC will provide oversight to Contractors to ensure that the mitigation measures and controls are implemented and that measurements comply with the standards listed in Section 1.4 of this BMP. This will be achieved through planned periodic inspections, audits of Project sites, and the implementation of monitoring programs. DGDC's Project Manager and Environmental Coordinator will be responsible for maintaining records of corrective actions and associated reports. They will also be responsible for supervising the implementation of corrective actions and/or training programs to avoid the repetition of non-conformities and non-compliance with standards.

1.7 Summary Table of Verification of Mitigation Measures and Key Performance Indicators

Table 1-1 presents the impact avoidance, minimization, and mitigation activities that are specific to biodiversity to be implemented during the pre-construction, construction, and operations phases of the Project. Impacts and mitigation measures are summarized here that include the Jacobs ESIA (2018), Eclipse ESIA (2020), the Habitat and Biodiversity Management plan, and additional measures defined per impacts in the Addendum to the ESIA.

Table 1-1: Summary of Biodiversity Impacts, Mitigation Measures, Timing, Monitoring, KPIs, and Responsibilities

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
Clearing of vegetation during construction of Project Infrastructure	Direct loss and disturbance of vegetation, secondary natural forest, and terrestrial wildlife habitat	Minimize	Minimization of Project Footprint	Pre-construction	Documentation of project footprint	Project footprint reduced to 4.6 ha	DGDC/Environmental Coordinator and EPC Contractor
		Avoid	Avoid removal of trees, where possible, and vegetation along Project boundaries and in undeveloped areas	Construction	Daily vegetation clearing reports	Vegetation disturbance is limited to RoW and footprint	DGDC/Environmental Coordinator; and EPC contractor
		Avoid and Minimize	Minimize impacts by demarcating area of removal with fences to avoid “creep” into surrounding areas and have technical specialist implement best-practice vegetation clearing methods	Construction	Daily vegetation clearing reports	100% of minimization measures are implemented successfully	DGDC/Environmental Coordinator and specialized contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
		Avoid and Minimize	Employ an environmental/ biodiversity construction monitor during site preparation activities to ensure proper implementation of the measures defined herein, identify potential unforeseen impacts to terrestrial, and to apply adaptive management where needed to minimize impacts on vegetation and wildlife, particularly rare species	Pre-construction	Daily reports documenting the day's activities and findings	Specialist hired with biology/environmental training	DGDC
		Restore	Restore and revegetate temporary laydown areas post construction with native trees and shrubs	Post-construction and operations	Revegetation activity reports	100% revegetation of temporary laydown areas with native species	DGDC/Environmental Coordinator,
		Offset	Implement the Habitat	Operations	■ Forest cover	Goals for offset plan are	DGDC/Environmental

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
			Management Plan		monitoring reports ■ Restoration management reports	achieved; all identified areas impacted by Hurricane Maria are restored/ reforested	Coordinador, EPC or O&M Contractor
	Mortality, Injury and Disturbance to Fauna	Avoid and minimize	Pre-clearing surveys will deter fauna from Project clearing areas using acoustic deterring methods	Pre-construction	Pre-clearing activity reports and records	■ 100% Implementation of humane wildlife acoustic deterring devices ■ Number of species recorded in database	DGDC/Environmental Coordinator, contracted wildlife specialists
		Avoid and minimize	Implement a Chytrid Prevention protocol when handling all amphibians	Pre-construction	Pre-clearing activity reports and records	Use of a Chytrid prevention protocol	Contracted wildlife specialists
		Avoid	Conduct bat roost census and implement humane physical or acoustic exclusion measures to	Pre-construction	Bat roost census reports and records	100% Implementation of humane exclusion measures for existing bat roosts	DGDC/Environmental Coordinator and contracted bat specialist

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
			keep bats away from site				
		Avoid and Minimize	Rescue and relocate sessile species to undisturbed sites	Pre-construction	Rescue and relocation records to be prepared for all individuals	■ Identification and successful translocation of sessile fauna from the pad sites prior to site preparation activities ■ No mortality during rescue and relocation	DGDC/Environmental Coordinator, contracted wildlife specialists
		Avoid	Avoid vegetation clearing and site preparation activities, as feasible, between January and August to avoid impacts on bird breeding season	Construction	Daily vegetation clearing reports	No nests impacted	DGDC/Environmental Coordinator and EPC Contractor
	Spread invasive and exotic plant species in temporary laydown areas	Avoid, Minimize	Revegetation and restoration of temporary laydown areas with native and endemic species	Operations	Revegetation activity reports	100% revegetation of temporary laydown areas with native species	DGDC/Environmental Coordinator

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
Vehicular traffic and use of heavy machinery along access roads	Direct mortality or injury of wildlife	Avoid	Assess areas for frequent wildlife crossing, install wildlife crossing signs and speed bumps	Construction and Operations	Photographic documentation of signs; wildlife-vehicle incident reporting	■ 100% of wildlife crossing signs installed along Project property, if necessary ■ No injury or mortality of wildlife due to Project-related traffic	DGDC/Environmental Coordinator and EPC Contractor
		Minimize	Implement Road Safety Plan in regard to traffic (*i*.e. Install road signs and enforce speed limit)	Construction and Operations	Photographic documentation of signs; wildlife-vehicle incident reporting	■ 100% of road signs installed along Project property	DGDC/Environmental Coordinator and EPC Contractor
		Avoid	Induction tool-box talks include importance of Road Safety Plan in regard to wildlife	Construction and Operations	Photographic documentation of talks and ESMS reporting documentation	■ All staff attend tool-box talks ■ No injury or mortality of wildlife due to Project-related traffic	DGDC/Environmental Coordinator and EPC Contractor
	Spread invasive and exotic plant species in	Avoid	Inspection of all equipment with arrival of	Pre-construction	Inspection reports	100% of inspection of all foreign	DGDC/Environmental Coordinator

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
	temporary laydown areas		overseas equipment following port regulations	and construction		equipment and supplies	and EPC Contractor
		Avoid	Machinery and vehicles cleaned upon entry/exit,	Construction and Operations	Vehicle and parking area washing logs	100% cleaning and clearing of all invasive species	DGDC/Environmental Coordinator and EPC Contractor
	Traffic and site preparation activities may create dust	Minimize	Regular watering of Project areas to minimize dust	Construction	Documentation of Project footprint through monitoring.	No vegetation degradation from dust accumulation as documented through monitoring.	DGDC/Environmental Coordinator and EPC Contractor
Transportation of equipment, and soil off/onsite	Introduce invasive insect pests and flora that could cause disturbance to natural vegetation species in the BAOI	Avoid	Screening of soil brought on or off site for invasive species or plant pathogens.	Construction and Operations	Soil management records	100% screening of all soil	DGDC/Environmental Coordinator and EPC Contractor
Operation of the drill rig, blow testing, and other construction activities	Generated air emissions which could adversely affect susceptible wildlife	Avoid and minimize	Implement air quality management plan and monitor air quality to	Construction	Air quality monitoring reports	Air quality does not exceed IFC EHS thresholds	DGDC/Environmental Coordinator and EPC Contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
			meet IFC EHS standards				
	High Noise levels causing wildlife displacement and mask acoustic calling, thus affecting mating and feeding behaviors, within the BAOI	Minimize	Install sound-suppressive devices and/or screens where necessary	Construction	Photographic documentation; pre-drilling and construction preparation reports	NA	DGDC/Environmental Coordinator and EPC Contractor
		Minimize	Maintain vegetation barriers surrounding Project Area	Construction	Vegetation clearing daily reports	Vegetation disturbance is limited to well and injection pad sites	DGDC/Environmental Coordinator and EPC Contractor
		Minimize	Provide regular maintenance to all vehicles and Install silencers to vehicles and heavy equipment	Construction and Operation	Maintenance and inspection logs	Vehicle noise does not cause exceedance of IFC EHS noise thresholds	DGDC/Environmental Coordinator and EPC Contractor
		Avoid	Avoid drilling and steam blow testing, as feasible, between January and August to avoid impacts on maternity colonies of bats, and parrot breeding season	Construction	Scheduled construction timeline;	■ No abandonment of breeding territories in and around the Project ■ No significant population decrease in threatened	DGDC/Environmental Coordinator and EPC Contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
						Red-neck Amazon colonies surrounding Project site	
		Avoid and Minimize	Survey areas for existing bat roosts and implement humane physical or acoustic exclusion measures to keep bats away from site	Pre-construction	Bat survey census reports and records	100% of roosts are cleared prior to construction, if found within Project boundaries	DGDC/Environmental Coordinator and contracted bat specialist
	Generation of localized vibrations sufficient to harm ground- dwelling terrestrial wildlife.	Minimize	Assess the need of a shock absorber, or damper on the drill	Construction	NA	Vibration ground disturbance is monitored	DGDC/Environmental Coordinator, drilling contractor
		Minimize	Sequence drilling operations so that the vibration-intensive activities do not occur simultaneously	Construction	Scheduled drilling timeline	Drilling timeline is schedule to reduce overlap of drilling activities, as feasible	DGDC/Environmental Coordinator, Drilling contractor
		Avoid/Minimize	Implement pre-construction surveys to relocate ground	Pre-construction	Pre-clearing activity reports and records; Rescue and	■ Identification and successful translocation	DGDC/Environmental Coordinator

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
			dwelling wildlife from the activity sites to the extent practicable		relocation records	of sessile ground fauna from the pad sites prior to site preparation activities ■ No mortality during rescue and relocation	
Operation of air cooler condenser fans	High Noise levels causing wildlife displacement and mask acoustic calling adjacent to the Project	Minimize	Adjust air-cooled condenser units speed drives to reduce noise if necessary;	Operations	Operations noise monitoring logs	Operations noise is monitored and speeds are adjusted, if necessary	DGDC/Environmental Coordinator and EPC Contractor
		Minimize	Maintain tree barriers and dense vegetation near air cooler condensers.	Operations	Vegetation clearing and revegetation activity reports	Vegetation disturbance is reduced to well and injection pad sites	DGDC/Environmental Coordinator and EPC Contractor
Artificial Night lighting during construction and operations	Introduced artificial night lighting could act as attractants for night-migrating or nocturnal species, increasing the potential for collision with	Minimize	■ Assess and design light intensity and configuration, spacing, height, and directionality to reduce the intensity and spillage of	Pre-construction	NA	No impacts to birds and bats due to artificial light night	DGDC/Environmental Coordinator and EPC Contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
	lighting structures, increased energy expenditure, or increased predation		light to minimize overall illumination				
		Minimize	■ Minimize the amount of artificial lighting used at the pad sites with the following: ■ Use directional lighting (downward facing lighting) and direction accessories ■ Avoid the use of UV light	Pre-construction	Lighting design	■ Assessment of all lighting structures and areas ■ Demonstrated reduction of impacts for nocturnal fauna, including bats, birds and mortality to insects.	DGDC/Environmental Coordinator and EPC Contractor
Installation of a brine ponds	Holding of geothermal fluids may cause injury or mortality to terrestrial wildlife	Avoid	Installation of screen or nets over the brine collection pond to prevent wildlife contact with fluids	Construction and Operations	Photographic documentation	No mortality or injury to fauna associated with brine pond	DGDC/Environmental Coordinator and EPC Contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
Worker Harassment	Disturbance, injury and mortality to fauna and flora	Avoid/Minimize	Provide training to Project field staff on the biodiversity features of the Project area, particularly the rare and endemic species potentially present in the area, wildlife management, and the procedures defined in this Biodiversity Management Plan	Worker Induction, tool-box talks	Documentation of Training provided to Staff, provision of written training materials, and attendance records	■ 100% of workers trained	DGDC/Environmental Coordinator and EPC Contractor
		Avoid/Minimize	Implement Worker Safety, Health and Environment Plan and procedures which prohibits wildlife hunting activities, poaching, or any form of harassment	Worker Induction, and pre-construction	Documentation of induction training provided to staff	100% worker attendance of trainings and safety inductions	DGDC/Environmental Coordinator and EPC Contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
	Disturbance, injury and mortality to fauna and flora	Avoid/Minimize	Installation of no disturbance, no hunting or harassment of wildlife signs in work areas	Pre-construction	Photographic documentation	Signs installed in frequently viewed areas	DGDC/Environmental Coordinator
Solid and liquid Hazardous and non-hazardous waste	Injury and mortality to fauna and flora, and destruction of habitat	Minimize and avoid	■ Implement waste management and hazardous waste management plans ■ Ensure standard safe storage measures for n-pentane	Construction and operations	■ Documentation of Storage facilities for waste ■ Waste maintenance logs	■ Use of Designated waste facilities ■ 100% of workers following waste management procedures ■ Water quality standards do not exceed IFC EHS Thresholds	DGDC/Environmental Coordinator and EPC Contractor
Pollutants and surface water runoff	Destruction of habitat quality and mortality to fauna	Avoid and minimize	Implement standard construction site practices to avoid surface runoff	Construction and operations	■ Construction site maintenance logs ■ Photographic documentation	■ Water quality standards do not exceed IFC EHS Thresholds	DGDC/Environmental Coordinator and EPC Contractor

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
		Avoid and minimize	Install sediment barriers	Construction and operations	■ Construction site maintenance logs ■ Photographic documentation	■ No evidence of sedimentation in rivers and stream below Project ■ Water quality standards do not exceed IFC EHS Thresholds	
Indirect Impacts to MTPNP WHS or habitat downstream of Project	Noise impacts, increased hunting and reduced ecological connectivity	Minimize and restore	Participate, collaborate and support Management committee and sub-management committee of WHS buffer zone to i) support and coordinate proposed activities and programs, ii) assist in maintenance, iii) Provide monitoring research of key biodiversity	Operations	■ Photographic documentation ■ Meeting attendance	■ 100% support and participation in buffer zone management and maintenance programs	DGDC

Source of Impact	Impact	Mitigation hierarchy	Mitigation Measure	Timing	Monitoring	KPI	Responsibility
			values (threatened and endemic species) and support, and iv) participate in community public awareness programs. Implement standard construction site practices and sedimentation barriers to avoid surface runoff Implement waste management plan and air quality management plan Maintain vegetation barriers along perimeter of footprint Installation of no disturbance, no hunting or harassment of wildlife signs in work areas				

1.8 No Net Loss (NNL) Biodiversity Monitoring and Reporting

DGDC will monitor the flora and fauna within the BAOI to assess effectiveness of mitigation measures and evaluate impacts on flora, fauna, and the MTPNP WHS. Monitoring of the biodiversity priority values within the BAOI will demonstrate No Net Loss (NNL) with regards to biodiversity, as per IFC PS 6. NNL will be quantified and compared to baseline data collected by Caraïbes Environnement Développement & Collaborators in 2015, and Eclipse Inc. in 2017 and 2020.

DGDC will hire local field specialist to design specific monitoring protocols for each taxonomic group and components based on the recommended framework found in Table 1-2. Specialists will analyze data using baseline field data to compare and quantify NNL. It is recommended that contracted specialists include baseline survey locations in monitoring design for adequate and statistically relevant comparisons.

Table 1-2. Summary of Biodiversity Values to Monitor to demonstrate NNL

Biodiversity Priority Value/ Parameter	Metrics	Frequency
Revegetation and reforestation of riparian and forest habitat impacted by Hurricane Maria	■ Percent vegetation cover over time ■ Flora species richness ■	■ Annually during construction and Operations up to year 5
Avifauna, with focus on Red-necked Amazon (*Amazona arausiaca*)	■ Species richness ■ Abundance ■ Presence of *A. arausiaca*	■ Biannually during construction ■ Annually during operations up to year 5
Bats	■ Species richness ■ Abundance	■ Pre-construction Baseline census ■ Annually during construction ■ Annually during operations up to year 3
Reptiles	■ Species richness ■ Abundance	■ Annually during construction and operations up to year 5
Amphibians	■ Species richness ■ Abundance ■ Number of tadpoles	■ Biannually during construction ■ Annually during operations up to year 5
Fish and aquatic invertebrates	■ Species richness ■ Abundance ■ Presence of invertebrate ecological indicators	■ Biannually during construction ■ Annually during operations up to year 3

2. EROSION AND SEDIMENT CONTROL PLAN

2.1 Introduction

The Erosion and Sediment Control Plan (ESCP) has the purpose of ensuring the reduction of the project's potential impacts on the soils and the water resources in its area of influence, as well as documenting and monitoring the mitigation measures that will be implemented. The plan includes methods that will guide the personnel involved in the project to manage, mitigate and / or avoid (as much as possible) adverse effects with regards to soils. In general, erosion and sediment control is part of the design for construction activities that the contractor must prepare for any project.

2.1.1 Objective

They key objective of this Plan is to ensure that the effects of erosion and sedimentation on the environment are minimized by minimizing soil disturbance, degradation and erosion resulting from Project activities. The more general objectives of this plan include:

- Comply with the relevant country regulatory requirements;
- Avoid and control soil erosion and contamination;
- Follow best international practices guidelines;
- Define the procedures, integrated controls and mitigation measures to be used in construction activities and project operation phases that have the potential to cause adverse impacts;
- Define the roles and responsibilities for the implementation of this Plan; and
- Define procedures for monitoring the efficiency of the mitigation measures, the generation of reports, interventions, and the adaptation of the plan.

2.1.2 Scope of Application

This procedure will apply during the development of DGDC's activities and during the Project's life cycle (construction, operations and decommissioning). It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's Environmental and Social Management System (ESMS) policies and procedures, which are aligned to international best practices.

The Erosion and Sediment Control Plan includes measures to ensure that direct impacts (land disturbance) are limited to the works area, and that secondary impacts do not impact adjacent areas. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation or as a contract amendment, if the Company was contracted before the creation of the ESMP, and used as a basis for all specific Erosion and Sediment Control Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

2.2 Roles and Responsibilities

In order to properly implement the Erosion and Sediment Control Plan, DGDC requires the involvement of the people listed in Table 2-1.

Table 2-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Erosion and Sediment Control Plan
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Erosion and Sediment Control Plan
Head of Environmental, Social and Governance (ESG)	■ Assure the correct implementation of the Erosion and Sediment Control Plan
ESG Manager	■ Assure the correct implementation of the Erosion and Sediment Control Plan ■ Update the Erosion and Sediment Control Plan ■ Review and approve the contractor project-specific Erosion and Sediment Control Plan
Environmental Coordinator or H&S Manager	■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining DGDC's KPIs. In addition, ensure the internal coordination to follow the Erosion and Sediment Control Plan
Contractor Company	■ Develop a project-specific Erosion and Sediment Control Plan
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Erosion and Sediment Control Plan

2.2.1 Construction

Contractors are required to incorporate proposed mitigation measures and management controls in their own procedures and work plans, and in the Management Plans for each project. Their roles and responsibilities with regards to monitoring and implementation of mitigation measures will be clearly defined in these plans.

2.2.2 Operation

Monitoring of the condition of stormwater management structures will be performed during the routine site inspections to be performed by the Plant Managers. Any corrective actions will be implemented by the site General Maintenance personnel.

2.3 Key Impacts

The earth movement activities during land clearance and construction can lead to erosion, landslides, and sedimentation which can have the following impacts:

- Airborne dust
- Damage to native plants
- Pollution to local waterways and harm to aquatic animals within the local waterways
- Increase in flooding conditions.

Construction activities at the site include:

- Site clearing for drilling pads, plant infrastructure, and pipelines

- Movement of heavy equipment
- Construction of infrastructure
- Installation of pipelines

Once sites have been restored and/or rehabilitated, no erosion or sedimentation is expected during operational activities.

2.4 Mitigation Measures

2.4.1 Pre-Construction

During the design stage, erosion and sediment control measures will be included in the Project design to control runoff from construction areas. These designs will include temporary (for construction) as well permanent drainage systems (construction and operation), and will include gulleys and stormwater conveyance systems with gentle slopes with the purpose of diverting stormwater away from the project infrastructure in a manner which does not cause soil erosion or sedimentation. Deforestation and site clearance activities will be minimized to the extent possible.

2.4.2 Construction

The EPC Contractor will develop an Erosion and Sediment Control Procedure that they and all Subcontractors will implement during all Project construction works. The Erosion and Sediment Control Procedure will incorporate a Landslide Management Procedure, which will contain measures to reduce potential impacts of landslides (slope stabilization, planting, sandbags etc.), and Stormwater Management Procedures (SMP).

In order to reduce erosion and sedimentation during Construction, the following general mitigation measures should be applied:

- The laying of overland flow diversion drains and preload fill should be completed preferably during the dry season and prior to the power plant construction earthworks commencing.
- Disturbance area will be minimized and clearly demarcated.
- Works will only be conducted within the works zone.
- Vehicle movements will be restricted to the defined roads/tracks.
- Where possible, works area will be designed to ensure stormwater runoff drains into the site.
- Where runoff from the site is required, it will be via the longest flow path possible to ensure maximum sediment retention. Flows to undisturbed areas will be prioritized.
- Where required, sediment controls will be put in place. These will include, but not be limited to, sediment ditches, regulating dams such as rock check dams, sediment basins, sediment fences and silt socks. Silt curtains, fibrous mats etc. will be placed across as temporary stormwater drains to reduce the efflux velocity of the water and to aid settling of suspended sediment from the water.
- Develop banks and excavation slopes in accordance with the guidelines for geotechnical stability. All soil stockpiles that will not be immediately re-used will be seeded. Temporary stockpiles will be watered as required to suppress dust. Excavated earth should be strongly compacted and cut-off ditches should be dug in erosion prone areas to divert water away for the earthworks and to settling ponds before discharge to nearby water courses.
- Avoid building roads or access roads on slopes greater than 15% as a soil conservation measure.

- Deposit surplus material in previously approved areas or reuse it as fill material.
- Stabilization and progressive reforestation of affected areas with plants and vegetation native to the island.

Once the construction stage is complete, all areas, including access and service roads, which are not necessary for the project's operation will be restored to their original or better conditions.

2.4.2.1 Power Plant Construction

Following surveying of the boundary of the construction pad, diversion drains should be excavated around the perimeter of the site to convey overland flow to appropriate locations downstream. During construction these could be temporary excavations, rock or geotextile lined to reduce erosion.

Direct site runoff should be captured via interceptor ditches and sumps/sediment ponds. In localized areas, sediment runoff could be managed through silt fences. Grading the construction site to ensure runoff is captured and detained in these locations is essential, as its highly likely surface water will be sediment laden and will need some settling before discharge to the nearby Titou Gorge Stream (likely through a decant structure or overflow spillway in a sediment pond).

Any discharges of concentrated flow should be to watercourses that have adequate erosion protection in place to prevent gullying of channels, bank collapse and increased sedimentation downstream. This may require installation of reno mattresses or rock rip rap (adequately sized to convey flows and velocities) at the discharge point. The remaining channel (if it exists) may require further excavation to convey the increased flows, and subsequently the installation of a permanent channel draining from the construction pad settling ponds to the Titou Gorge Stream would be recommended.

Should local water sources be required for meeting some construction demands including vehicle and equipment washdown, the use of a temporary portable storage tank is advised. A 25,000 L plastic tank (3.6 m x 2.8 m) could provide storage for firefighting and water supply, and be topped up from local streams at low abstraction rates (<2 L/s) to minimize environmental impact.

2.4.2.2 Reinjection Pipeline Construction

Along the reinjection pipeline route catchment areas will be kept to small sizes with their own temporary drains and specific treatment devices.

Near stream works will require local sediment controls such as silt fences or downstream sediment traps to reduce the effects of disturbance. Water supply for concrete mixing will be minimal and infrequent, primarily used for support foundations

2.4.3 Operation

The O&M Contractor will develop an Erosion and Sediment Control Procedure that they and all Subcontractors will implement.

The O&M Contractor will ensure the following provisions are satisfied:

- Power plant site and laydown area will have a stormwater system designed to capture and treat any runoff. Stormwater conveyance systems will be adequately maintained in order to ensure stormwater flow does not lead to erosion and sedimentation.
- The power plant’s stormwater system will drain through a sump or settling pond. This would capture any runoff from the pad and settle out rubbish and sediment, while reducing flow velocities.

- Areas of the plant that are at risk of having contaminant discharges (such as oil leaks from vehicles or fluid spills) should be isolated, with their flows first draining through an oil water separator. The outflows from this separator could then drain to the sump/settling pond for further treatment.
- Diversion drains will be installed around the site, the capacity of these drains needs to convey adequate flood events to reduce the likelihood of this occurring.
- Stormwater collected in secondary storage facilities will be discharged once it has been inspected for contamination, at low flow rates through the existing stormwater conveyance systems to allow for infiltration into the ground at the site. If any signs of oil sheen or contamination are observed in the collected stormwater, then it shall be handled in accordance with the Waste Management Plan.
- Sourcing a water supply for firefighting will be infrequent, however would require >500 m^3 stored in a tank.
- The O&M Contractor will ensure a Subsidence Management Plan will be prepared and implemented.

2.5 Monitoring and Reporting

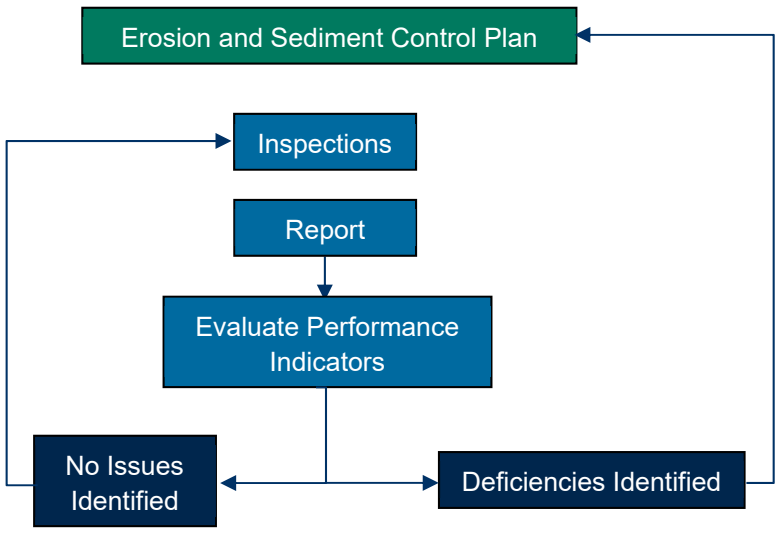
2.5.1 Construction

Each construction Contractor will establish an inspection and audit program that will include:

- Identification of performance indicators to be monitored
- Periodic audits and inspections of the contractors' work front to verify the correct implementation of the erosion and sediment control measures and plans, as well as the installation of erosion control systems.
- Inspections (periodic and unannounced) of clearing activities (felling and pruning).

The following figure present the typical audit process flow diagram for erosion and sediment control.

Figure 2-1: Erosion and Sediment Control Audit Flow Diagram



Monitoring during construction activities will be a constant occurrence, with daily visual inspections of work site. Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff).

If erosion or sedimentation resultant of the construction activities taking place is observed during the site inspections, an incident report for non-conformance of sediment control will prepared. In addition, during week like site inspections, the location and condition of sediment control structures will be recorded.

If necessary, corrective actions will be carried out which will:

- Investigate cause of sediment control failure.
- Review flow path and determine most appropriate controls are in place, additional controls which can be place in-stream and/or changes that can be made to flow path
- Review similar controls on-site (even though these may not have failed) for similarities.

Specific Monitoring requirements are described below.

2.5.1.1 EPC Contractor Responsibilities

The EPC Contractor will ensure the following are satisfied.

- Inspection and maintenance – the ESCP shall specify who is responsible for inspecting all physical elements of the erosion and sediment control measures. These shall be inspected daily to ensure they are installed and working correctly. Any defects shall be rectified before earthworks occur in that area of the site. Accumulated sediment shall be removed from all features when it reaches 25% of the available space. Records of all inspection and maintenance shall be kept.
- Visual inspection of the raw water intake spring -– the ESCP shall specify who is responsible for inspecting the unnamed spring upstream and downstream of the raw water intake works on a daily basis. The inspection should identify whether any visible change in water clarity or turbidity occurs after the works. If visible changes are observed, then modification of site operations and/or site erosion and sediment control practices should be made to reduce the impact. Records of all inspection and response activities shall be kept.
- The EPC Contractor will ensure that visual monitoring is undertaken at raw water intake spring banks and the construction of any diversion channels to identify any areas that may be performing inadequately (resulting in bank collapses, localized erosion hot spots and scouring).
- Prior and during construction it is recommended that monitoring of the flow rates be conducted at the small stream used for abstraction of water.
- The discharge from the sedimentation ponds should be monitored during rain events. At least once per month for total suspended solids for comparison with the discharge limit of 50 mg/l and to determine the effectiveness of the pond.

2.5.1.2 DGDC Responsibilities

The DGDC shall review and approve the EPC Contractor's Erosion and Sediment Control Procedure, including its Stormwater Management Procedure and landslide management procedure.

The DGDC shall continuously audit the EPC Contractors adherence to their Procedure and to monitoring requirements and shall upon finding any non-compliance, provide an immediate written notice to the EPC Contractor requiring them to correct the issue within a defined time period. The DGDC shall monitor that the EPC Contractor does in fact address all such matters; if the DGDC finds the EPC Contractor fails to

address the matters within the time period, the DGDC shall advise the Engineer to the EPC Contract, whom shall consider the issuance of a “stop work” notice.

2.5.2 Operation

The DGDC shall review and approve the O&M Contractor’s Erosion and Sediment Control Procedure.

The DGDC shall continuously audit the O&M Contractor adherence to their Procedures and monitoring requirements and shall upon finding any non-compliance, provide an immediate written notice to the O&M Contractor requiring them to correct the issue within a defined time period. The DGDC shall monitor that the O&M Contractor does in fact address all such matters; if the DGDC finds the O&M Contractor fails to address the matters within the time period, the DGDC shall use whatever mechanisms are available within the O&M Contractor’s contract to enforce compliance.

2.6 Training

All personnel will be trained on:

- General awareness and procedures concerning water management and the prevention of erosion and sedimentation;
- General awareness on key indicators of erosion and sedimentation in order to apply corrective actions;
- The appropriate disposal methods of collected stormwater.

2.7 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 2-2: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method / Tool / Frequency
Soil and Water Resources	No evidence of significant sediment deposition outside the works area.	100% of inspections	Construction	Site inspections, Weekly and after rain events
Soil and Water Resources	Total Suspended Solids in discharges	< 50 mg/L	Construction	Monthly
Soil and Water Resources	No evidence of significant drilling, gullies or other instances of run-off erosion.	100%	Construction and Operation	Site inspections, Construction: Weekly and after rain events, Operation: Monthly and after major rain events.
Soil and Water Resources	Employees must have the appropriate training	100%	Construction and Operation	Documentation verification. Construction: Induction training, Operation: Yearly

3. WASTE MANAGEMENT PLAN

3.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensure the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

To promote the Project's alignment to best international practices, DGDC acknowledges that waste management measures are an essential part of any project. This Waste Management Plan details the steps to minimize environmental impacts through appropriate controls and site inductions of employees and sub-contractors. During the construction and operation phase of the Project, there is the possibility of generating solid, liquid, and hazardous wastes. This plan defines the various potential sources of waste, and sets out how they will be controlled and monitored for the duration of the projects.

3.1.1 Objective

The objective of this plan is to comply with all relevant host-country environmental regulations, reduce waste volume, maximize recycling, reuse and recovery, and prevent any construction waste/litter entering the environment. In general, the objectives of this plan include:

- Avoid and control the generation of waste related to the Project during the construction and operation phases;
- Define the procedures, integrated controls and mitigation measures to be used during the activities from the construction and operation phases that have the potential to affect the environment and the neighboring communities; and
- Comply with the requirements of Dominica regarding the management and disposal of different types of waste.

3.1.2 Scope of Application

This procedure will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

The Waste Management Plan includes measures related to the management of waste derived from Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Waste Management Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

3.2 Roles and Responsibilities

In order to properly implement the Waste Management Plan, DGDC requires the involvement of the people listed below.

Table 3-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Waste Management Plan.

Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Waste Management Plan
Head of ESG	■ Assure the correct implementation of the Waste Management Plan
ESG Manager	■ Assure the correct implementation of the Waste Management Plan ■ Update the Waste Management Plan ■ Review and approve the contractor project-specific waste management plan.
Environmental Coordinator or H&S Manager	■ Ensure the generation of evidence and reports for national compliance and compliance with the IFC PS as well as maintaining DGDC's KPIs. In addition, ensure the internal coordination to follow the Waste Management Plan ■ Approve the Contractors project-specific Waste Management Plan
Contractor Company	■ Develop a project-specific Waste Management Plan
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Waste Management Plan

Typical roles and responsibilities are as follows:

- As project phases unfold, Contractors will be responsible for overseeing the implementation of the waste management plan. Contractors must develop and deliver a list of all waste management procedures, specific to each function.
- Prior to the start of work involving the generation of waste, each Contractor must prepare its own management plans and inspection procedures. Said management plans will be reviewed and approved by the DGDC before the works begin, in order to ensure consistency between the waste management plans. In addition, Contractors will need to comply with all local rules and regulations including the correct classification, disposal and reuse of waste.
- Workplace supervisors will oversee health and safety factors for Contractors in relation to waste management and enforce established environmental incident prevention and safety practices. They will supervise waste activities comprised of classification, control, mitigation, transportation and disposal of all the waste generated by the projects.

3.3 Sources of Impacts

Most of the waste is expected during construction activities. The construction of the Project will generate typical industrial construction waste as well as typical household waste. During operation, personnel at the administration and control building, and the security building will generate typical office and household wastes.

If not properly managed, the potential impacts associated with the waste include:

- Visual impacts in the areas of the construction works;
- Contamination of soils and water resources;
- Impacts on animals;
- Impacts on human health;
- Odors from residues in surrounding areas; and
- Waste due to poor management of recyclable waste.

3.4 Waste Generation

A number of wastes generated during the construction and drilling activities will be transported off-site for disposal. These wastes will be recycled or re-used if possible or transported and disposed of at an appropriate licensed municipal landfill facility or at an alternative approved site.

Where practicable, the following waste types will be recycled or reused:

- Recyclable waste materials such as paper, plastic, wood and glass;
- Scrap metal and other material; and
- Used oil, including lubricating and gear oil; solvents; hydrocarbon based detergents, possible drilling fluids and machine oil.

A licensed waste contractor at licensed waste facilities will dispose of the following wastes:

- Drums and containers containing residues (e.g. lubricating oil) that may have environmental effects; and
- Hazardous wastes.

3.5 Approach

The Project will comply with national laws and standards, as well as with the best international practices for waste management. It is important to minimize the generation and transportation of waste to disposal facilities. The general approach to waste management is described below:

- **Reduction:** Whenever possible, waste generation will be minimized, not only to save money but also to reduce the need for storage and transportation resources, and to promote sustainable work environments. During the construction phase of the projects, the contractors and operators of the construction works will be required to supply specific waste reduction plans and procedures. Workers and operating companies will avoid the excessive use of materials in their work activities. During the operation phase of projects, operators, those responsible for maintenance, and users will work in a sustainable way and encourage members of the surrounding communities to do the same.
- **Reuse:** it is expected that during the construction and operation phases of the projects multiple types of waste will be generated. When possible, all waste material that is salvageable and practical will be reused.
- **Recycling:** Recycling not only reduces the volume of waste, it also protects wildlife, reduces water pollution, creates jobs, and encourages sustainable behavior. When possible, the following items will be recycled: plastics, cans, glass, paper, cardboard, wood and metal. All recycling items will be collected, sorted and stored at the point of origin and placed in different containers or containers clearly identified with markings and colors. After sorting, items will be transported to pre-approved recycling centers.
- **Classification:** all waste materials (hazardous and non-hazardous) will be classified at the point of origin in separate areas for each type of waste. Materials that can be reused or recycled will be separated in additional locations or containers to minimize transportation and disposal of waste. Examples of acceptable materials for recycling were listed above. Hazardous and non-hazardous waste will be monitored and managed separately. Wastes can be classified in the following classifications:

- General Waste: Waste must be considered as general waste when it does not have the characteristics to be classified as special handling waste or it does not have any specification included in the local regulation.
- Special Handling Waste: The waste that is required to have special handle during its disposal process and is not classified as hazardous waste must be considered as special handling waste.
- Hazardous Waste: The waste that have any danger specification or characteristics according to the local regulation, it must be consider as hazardous waste.

- **Disposal Transportation:** Waste materials that cannot be reused, recycled, or salvaged will be taken to a previously designated landfill and waste management facilities. Such facilities must meet and comply with all relevant regulations; as established by local laws. Contractors will document and record all transportation of waste, which will include information such as: type of waste, quantity, source of the waste, location of disposal site, and receiving facilities.

Household waste, such as garbage (bottles, cans, clothing, compost, disposable items, food packaging, food waste, newspapers, magazines, etc.) will be classified at the point of origin, placed in containers of different colors (supplied by contractors during construction and by DGDC during operation) and clearly identified, for example:

- Blue: plastic items;
- Green: cans and glassware;
- Red: residual waste;
- White: paper and cardboard; and
- Brown: food waste.

Industrial waste generated during the construction, operation and decommissioning phases of projects shall be classified at the point of origin in piles or in properly identified steel bins. Examples of the types of industrial solid and liquid wastes expected include:

- Drilling muds;
- Metal waste;
- Plastics;
- Concrete;
- Wood waste;
- Oil-contaminated rags;
- Cardboard;
- Used oils and fats;
- Batteries;
- Paint containers; and
- Residues of chemical compounds (paints, adhesive materials, etc.)

3.6 Mitigation Measures

3.6.1 Construction

3.6.1.1 General Measures for Waste

The EPC Contractor is required to develop a Waste Management Procedure that they and all Subcontractors will implement during all Project construction works. During construction, the EPC Contractor shall be responsible for the clean-up of the Site on a daily basis. The Site is to be kept clean and tidy at all times and clean-up shall be performed throughout the day with a final emphasis on site clean-up at the end of each shift. This clean-up emphasis is to contribute to the safe working conditions at the Site. Disposal of waste materials, both solid and fluid, shall be in accordance with local regulations, good hygiene and good construction practice, including the avoidance of oil or chemical spillage or run-off into local water ways. At a minimum, the waste management plans, specific to each activity, shall demonstrate compliance with the following:

- Particular attention should be given to the use and re-use of materials to minimize waste and, whenever practicable, using materials and products from sustainable sources. The Waste Management Procedure will be prepared in accordance with the waste hierarchy described above.
- Mechanisms for the collection, identification, temporary storage, and transportation of the waste before its transfer outside the Project areas. Waste will be stored in closed containers away from direct sunlight, wind and rain. Waste packaging will be in good condition, undamaged, corrosion and leak free. Waste will be stored so as to prevent or control accidental releases to air, soil, and water resources. In addition, waste will be stored in a manner that prevents the commingling or contact between incompatible wastes. Sufficient space is needed between incompatibles or physical separation such as walls or containment curbs.
- Waste signs will be put on all waste containers and collection areas. Each sign will be highly visible and easily seen by the person using the waste container or area. Each container or waste area sign will be labelled as Domestic Waste, Non-Hazardous Waste or Hazardous Waste and include the responsible person with contact information and how to handle the waste.
- Descriptions of responsible parties, procedures for registering and documentation of waste transfers, options for recycling, treatment and disposal of waste, including the proposed final destinations of those that cannot be reused, and measures for the reuse of waste;
- Solid waste produced during construction will be disposed of in compliance with the regulatory requirements and classification regulations and will be outlined in the Waste Management Procedure. Expected types and estimation of waste volumes should be provided in the Waste Management Procedures. And,
- Trainings for staff awareness.

The following information was obtained from Dominica Solid Waste Management Corporation (DSWMC) and shall be used as a guideline to develop the Waste Management Procedure (DGDC, 2020).

Table 3-2: Waste Management Procedures in Dominica

Waste Material	Disposal Route
Bio solids	Landfill (close to the seaport)
Construction Waste	Metal: to be recycled (exported) HDP plastic: can be recycled in Dominica

Waste Material	Disposal Route
	Other plastics and material : if possible, organize a place for local people to consider re-use (to be duly organized), or landfilled
Cooling water pipe debris	Same as above
Earthworks overburden	Stockpiled for future use, or revegetated as permanent landscaping.
General waste	Recycling and Disposal in landfill
Oils	Oil: to DCP Oily waste (such as oily rags): to the landfill
Vegetation	On site decomposition, burning, or be recycled as fire wood or building material where possible. This is acceptable according to Dominican law.

Note: Burning of chemicals, treated wood, and/or plastic is forbidden

As there is only one certified/recognized waste disposal facility in Dominica managed by the DSWMC, all solid waste to be disposed of off-Site shall be directed to them.

Project contractors will need ensure that the transportation, treatment and/or disposal of waste are done correctly, and will implement the following controls:

- All loads arriving or leaving the site will be appropriately secured.
- Provide information regarding waste management in site-specific inductions, including waste separation and importance of securing vehicle loads.
- Ensure licensed contractors are used to collect controlled wastes.
- Sewage and other effluents generated must be discharged to the septic tanks

3.6.1.2 Excavated Material

The EPC Contractor will make sure that excavated material is managed accordingly, as per the following provisions.

- Excavated topsoil will be transported to, and stockpiled in, designated topsoil storage areas.
- Prior to filling, sub-grade surfaces of depressions will be free of standing water and unsatisfactory soil materials will be removed.
- All unnecessary excavated materials will be transported and deposited outside of the site at an approved facility.
- Where excavated material is suitable to be used for fill and backfill, the material will be segregated and transported to a stockpile location at the construction site.

3.6.1.3 Hazardous Substances and Waste

The EPC Contractor will develop a Hazardous Substances Management Procedure that they and all Subcontractors will implement during all Project construction works. Under the Hazardous Substances Management Procedure, the EPC Contractor will induct their workforce to be made aware of hazardous substances, with reference to the applicable Safety Data Sheets (SDS). They will also attend mandatory safety training in the correct way to use and handle the hazardous substances. Training must be adjusted to be compliant with the laws of Dominica and any other relevant regulations prescribed by the competent authorities. For the handling of hazardous materials and waste:

- Workers will be provided with the appropriate Personal Protective Equipment (PPE) for the handling and use of hazardous substances.
- Emergency facilities, first aid points, clinics, eye wash fountains, emergency showers will be identified/provided where required.
- Other facilities that will be available include fire extinguishers, first aid, communication equipment, emergency doors and alarms.
- Smoking will be restricted to designated areas and all flammable liquids will be kept away from hot work areas.
- Oil, fuel and lubricants storage and dispensing stations will be restricted to established locations. Dispensing area should be located on an impervious surface and under shelter where possible.
- Oily and/or hazardous waste will be separately collected and disposed of by an appropriately licensed operator.
- Storage areas will be identified and unauthorized entry will be controlled by use of barriers warning signs and close supervision. All hazardous substances will be stored away from construction activities under covered stores. 'No Smoking' signs will be placed at these locations and all storage areas shall have minimum one dry powder type fire extinguisher.
- Hazardous and toxic wastes stored on site will be minimized by increasing the frequency of pick-ups where necessary. The producer of hazardous waste may store hazardous and toxic waste on-site for a maximum of 90 days. This period may be extended if the amount that is produced is less than 50 kg/day.
- Adequate ventilation will be provided where volatile wastes are stored.
- Secondary containment should be included wherever liquid wastes and hazardous substance are stored in volumes greater than 220 liters. The available volume of secondary containment should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater), in that specific location.
- Triple rinsing must be undertaken before empty chemical containers can be treated as non-hazardous solid wastes.
- Hazardous waste will be directed to the DSWMC for proper disposal.
- Wherever possible, less hazardous substances will be obtained as substitutes.

DGDC will include contractual clauses that describe the requirements for transportation and disposal instructions so that they are handled appropriately and implement a “cradle-to-grave” approach where documentation for accountability is maintained from removal all the way to final disposal (noting quantities, types of materials, and names of people and companies handling the material).

3.6.1.4 Spill Management

The EPC Contractor will develop an Emergency Response Plan that they and all Subcontractors will implement during all Project construction works. Emergency procedures are provided in DGDC’s Occupational Health and Safety Manual. General mitigation measures include:

- Vehicles will only be fueled in designated locations where the area is hard paved and the collection sump is connected to the wastewater treatment system.
- All vehicle maintenance should be done in garages with appropriate measures to capture oil.

- In the event of a spill during construction, spill containment and clean up equipment will be located onsite. This will include equipment for:
  - Containing and cleaning any spill such as a shovel, broom, drain covers, sandbags, booms and absorbent material. All spills will be handled with compatible materials.
  - Storing and disposing of spilled material such as safe containers, bags, and drums.
  - Protecting the safety of staff through PPE.

Any spills will be contained and cleaned up immediately and disposed of at an approved facility. Soil contaminated with hazardous substance should be excavated, disposed of as a hazardous waste and replaced with clean fill to minimize (or prevent) groundwater contamination with treatment of any stormwater runoff or process water prior to disposal.

Incidents will be recorded and reported following the accident reporting system. This includes the preparation of an Accident/Incident Report.

3.6.2 Operation

The O&M Contractor shall adopt the EPC Contractors Waste Management Procedure and the Hazardous Substances Management Procedure and shall update them to ensure they are relevant for the ongoing operations and maintenance of the Facilities.

3.7 Documentation and Monitoring

Monitoring and “cradle-to-grave” documentation of the generation, transportation, and disposal of waste materials is essential to projects. Measures and standards must be implemented to ensure compliance and to detect non-conformities with said standards. When a nonconformity is detected, a formal investigation will be conducted to determine its origin and establish the necessary corrective actions to comply with the standards.

3.7.1 Contractor Monitoring Responsibilities

In general, Contractors will carry out daily inspections, audits, monitoring and sampling activities (if necessary) in all areas associated with the generation and reception of waste. As part of the Waste Management Procedure a monitoring plan will be developed to inspect waste collection skips, to check wastes are being separated correctly and hazardous wastes are not being included with non-hazardous. Additionally, contractors will keep logs of waste volumes leaving the site with contractors and information on waste’s final destination. Checklists will be prepared for use during the inspections, which will be documented for reporting and monitoring purposes.

Inspection lists will include:

- Any spill, leak, absence of identification markings, containment problems and any other factor that may require corrective actions. The inspections should include a check of the waste skips and bins condition to be sure waste is being held securely and not able to impact the environment through leakage or being blown away. Regular inspections will check that wastes are being separated and deposited in the correct bins for recycling and disposal.
- Records and documentation of any corrective and follow-up action on issues identified.
- All bund enclosures will be regularly inspected for water and sheens prior to the collected water being discharged.

- Monitoring of treated effluent from the Workers' Accommodation package sewage treatment plant shall be performed on a monthly basis.
- Prior and during construction it is recommended that water quality and ecological (i.e. aquatic invertebrates) monitoring will be conducted at the small stream used for abstraction of water.
- Additionally, inspections of all buildings related to the facilities will be carried out in order to establish their current conditions and maintenance, cleanliness and order, the contractor's performance, the classification process, and the assessment of additional processing areas. Housekeeping procedures are provided in DGDC's Occupational Health and Safety Manual.

Any environmental incident involving wastes generated on site will be documented via an incident report. Corrective actions will include:

- Investigate cause of inappropriate waste disposal.
- Review cause of issue and develop response, such as variation to bin size, service schedule or waste separation awareness.
- Implement controls.

3.7.2 DGDC Monitoring Responsibilities

The DGDC shall review and approve the EPC Contractor's Waste Management Procedure and the Hazardous Substances Management Procedure.

The DGDC shall continuously audit the EPC Contractors adherence to their Procedures and shall upon finding any non-compliance, provide an immediate written notice to the EPC Contractor requiring them to correct the issue within a defined time period. The DGDC shall monitor that the EPC Contractor does in fact address all such matters; if the DGDC finds the EPC Contractor fails to address the matters within the time period, the DGDC shall advise the Engineer to the EPC Contract, whom shall consider the issuance of a "stop work" notice.

3.8 Training

Before the start of the construction works for each project, all project personnel must have received specific training for their tasks, as well as participated in various induction training sessions. Employees and contractors will be provided detailed information about the importance of proper waste management, including its classification.

3.9 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 3-3: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Soil and Water Resources - Accidental release of hazardous materials into the environment during transportation and/or storage. Inappropriate disposal of hazardous materials.	Hazardous materials all appropriately disposed	100%	Construction and Operation	Monthly Inspections, Documentation verification.

Soil and Water Resources	Waste materials appropriately disposed at landfill	100%	Construction and Operation	Monthly Inspections, Documentation verification.
Soil and Water Resources	Recycling of all recyclable construction waste	100%	Construction and Operation	Montyhly Inspections, Documentation verification.
Soil and Water Resources	Waste Records maintained on site	100%	Construction and Operation	Monthly Inspections, Documentation verification.
Soil and Water Resources	Employees must have the appropriate training	100%	Construction and Operation	Documentation verification. Construction: Induction training, Operation: Yearly
Soil and Water Resources	% Waste reduction (all types)	Any % reduction	Operation	Documentation, monthly calculations
Soil and Water Resources	Increase in % recycled waste	Any % increase	Operation	Documentation, monthly calculations
Soil and Water Resources	100% Compliance with waste storage areas inspections	100%	Construction and Operation	Monthly Inspections
Soil and Water Resources	100% Compliance with local applicable permits and authorizations	100%	Construction and Operation	Documentation verification

4. WATER MANAGEMENT PLAN

The Dominica Geothermal Development Company (DGDC) is committed to ensuring the compliance of the implementation of the Environmental and Social Management System (ESMS) policies and procedures.

To promote the Project's alignment to best international practices, DGDC acknowledges that water management measures are an essential part of any project. This Water Management Plan details the steps to follow for the identification and the appropriate management of potential impacts to the water resources in the Projects AOI, including the necessary requirement for the water supply and wastewater discharged during activities associated with the geothermal Project.

4.1 Objective

The objective of this plan is to comply with all relevant Dominica environmental regulations, identify project risks on water resources and provide appropriate mitigation. In general, the objectives of this plan include:

- Protect surface and groundwater quantity and quality for local users and the environment
- Define management procedures for all water-related functions including roles and responsibilities and training requirements;
- Comply with applicable regulatory requirements and recommended international guidelines (i.e., WHO, IFC, NOAA);
- Align with international best practices; and
- Define and implement monitoring and reporting procedures

In addition, identify project activities that require water consumption and minimize and monitor water usage, document the water sources, which must be authorized by local entities; and monitor wastewater discharge for compliance with Dominica's Maximum Permissible Limits (MPL).

Stormwater that accumulates in secondary containment areas will be discharged in a way that does not lead to negative impacts and in accordance with the Erosion and Sediment Control Plan. Geothermal fluids extracted from the reservoir will be in closed loop system that will be re-injected into the reservoir and will not be used for any other purpose or released to the environment. Brine ponds have been designed to be able to hold enough geothermal fluids during plant shut-down activities or emergency response. Any geothermal fluids collected in the brine ponds will also be re-injected into the reservoirs.

4.2 Scope of Application

This procedure will apply during the development of DGDC's activities and during the Project's life cycle (construction, operations and decommissioning). It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's Environmental and Social Management System (ESMS) policies and procedures, which are aligned to international best practices.

The Water Management Plan includes measures related to the management of water and wastewater related to Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Water Management Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific Environmental and Social Management Procedures (ESMP) will be applied on the ground. DGDC will review and approve this document before any implementation.

4.3 Roles and Responsibilities

In order to properly implement the Water Management Plan, DGDC shall:

- Ensure the EPC Contractor implements the required heat and fire detection and suppression systems.
- Review and approve the O&M Contractor's Waste Management Procedure and the Hazardous Substances Management Procedure (the Procedures).
- Continuously audit the O&M Contractor adherence to their Procedures and shall upon finding any non-compliance, provide an immediate written notice to the O&M Contractor requiring them to correct the issue within a defined time period. The DGDC shall monitor that the O&M Contractor does in fact address all such matters; if the DGDC finds the O&M Contractor fails to address the matters within the time period, the DGDC shall use whatever mechanisms are available within the O&M Contractor's contract to enforce compliance

Typical roles and responsibilities are as follows:

Table 4-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Water Management Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Water Management Plan
Plant Manager	■ Accountable for ensuring the right resources are available to manage water use and wastewater within the plant and deliver on procedure objectives. ■ Responsible for approving corrective actions to address issues associated with water use and management with a focus on reducing consumptive use, and wastewater discharge. ■ Responsible for ensuring that water use and management and wastewater discharge are compliant with the applicable regulatory requirements and IFC standards. ■ Responsible for appointing a competent person (Engineer or equivalent) to monitor and manage water use within the plant. ■ Responsible for working with Engineers to agree follow up action to address water use and any water leakage issues identified by the Engineer. ■ Responsible for identifying water minimization opportunities such as equipment changes. ■ Responsible for identifying opportunities for reducing the pollution loading on wastewater discharges.
Environmental Coordinator or H&S Manager	■ Responsible for regular water management and usage monitoring, including analyzing the data to identify trends in water use (e.g. is water use in summer significantly higher due to raised air temperatures) and reporting results to the Plant Manager. ■ Responsible for meeting maintenance schedules for the septic system and any associated equipment. ■ Responsible for recommending, submitting to, and coordinating with the Plant Manager any identified changes/upgrades in response to any issues identified by the water usage survey program. ■ Responsible for identifying and responding to increased water use and water leakage, working with the Plant Manager. ■ Responsible for reviewing changes to the equipment that might require change management procedures and investigation.

	■ Responsible for engaging suitably competent persons and contractors to undertake work to rectifying any leaks or other water and wastewater associated faults or maintenance. ■ Approve the Contractors site specific Management Procedures.
Contractor Company	■ Develop a project-specific Water Management Procedure aligned with this Water Management Plan.
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in this Water Management Plan.

4.4 Activities

Most of the water use is expected during construction activities. The construction of the Project would require water during well drilling and filling the firewater tank, and for the portable worker restrooms and workers camps. During operation, utility water will be required for the administration and control building.

Most of the wastewater generated on-site will be sanitary sewage resulting from the portable restroom facilities during construction and from the restrooms and kitchens in the administration and control building, and the security building during operation. Wastewater from equipment cleaning and process areas will pass through an oil interceptor prior to being discharged to the stormwater system.

4.4.1 Water

4.4.1.1 Construction

Facility and Site Construction

During construction activities, potable water for contractor will be sourced from a nearby stream as shown in the Figure below. DGDC will submit an authorization application to the “Minister for Housing Lands Settlement and Water Resource Management” for water abstraction. The EPC Contractor shall be responsible for the design, execution and completion of the raw water intake structure and piping required to transfer to the Site.

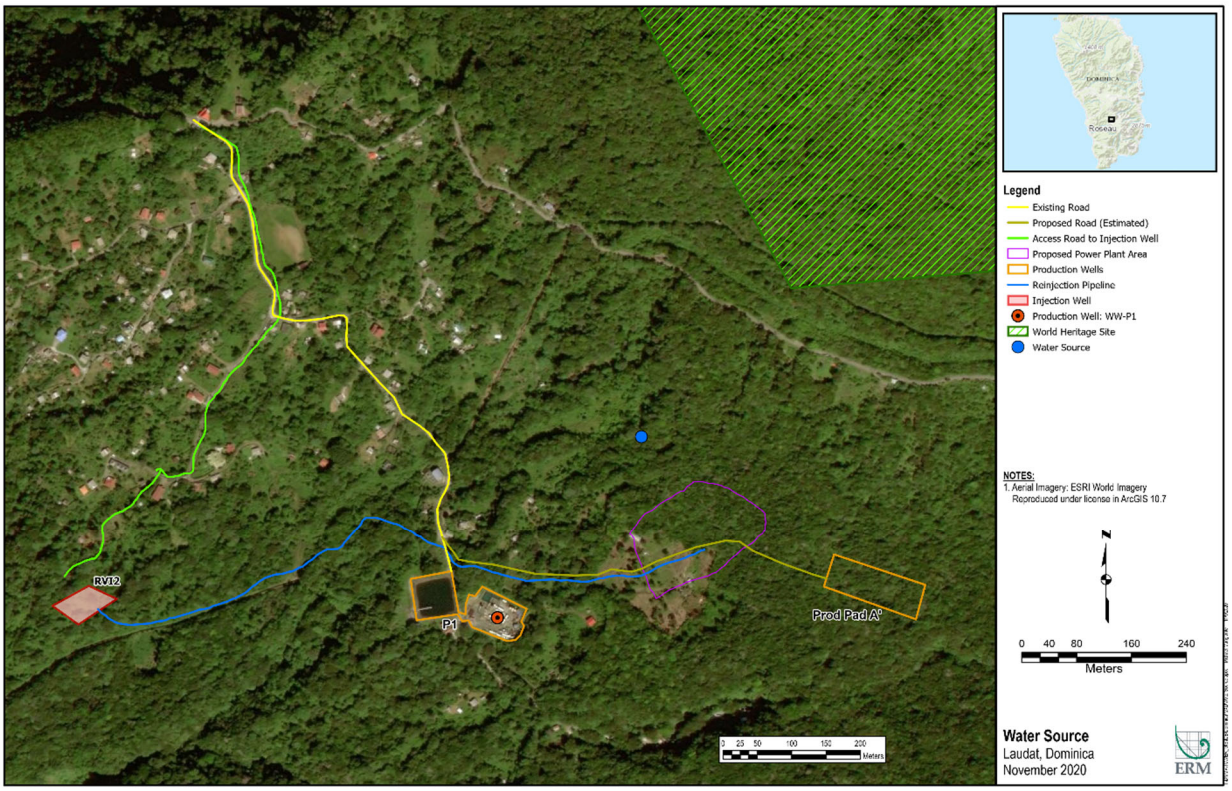


Figure 4-1: Proposed Water Source Location

Water take limits are as provided in the table below.

Table 4-2: Proposed Water Take Limits

Duration	Quantity	Unit
Daily	10,000	Liters
Monthly	200,000	Liters
Maximum Instant	5	Liters/second

Source: Jacobs, 2018.

No maintenance activities shall be performed on site. Vehicle and equipment washing on-site will be prohibited. In addition, the contractor must:

- Properly store and use of fuel and hazard materials so that they do not come into contact with water;
- Control soil erosion in construction areas (by use of hay bales and silt fences);
- Monitor and periodically remove accumulated silt from any sediment control ponds for proper disposal (landfill);

- Construct diversion drains and bunds to divert clean runoff away from construction areas and prevent contaminated water entering local water sources.

Well Drilling

Drilling Muds

Drilling will be conducted using water based drilling muds rather than oil based. Drill cuttings will flow into a temporary mud pit where drill cuttings are settled prior to the mud being recirculated back into the borehole. During short-term well testing, the mud is evacuated from the borehole into the temporary mud pits. Settled solids will be disposed of at the landfill while liquids will be re-injected into the reservoir. Once the storage ponds area available, fluid produced during testing activities would be directed into the storage ponds on-site prior to re-injection. During long term testing, when an injection well is then available, the produced fluid would be immediately re-injected via the injection wells. In order to prevent contamination of the drilling fluids, the contractor will:

- Recycle drilling muds where possible;
- Design adequate capacity ponds to manage waste water;
- Line ponds with HDPE/impermeable lining, and regularly check for rips and tears. Ponds will be regularly cleared of silt;
- Lining, casing and grouting the drilling wells;
- Reinjection of water (geothermal fluids) to avoid discharge of well brines to surface water
- Route effluent fluids to settling ponds; and
- Create bunded areas in low lying land around injection pads and provide diversion channels around these bunded areas.

Measurement of Water Intake

During drilling activities, the contractor will measure the amount of water supplied and discharged and will not go over the water take limits provided above. This information must be registered with the additional information described below:

- Description of the activity where water is consumed;
- The maximum permissible amount or the local equivalent of water discharged established by the internationally accepted regulatory organisms;
- Monthly amount of water consumed and discharged

In addition, the contractor must manage the potential circumstances where water is consumed or discharged (i.e. consumption reduction plans or strategies), and mitigate the potential water discharges by applying measures to control and reduce them.

Groundwater

Other than the geothermal fluid to be used for the plant, there will be no other use of groundwater at the facility. Wells will be designed to employ deep set surface casing to prevent blowouts (the uncontrolled discharge of deep aquifer water/steam into the upper aquifer or surface).

4.4.1.2 Operation

The water source to be used during operation remains unknown. Water to be used at the site during operation will be supplied by Dominica's Water and Sewerage Company Ltd. (DOWASCO). The options currently being considered are:

- Option 1. Extend the existing 2" line to the geothermal plant site. This is about 1,200 m, and would deliver potable water at a rate of approximately 8 m^3/hr
- Option 2. Pump water from Titou Gorge to the plant site. The water would be extracted below the DOMLEC intake point, to minimize interference with DOMLEC's systems. The flow in the Gorge can support the target flow rate (10 m^3/hr).
- Option 3: Truck water to the site

Selection of the final option is dependent on water capacity which is currently being assessed by DOWASCO.

Measurement of Water Intake

Depending on the water source option selected, unless water is trucked to the site, a water meter will be installed at the intake from the main prior to the water entering the facility. This water meter will measure and record the inlet water flow rate and calculate the total cumulative water flow/volumes. The measurement will be continuous and data will be recorded on a continuous basis.

Water Use Monitoring

The water usage for the plant as a whole will be calculated at least monthly based on the volumes of water abstracted from the local water main.

Consumption values will be compared to design calculations as well as previously recorded consumption values for those same operating conditions and the source(s) of any net loss/gain identified. Changes in consumption are accounted for to allow opportunities to identify leaks as well as to reduce consumptive use.

Recording of Leaks/Opportunities to Reduce Consumptive Use

By the implementation of a regular water monitoring program as well as facility inspections by the Engineers as part of relevant operational and maintenance procedures, significant leaks are identified and recorded, including their location, duration and approximate volumes of water lost. Corrective actions/nature of repairs undertaken are also recorded by the Engineers. Opportunities for reduction in consumptive water use are identified by the Environmental Department where possible and as part of annual environmental improvement initiatives.

4.4.2 Wastewater

4.4.2.1 Construction

Sanitary Sewage

Domestic wastewater from amenities at the power plant site including the worker's camp will need be collected and treated in a package plant to meet discharge requirements. The EPC Contractor will need to maintain the package plant and associated effluent disposal system to meet international guidelines discharge criteria (see section on Discharge Criteria below) and to prevent odor or other nuisance to the community during the period of construction. The EPC Contractor will typically be responsible for

decommissioning and removing the unit at the end of the construction period. All wastewater should be collected prior to discharge.

Portable toilets will be installed and used by workers to prevent contamination of waterways during construction of the reinjection pipeline.

Drilling

Drilling and injection works have the potential to affect water resources quality if geothermal liquid, wash water, mud and drill cuttings (collectively referred to as process wastewater) are not managed properly. Process wastewater resulting from the drilling will be re-injected into the reservoir once solids have been settled out in the sump pumps. Drilling muds will be disposed of at the local landfill. No onsite disposal of any waste material is allowed. No hazardous waste material is allowed to be disposed of at the local landfill. Any characteristic or listed hazardous waste produced by the drilling contractor will be containerized and disposed accordingly.

Discharge Criteria

Although the Project will not discharge directly to a neighboring water body, ESIA specifies that the water bodies near the site, such as the Roseau and Blanc rivers are of “good” quality (Jacobs, 2018). In order to prevent any potential impacts to area water bodies, sanitary sewage from restroom facilities and kitchens will be treated via a package plant for disposal. The package plant discharge would be to a sand filter or similar medium that allows the treated effluent to infiltrate to ground below the soil surface and receive further treatment. This infiltration system will be located close to the edge of the power plant area to maximize distances to watercourses. Although a specific permit is not required, plant design details will need to be included in the development application to be submitted by DGDC (or the EPC on behalf of DGDC) to be approved by the Ministry of Housing & Urban Development prior to construction.

Stormwater and any water collected from the settling ponds will be discharged via surface flow for infiltration to the ground from the stormwater collection system post treatment by settling ponds and/or oil interceptors (if required). Effluents from oil interceptors, settling ponds and package plant should meet the following criteria, as specified in Table 1.3.1 of the General IFC EHS Guidelines. Minimum parameters to be measured for each type of discharge are specified in the table below.

Table 4-3: IFC EHS Guidelines Water Discharge Criteria

Pollutant	Unit	Limit	Oil interceptor	Settling pond	Package plant
pH	pH	6 - 9			X
Biological Oxygen Demand - BOD	mg/l	30			X
Chemical Oxygen Demand - COD	mg/l	125			X
Total Nitrogen	mg/l	10			X
Total Phosphorus	mg/l	2			X
Oil and grease	mg/l	10	X		
Total Suspended Solids	mg/l	50		X	X

Total Coliform Bacteria	MPN*/ 100 ml	400			X

* MPN : Most Probable Number.

Temperature of wastewater prior to discharge should not result in an increase greater than 3°C of ambient temperature of the receiving surface water.

The effectiveness of the settling pond on sediment should be undertaken during construction and ongoing operations, with spot samples assessed for Total Suspended Solids (TSS) at the inlet and outlet locations. Imhoff settling cones offer a cheap and viable method for quick onsite estimates of TSS from the inlet and outlet.

Prohibitions

Any illicit discharges of industrial wastewater or chemicals/hazardous materials into the portable sanitary facilities is strictly prohibited. Equipment and vehicle washing is not allowed to be performed on-site.

4.4.2.2 Operation

Septic System

A septic system would be installed onsite for treatment of sanitary sewage. This septic system will be:

- Properly designed and installed in accordance with local regulations and guidance to prevent any hazard to public health or contamination of land, surface or groundwater.
- Well maintained to allow effective operation.
- Installed in an area with sufficient soil percolation for the design wastewater loading rate.
- Installed in an area of stable soils that are nearly level, well drained, and permeable, with enough separation between the drain field and the groundwater table or other receiving waters.

Prohibitions

Any illicit discharges of industrial wastewater or chemicals/hazardous materials into the sanitary sewer system is strictly prohibited.

Maintenance

The facility's septic system will have to be operated, cleaned and maintained by a licensed contractor based on the schedule recommended by the manufacturer. There are no wastewater treatment facilities available on the Island, therefore pumped solids will be disposed of at the designated area of the landfill.

4.4.3 Stormwater

4.4.3.1 Construction

Stormwater will be diverted from the construction areas in accordance with the Erosion and Sediment Control Plan in order to avoid stormwater coming in contact with exposed soils or construction equipment. Stormwater collected in secondary containment areas will be checked for oil sheens and any signs of contamination before being discharged to the surrounding surface to allow for infiltration into the ground. The laying of overland flow diversion drains and preload fill should be completed preferable during the dry season and prior to the power plant construction earthworks commencing.

Drainage water collection and treatment systems should be installed as a priority to prevent discharge to the adjacent rivers and streams. If there are signs of contamination, the stormwater will be pumped out of the secondary containment areas and collected, transported, treated or sent to disposal in compliance with the federal, state or municipal regulations.

4.4.3.2 Operation

Stormwater collected in secondary containment areas will be checked for oil sheens and any signs of contamination before being discharged to the surrounding surface to allow for infiltration into the ground.

If there are signs of contamination, the stormwater will be pumped out of the secondary containment areas and collected, transported, treated or sent to disposal in compliance with the federal, state or municipal regulations.

4.5 Documentation and Monitoring

Implementation of this procedure is reviewed through internal and external (when applicable and available) audit results and other inspection processes.

4.5.1 Construction

During drilling activities, there will be daily site inspections and audit reports which shall be kept on-file. There will be no discharges of untreated water. Prepare Daily Geological Reports (DGR) which include a description of the cuttings and water use. In the event there is a discharge of untreated water or drilling muds, an incident report will be filled.

The EPC Contractor monitoring activities during construction will include:

- Regularly inspecting all bund enclosures for water and sheens prior to the collected water being discharged.
- Monitoring of treated effluent from the Workers' Accommodation package sewage treatment plant on a monthly basis.
- Monitoring at the small stream used for abstraction of water prior to and during construction for water quality and ecological indicators (i.e. aquatic invertebrates).
- As indicated above, measurements of water intakes will be performed and documents will be maintained on-site. Waste logs will also be maintained on-site.

4.5.2 Operation

Monthly reports on water usage would be maintained on-site to monitor water usage. Maintenance and inspection logs will be maintained on-site. There are no regulatory requirements to submit summary reports on water usage or wastewater to the Government.

Any permits relating to water supply will be maintained on site indefinitely.

Any wastewater resulting from industrial activities onsite will have to be disposed of off-site. Maintenance logs for the septic system will have to be maintained on site indefinitely.

4.6 Training

All activities will consider the reduction and adequate management of water consumption. All personnel will be trained to on

- General awareness and procedures concerning water management and conservation

- Emergency procedures in case of water leaks
- The appropriate disposal methods of hazardous materials or industrial wastewater to ensure they are not disposed of in the facility's sanitary sewer system.

4.7 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 4-4: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool
Water Resources	% Water consumption	Any % reduction	Construction and Operation	Record quantity of water consumed and timing of consumption
Water Resources	% Water savings	Any % savings	Construction and Operation	Record quantity of water consumed and timing of consumption
Soil and Water Resources	Daily Drilling Report (DDR) and Daily Geology Reports (DGR)	100% reports kept	Construction	Daily Report Logs
Water Resources	Monthly surface water quality monitoring upstream and downstream of the Project's water source Site – no deterioration in pre-project water quality	No impacts to water quality	Construction	Monthly water quality monitoring
Soil and Water Resources	Wastewater monitoring reports must be under the MPLs	100%	Construction and Operation	Monthly wastewater quality monitoring
Soil and Water Resources	Employees must have the appropriate training	100%	Construction and Operation	

5. AIR EMISSIONS MANAGEMENT PLAN

5.1 Introduction

This procedure details the steps to follow to implement the appropriate measures to prevent, minimize or mitigate the negative impacts on human health and the environment caused by the air emissions pollutants generate from Project activities, as well as to reduce the Greenhouse Gas Emissions.

5.1.1 Objective

The general objective of this Plan is to define framework and actions to implement mitigation measures to control and minimize potential sources of air emissions. This Plan also aims to:

- Comply with applicable local and international air quality standards as listed in the IFC EHS General Guidelines (whichever is more stringent);
- Identify the potential sources of air impacts during Project construction and operation;
- Define construction and operation procedures for emissions management in order to eliminate, minimize and/or mitigate any air emissions ensuring they are controlled to acceptable levels;
- Align with international best practices;
- Define the procedures and mitigation measures to be applied to construction and operation activities that have the potential to produce air emissions;
- Define training and communication commitments; and
- Define the monitoring, reporting, and adaptive management procedures for the Plan.

5.1.2 Scope of Application

The procedures identified in this Plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

This Plan includes measures related to the management of air emissions resulting from Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Air Emissions Management Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

5.2 Roles and Responsibilities

In order to properly implement the Air Emissions Management Plan, DGDC requires the involvement of the people listed below.

Table 5-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Noise Management Plan.

Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Air Emissions Management Plan
Head of ESG	■ Assure the correct implementation of the Air Emissions Management Plan
ESG Manager	■ Assure the correct implementation of the Air Emissions Management Plan ■ Update the Air Emissions Management Plan ■ Respond to detections of contaminants of concern ■ Review and approve the contractor project-specific Air Emissions Management Plan
Environmental Coordinator or H&S Manager	■ Oversight and approval of the contractors emissions management plan ■ Ensure the generation of evidence and reports to ensure compliance with the recommended exposure limits as well as maintaining DGDC's KPIs. ■ Ensure the internal coordination to follow the Air Emissions Management Plan
Contractor Company	■ Develop a project-specific Air Emissions Management Plan ■ Develop and implement additional mitigation measures in the event of exceedances to the recommended limits or if a proposed mitigation measure does not result in sufficient air emissions control ■ Ensure that workers have access to personal protective equipment (PPE) and are trained in appropriate use and jobs with potential for exposure to elevated air emissions levels
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Air Emissions Management Plan

Typical roles and responsibilities are as follows:

- As project phases unfold, Contractors will be responsible for overseeing the implementation of the Air Emissions Management Plan. Contractors must develop and deliver a list of all air emissions management procedures, specific to each function. In the event of the detection of an exceedance or if a control measure does not result in sufficient air emissions control, Contractors will work with DGDC to identify and implement additional control measures to address the issue.
- Prior to the start of construction activities, each Contractor must prepare its own management plans and inspection procedures. Said management plans will be reviewed and approved by the DGDC before the works begin, in order to ensure consistency between this management plan.
- Workplace supervisors will ensure that air emissions management measures and BMPs are implemented prior to commencing Project activities and oversee health and safety factors for Contractors in relation to air emissions management and enforce established environmental incident prevention and safety practices.

5.3 Sources of Impacts

Project activities could result in the following negative impacts to social and environmental receptors located within the project's area of influence:

- Increase in the generation of gas and particle emissions from equipment, machinery and vehicles (mobile sources) that use hydrocarbons as a fuel source;
- Increase in the emission of vapors and gases from drilling and well testing activities on site;
- Dust emission from areas devoid of vegetation and gaseous emissions from construction equipment and machinery and vehicles that transport materials and/or waste; and

- Generation of vehicular emissions and suspension of particles during the operation phase, due to the circulation of mobile equipment involved in maintenance work.

5.4 National/International Standards

There are no national ambient air quality standards in Dominica; therefore, international limits for ambient air quality levels will be applied. Standards applicable to the Project include:

- The IFC's General Environmental, Health, and Safety (EHS) Guidelines for Air Emissions and Ambient Air Quality,
- The National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (REL);
- Occupational Safety and Health Administrations (OSHA) Permissible Exposure Limits (PEL); and
- Best practices.

The following table presents the guidelines for ambient air quality.

Table 5-2: Guidelines for Ambient Air Quality for Typical Air Pollutants

Compound	Averaging Period	Guideline Value in µg/m^3
Sulfur dioxide (SO_2)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)
	10 minute	500 (guideline)
Nitrogen dioxide (NO_2)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter (PM_{10})	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter ($PM_{2.5}$)	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

Hydrogen sulfide, mercury, and carbon dioxide are the main potential air pollutants associated with geothermal power generation. Potential emissions of these contaminants may occur during well drilling and flow testing activities, and via the open contact condenser / cooling tower systems unless pumped out of

the condenser. Vent mufflers can also be potential sources of hydrogen sulfide emissions, primarily during upset operating conditions when venting is required. Under normal operating conditions, binary technologies (with non-contact condensing technology) have close to zero emissions of hydrogen sulfide or mercury to the atmosphere because of reinjection of all geothermal fluids and gases.

In addition to the possible exposure to the above mentioned contaminants, the geothermal plant will also use and store a working fluid (n-pentane or isopentane) in the equipment. Although this is a closed system, a failure to this system could lead to pentane being released to the immediate surroundings.

The following table provides the NIOSH and OSHA recommended exposure limits to the possible air contaminants that could be released at the Site:

Table 5-3: Exposure Limits to Potential Air Contaminants

Compound	OSHA PEL	NIOSH REL
Hydrogen Sulfide (H_2S)	10 ppm (8-hour Time Weighted Average (TWA)), 50 ppm [10-minute maximum peak]	10 ppm (15 mg/m^3) [10-minute]
n-pentane	120 ppm (10-hour TWA) 610 ppm (15-minute short-term limit)	120 ppm (350 mg/m^3) [15-minute]

5.5 Approach

The Project will comply with the standards identified in Section 5.4, as well as implementation of management practices and mitigation measures identified in the ESIA. It is expected that the majority of the air emissions will be temporary in nature and will be related to construction activities. Typical construction type emissions have to do with fugitive emissions which include dust (particulate matter (PM)) and odors, and other contaminants mainly associated with combustion processes (nitrous oxides (NOx), sulfur dioxide (SO2) and carbon monoxide (CO)). As previously mentioned, hydrogen sulfide and carbon dioxide emissions are possible during well drilling and testing during the construction phase and upset conditions during operations.

The general approach to air emissions management is described below:

- **Minimization:** Whenever possible, air emissions will be minimized at the source.
- **Monitoring:** Monitors will be installed during both the construction and operation phases of the project in order to implement mitigation measures as necessary when contaminants of concern are detected. In case of detection, implement mitigation and response measures.
- **Mitigation:** DGDC will establish procedures for addressing the different emission streams. Procedures include dust control measures, vehicle and equipment specifications and chemical additives to reduce contaminants of concern.

5.6 Management/Mitigation Measures

5.6.1 Dust Control

The most common air pollutant expected during construction activities is the fugitive source emissions of dust, measured as particulate matter (PM). Dust is likely to be released during certain activities (i.e. transport or outdoor storage of solid materials, uncovered land surfaces, or transit on unpaved roads). The EPC Contractor will implement the following dust suppression methods to minimize emissions:

- Watering unpaved roads/temporarily exposed bare soils - Construction dust will be suppressed with water applied by water sprinklers and/or water carts. For access tracks, it is recommended that water is sprayed on roads at least twice a day during the dry periods;
- Material from stockpiles of soil, aggregate, sand etc. prone to being windblown, will be held in bins or other enclosures, and stockpiles of material including soil, and where practicable covered with a tarpaulin;
- Dust on the wheels of vehicles will be removed through wheel washing prior to leaving the site;
- Vehicle speed on the construction site will be set to a maximum of 15 mph to reduce dust release from road surfaces;
- In the event of high winds during dry periods, it may be necessary to cease some construction activities until the wind subsides;
- Reseeding bare soils as soon as possible to establish grass coverage and limit soil dispersion - To reduce windblown material, the EPC Contractor will sow grass seed on soil stockpiles that will remain dormant for more than three months;
- Ensuring all trucks moving materials are covered - When transporting material that is prone to wind blow, vehicles will be equipped with a tarpaulin cover when passing through residential areas;
- Minimize earth movement activities.

5.6.2 Combustion Gases and Mobile Sources

Combustion emissions from equipment, machinery and vehicles used for Project activities include CO, NOx, SO_2, PM and VOCs. In order to minimize these emissions, The Project will ensure that all contractors during construction and DGDC during operation adhere to the following:

- Regardless of the size or type of vehicle in question, fleet owners/operators must apply the mechanical maintenance programs recommended by the manufacturers;
- Drivers will receive training on the advantages of vehicle driving practices that reduce both the risk of accidents and fuel consumption, as well as the importance of avoiding sharp accelerations and respecting speed limits; and
- To the extent possible, the following methods will be considered for reducing potential impacts:
  - Replacement of old vehicles with modern alternatives, with greater energy control;
  - Adaptation of the most used vehicles to cleaner energies, whenever feasible;
  - Installation and maintenance of emission control devices, such as catalytic converters; and
  - Implementation of a periodic vehicle maintenance and repair plan.

5.6.3 Odors and Process Emissions

During construction activities, monitors for hydrogen sulfide and carbon dioxide will be available on the drilling equipment. In addition, monitors will be placed strategically around the site (see Monitoring Section below) to detect any contaminants of concern. Equipment utilized is designed to reduce the possibility of emissions at the source; however, during well flow tests, emissions will not be controlled. Any detections that may cause community complaints, shall be reported to the Environmental Coordinator for action.

During operation, monitors with audible alarms will be in place to detect emissions of contaminants of concern; however, emissions are not expected from the closed binary system.

5.6.4 Greenhouse Gas Emissions

Emission of greenhouse gases (GHG) such as CO_2, methane (CH_4), NOx, and chlorofluorocarbons (CFCs) will be temporary and will come mainly from vehicle and machinery used during construction. In order to reduce GHGs, the measures described above will be applied.

5.7 Air Emissions Monitoring and Response

Air emissions monitoring will occur during two phases of the Project, during construction operation as described below.

5.7.1 Construction

5.7.1.1 Dust and Particles

To determine the effectiveness of dust mitigation measures used during construction, the EPC Contractor will ensure that ambient air monitoring is undertaken on the site boundary.

- Visual dust inspection of the site on a daily basis during the dry season to gauge the effectiveness of dust mitigation measures will occur at least 400 m from construction works.
- Monitoring should be undertaken by a qualified laboratory using appropriate sampling equipment; it should verify that control systems such as dust suppression sprays are operating correctly.
- Visual inspections of cleaning truck tires and road watering activities will also be performed and recorded.
- The results will be reported on a monthly basis and included in publicly available reports.

Site personnel will be trained in identifying potential activities that could lead to dust and particle emissions in order to implement the appropriate preventive measures. As part of good working practice the EPC Contractor will complete routine checks on dust generation from construction activities, and confirm that dust suppression and appropriate storage is being used where required. In addition, a mechanism for complaints regarding dust will be available to locals, and due regard given to any issues raised.

If personnel observe dust and particle emissions during construction activities, they will assess the situation and implement the appropriate mitigation measures as described above.

5.7.1.2 Odors and Process Emissions

Signs of hydrogen sulfide gas include:

- Reduction of mud pH
- Discoloration of mud (to a dark color)
- Rotten egg odor
- Formation of black scale on steel drill pipe

Continuous monitoring and recording of hydrogen sulfide and carbon dioxide will be performed at the locations to be specified by the Contractor. Safety monitoring systems with warning alarms for high emissions of potentially hazardous gases, including H_2S, incorporated at the well sites (e.g. the power plant and reinjection sites), as well as providing direct safety measures in the event of a blowout, will highlight potential H_2S emissions issues which could arise during well commissioning and operation. All personnel and local residents will be made aware of the procedure should an alarm be activated. Specific monitoring procedures for H_2S are provided in the Operational Health and Safety Manual prepared by DGDC.

If hydrogen sulfide gas is detected at levels that will produce unacceptable odors at downwind residences, DGDC will inject abatement chemicals into the drilling rod to reduce hydrogen sulfide emissions to acceptable levels.

DGDC will develop an evacuation plan, and a wind sock will be mounted on site so that plant personnel can move up-wind from a leak.

5.7.2 Operation

5.7.2.1 Dust and Particles

Dust and particle emissions are not expected as a result of operation activities. However, if site activities take place that could disturb soils, the mitigation measures described above will be implemented. Any vehicle carrying materials on site that could potentially lead to dust and particle emissions will be covered as discussed above. Site personnel will be trained in identifying potential activities that could lead to dust and particle emissions in order to implement the appropriate preventive measures.

5.7.2.2 Odors and Process Emissions

The O&M Contractor will ensure the following monitoring is undertaken during operation:

- Ambient monitoring for H_2S can be easily undertaken at sensitive locations (e.g. nearby residential areas) using low-level ambient H_2S monitors such as Odalog, which can be deployed at multiple locations for up to two months at a time.
- Safety monitoring systems with warning alarms for high emissions of potentially hazardous gases, including H_2S, incorporated at the well sites (e.g. the power plant and reinjection sites), as well as providing direct safety measures in the event of a blowout, will highlight potential H2S emissions issues which could arise during well commissioning and operation. All personnel and local residents will be made aware of the procedure should an alarm be activated. Specific monitoring procedures for H_2S are provided in the Operational Health and Safety Manual prepared by DGDC.
- For the Organic Rankine Cycle option, there will be infrared heat detectors and pentane vapor monitors installed at the power plant site around the working fluid condenser/equipment and cooling tower, for early detection of any leaks of pentane or heat sources.
- All heat and pentane sensors if an ORC plant is selected will be checked and calibrated on an annual basis or as per the manufacturer's specifications.

DGDC will develop an evacuation plan, and a wind sock will be mounted on site so that plant personnel can move up-wind from a leak.

5.8 Training

Before the start of the construction, all project personnel identified within Section 2 – Roles and Responsibilities must have received a copy of the Plan and understand their respective responsibilities.

All Project activities will consider the reduction and appropriate management of air emissions. To accomplish this, all Project personnel will be trained in the general awareness and procedures concerning emissions management. Personnel involved with the air emissions generation will receive additional training including refresher and updates to the training. Training will be provided in the implementation of this procedure.

5.9 Documentation and Record Keeping

Evidence of air emissions management will be maintained through monitoring logs.

DGDC will monitor the performance of the EPC Contractor with regards to Air Quality and shall upon finding any non-compliance, provide an immediate written notice to the EPC Contractor requiring them to correct the issue within a defined time period. The DGDC shall monitor that the EPC Contractor does in fact address all such matters; if the DGDC finds the EPC Contractor fails to address the matters within the time period, the DGDC shall advise the Engineer to the EPC Contract, whom shall consider the issuance of a "stop work" notice.

DGDC will monitor the performance of the O&M Contractor through periodic audits.

5.10 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this Plan:

Table 5-4: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Health and Safety	Air emissions monitoring reports must be below recommended levels	100%	Construction and Operation	Monitoring logs / Weekly
Health and Safety	100% of the employees assigned to handled air emissions must have the appropriate training	100%	Construction and Operation	Training documents / Quarterly

6. NOISE MANAGEMENT PLAN

6.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensure the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

This Noise Management Plan (Plan) is designed to control and minimize potential sources of noise during construction and operation of the Project. This Plan describes potential sources of noise during Project construction and operation, noise standards applicable to the Project, and proposed measures and best management procedures (BMP) to be implemented to protect environmental and social receptors from potential adverse impacts associated with the increase of airborne noise.

6.1.1 Objective

The objective of this Plan is to define framework and actions to implement the mitigation to control and minimize potential sources of noise. The following objectives are also part of this Management Plan:

- Comply with applicable local and international noise requirements;
- Identify the potential sources of noise impacts during Project construction and operation;
- Define construction and operation procedures for noise management;
- Align with international best practices;
- Define the procedures and mitigation measures to be applied to construction and operation activities that have the potential to produce noise;
- Define training and communication commitments; and
- Define the monitoring, reporting, and adaptive management procedures for the Plan.

6.1.2 Scope of Application

The procedures identified in this Plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

The Noise Management Plan includes measures related to the management of airborne noise resulting from Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Noise Management Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

6.2 Roles and Responsibilities

In order to properly implement the Noise Management Plan, DGDC requires the involvement of the people listed below.

Table 6-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Noise Management Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Noise Management Plan
Head of ESG	■ Assure the correct implementation of the Noise Management Plan
ESG Manager	■ Assure the correct implementation of the Noise Management Plan ■ Update the Noise Management Plan ■ Respond to noise complaints ■ Review and approve the contractor project-specific noise management plan.
Environmental Coordinator or H&S Manager	■ Ensure the generation of evidence and reports for national compliance and compliance with the IFC PS as well as maintaining DGDC's KPIs. In addition, ensure the internal coordination to follow the Noise Management Plan
Contractor Company	■ Develop a project-specific noise management plan ■ Develop and implement additional noise mitigation measures in the event of noise complaints or if a proposed mitigation measure does not result in sufficient noise control ■ Ensure that workers have access to personal protective equipment (PPE) and are trained in appropriate use and jobs with potential for exposure to elevated noise levels
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Noise Management Plan ■ Use PPE as needed to protect against exposure to elevated noise levels during Project construction and operation

Typical roles and responsibilities are as follows:

- As project phases unfold, Contractors will be responsible for overseeing the implementation of the Noise Management Plan. Contractors must develop and deliver a list of all noise management procedures, specific to each function. In the event of a noise complaint or in the event that a noise control measure does not result in sufficient noise control, Contractors will work with DGDC to identify and implement additional noise control measures to address the noise complaint or ensure sufficient noise control.
- Prior to the start of work involving the generation of airborne noise, each Contractor must prepare its own management plans and inspection procedures. Said management plans will be reviewed and approved by the DGDC before the works begin, in order to ensure consistency between the noise management plans.
- Workplace supervisors will ensure that noise management measures and BMPs are implemented prior to commencing Project activities, oversee health and safety factors for Contractors in relation to noise management, and enforce established environmental incident prevention and safety practices.

6.3 Sources of Impacts

Noise will be generated during Project construction and operation. Construction will involve the use of heavy equipment to clear and grade project parcels, construct the well pads and plant foundations, drill the production well and injection well, perform well testing, install the aboveground production and injection pipelines, assemble and install power plant equipment and related facilities (e.g., control room), and trench and install the underground transmission intertie line. In general, Project construction will proceed in phases

in which one activity is finished before the next activity begins (e.g., clearing and grading will be completed before well pads are constructed); however, some phases could overlap slightly. The majority of the construction activities will occur during daylight hours; however, well drilling and testing will occur 24 hours a day.

During operation, the primary sources of airborne noise will include the power plant equipment, pipelines, and venting during startup and shutdowns. The air-cooled condensers, which will use large fans to force air over thin fans containing the binary system working fluid, will produce the highest equipment levels.

6.4 National and International Standards

There are no national noise standards in Dominica; therefore, international limits for ambient/airborne noise levels will be applied. Legal and numeric standards applicable to the Project include:

- Environmental, Health, and Safety (EHS) Guidelines: Construction and Decommissioning, International Finance Corporation (IFC);
- EHS Guidelines: Noise, IFC
- EHS Guidelines: Geothermal Power Generation, IFC;
- Best practices for occupational noise.

The following table presents the IFC guidelines for ambient noise.

Table 6-2: IFC Guidelines for Ambient Noise

Receptor	Maximum Ambient Noise Level, L_{eq}, 1 hour (dBA)	
	Daytime (07:00-22:00)	Nighttime (22:00-07:00)
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

Source: IFC 2007.
Leq, 1 hour = statistical noise descriptor that represents the equivalent continuous sound pressure level over a 1-hour period;
dBA = A-weighted decibel.

In addition to the guidelines for sound contribution from a source at a receptor, the IFC also indicates that noise associated with a project should not cause the ambient noise level to rise by more than 3 dBA at the nearest off-site receptor.

The United States National Institute for Occupational Safety and Health (NIOSH) recommends that noise be controlled to at or below 85 dBA for an 8-hour exposure (equivalent to a standard workday). For construction or operational tasks where workers may be exposed to noise levels above 85 dBA, PPE is recommended to mitigate the noise exposure.

6.5 Approach

The Project will comply with IFC standards, as well as implementation of management practices and mitigation measures identified in the ESIA. The general approach to noise management is described below:

- **Minimization:** Whenever possible, noise will be minimized at the source by maintaining construction and operational equipment in good working order, and maintaining built-in noise minimization equipment such as mufflers, where applicable. During the construction phase of the Project, the majority of activities will be completed during daytime hours. Engines shall not be started and on-site

activities shall not be undertaken outside of the daytime construction hours. Non noise generating works can be undertaken at staging areas where works are not adjacent to residential receivers. Only well drilling and testing will occur 24 hours a day, 7 days per week.

- **Noise Mitigation (Shielding):** DGDC will use a silencer or rock muffler during all well venting activities. Contractors will need to provide localized noise screening where works are to be conducted within 200 meters (the compliance distance) of any sensitive receivers.

  During Project operation, DGDC will maintaining vegetative buffers and/or planting trees and other dense vegetation between the facility and noise receptors to increase soft ground cover and potential attenuation of noise levels.

- **Landowner Notification:** Provide receptors within 1,000 feet of the project parcels written notice prior to the start of construction that describes the approximate schedule for the construction activities and a contact name and phone number for the construction contractor and DGDC staff person responsible for handling construction-related noise complaints.

- **Noise Monitoring:** DGDC will establish baseline sound levels at the nearby receptors prior to commencing construction, and will monitor noise levels at the nearby receptors during construction and operation. Construction activities should be undertaken in accordance with BS 5228, Code of Practice for Noise Control on Construction and Demolition Sites. All equipment used on site would be required to demonstrate compliance with the noise levels recommended within BS 5228.

- **Noise Complaint Resolution:** DGDC will establish a procedure for receiving noise complaints during Project construction and operation, along with a procedure for complaint resolution. This procedure will identify parties' responsibility for investigating the complaint, establishing a response plan, and ensuring that the response plan resolves the noise complaint.

- **Personal Protective Equipment:** DGDC or its contractors will provide PPE for construction and operational staff and training on how to properly use PPE. PPE will be used during tasks where workers may be exposed to noise levels above 85 dBA to mitigate the noise exposure.

6.6 Management and Mitigation Measures

6.6.1 Construction Noise

Construction works should adopt Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) practices. BMP includes encouragement of a project objective to reduce noise emissions. BATEA practices involve incorporating the most advanced and affordable technology to minimize noise emissions.

To minimize impacts at residential receptors from construction noise, DGDC will require contractors to implement the following noise mitigation measures:

- Provide receptors within 1,000 feet of the project parcels written notice prior to the start of construction that describes the approximate schedule for the construction activities and a contact name and phone number for the construction contractor and DGDC staff person responsible for handling construction-related noise complaints.

- For sensitive receptors such as schools and hospitals that could be affected by the noise and vibrations, the contractor will the contractor will take additional measures and work with the representatives of the school, hospital etc to ensure noise generated is at an acceptable level.

- Appropriate use of all plant and equipment, with reasonable work practices applied, including no extended periods of 'revving', idling or 'warming up' in proximity to existing residential receivers. Any

excessively loud activities should be scheduled during periods of the day when general ambient noise levels are greatest. This would reduce the potential for cumulative noise impacts (relating to worst-case elevated operations) and extended periods of off-site annoyance.

- Minimizing reversing alarm noise emissions from mobile plant and transport truck operations should be considered, provided occupational health and safety requirements are satisfied. Where practicable, site entry and exit points should be managed to limit the need for reversing.
- Construction plant source noise levels should be confirmed prior to the commencement of works to verify construction noise impacts and noise management measures.
- Local residents and landowners are to be notified a minimum of 2 weeks prior to the commencement of construction works. The notification would detail proposed construction works, permitted hours of work and potential noise impacts. This should be done in conjunction with the community liaison officer of DGDC.
- Use a silencer or rock muffler during all well venting activities, including initial cleanout, as feasible.
- Implement the noise management plan that details noise monitoring requirements and noise complaint resolution recommendations.
- Provide PPE for workers completing tasks where noise levels exceed 85 dBA to mitigate the noise exposure.
- Locate haul routes as far as possible from residential receivers.
- Where possible, static construction plant such as generators should be located adjacent to on-site structures to impede noise propagation.

6.6.2 Operational Noise

To minimize facility sound levels and ensure that noise contributions at nearby receptors and increases in ambient noise comply with IFC guidelines, DGDC will ensure the O&M Contractor implement the following mitigation measures:

- Commissioning testing should be conducted during daytime periods only.
- During commissioning testing, temporary localized screening should be erected. Potential noise impact reduction of up to 6 dB(A) is achievable where acoustic screens are located within 5 m of the construction works, be at least 300 mm above the height of the noise source and provide a solid façade impeding line of sight to nearest receivers – any gaps negate noise reduction performance.
- Local residents and landowners should be notified prior to any commissioning testing.
- Maintaining vegetative buffers and/or planting trees and other dense vegetation between the facility and noise receptors to increase soft ground cover and potential attenuation of noise levels.
- Implement the noise management plan that details noise monitoring requirements and noise complaint resolution recommendations.
- Power plant workers will make direct observation of machine maintenance to ensure that any noise-creating faults are treated.
- Provide PPE for workers completing tasks where noise levels exceed 85 dBA to mitigate the noise exposure.

6.7 Noise Monitoring

The EPC Contractor will undertake noise monitoring to evaluate the actual construction noise levels at representative sensitive receiver locations, for example, adjacent to the power plant site. This monitoring should be carried out at the start of the construction of the Project and on a quarterly basis.

Direct observation of machine maintenance should also be made to ensure that any noise-creating faults are repaired. Specific noise monitoring procedures are provided in the Operational Health and Safety Manual prepared by DGDC.

DGDC will monitor the performance of the EPC Contractor. The DGDC shall review and approve the EPC Contractor's Construction Noise Management Plan (CNMP).

The DGDC shall continuously audit the EPC Contractors adherence to the CNMP and shall upon finding any non-compliance, provide an immediate written notice to the EPC Contractor requiring them to correct the issue within a defined time period. The DGDC shall monitor that the EPC Contractor does in fact address all such matters; if the DGDC finds the EPC Contractor fails to address the matters within the time period, the DGDC shall advise the Engineer to the EPC Contract, whom shall consider the issuance of a "stop work" notice.

During operation, the O&M Contractor will measure noise levels on a quarterly basis at the power plant site and the nearest settlements for a duration of at least 48 hours. Results from this monitoring are to be used to assess compliance with any Dominica and the IFC EHS Guidelines (see above) and to be reported to the relevant authorities. Specific noise monitoring procedures are provided in the Operational Health and Safety Manual prepared by DGDC.

Noise monitoring data should also be made available for public access.

6.8 Training and Complaint Resolution

Before the start of the construction, all project personnel identified within Section 6.2 – Roles and Responsibilities must have received a copy of the Plan and understand their respective responsibilities. A summary of required construction noise management practices shall be provided to all staff and contractors and be included during site inductions. The summary should include, as a minimum, the permitted hours of construction work, work site locations and site ingress/egress.

Prior to the start of construction, DGDC will establish a procedure for receiving noise complaints during Project construction and operation, along with a procedure for complaint resolution. This procedure will identify parties' responsibility for investigating the complaint, establishing a response plan, and ensuring that the response plan resolves the noise complaint.

All Project construction and operational staff will be trained regarding proper use of PPE, and will be informed of tasks where noise levels exceed 85 dBA to ensure that PPE is used during completion of these tasks.

6.9 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this Plan:

Table 6-3: Key Performance Indicators

Receptor	Impact	Mitigation Measures	Responsibility	Timing	Monitoring and KPI Frequency
Human Use and Residences	Potential increase in daytime airborne noise during general Project construction	Provide receptors within 1,000 feet of the project parcels written notice prior to the start of construction that describes the approximate schedule for the construction activities and a contact name and phone number for the construction contractor and DGDC staff person responsible for handling construction-related noise complaints, especially for sensitive receptors. Project construction staff will receive appropriate required PPE and training in their use. Hearing protection will be required for any tasks with the potential for exposure to noise levels above 85 dBA or as outlined in the EPC contractor's worker health and safety plan.	Head of ESG/ESG Manager/Environmental Coordinator of H&S Manager/ ESG Manager contractor. Construction Contractor	Construction	Implement noise monitoring described in Section 7 and complaint resolution procedures; Daily site inspection for appropriate PPE use.
Human Use and Residences	Potential increase in daytime and nighttime airborne noise during well drilling/testing	Install an earthen berm between drilling locations and residential receptor locations within 1,000 feet of the drill rig; Provide receptors within 1,000 feet of drilling sites at least two week's advance written notice of the start of well drilling, well venting, and well testing activities; Use a silencer or rock muffler during all well venting activities, including initial cleanout, as feasible. Project construction staff will receive	Head of ESG/ESG Manager/Environmental Coordinator of H&S Manager/ ESG Manager Drilling Contractor	Construction	Implement noise-monitoring requirements described in Section 7. If nighttime noise attributable to well drilling exceed 45 decibels (L_{Aeq}), then additional noise mitigation measures are needed; Implement complaint resolution procedures;

Receptor	Impact	Mitigation Measures	Responsibility	Timing	Monitoring and KPI Frequency
		appropriate required PPE and training in their use. Hearing protection will be required for any tasks with the potential for exposure to noise levels above 85 dBA or as outlined in the EPC contractor's worker health and safety plan.			Daily site inspection for appropriate PPE use.

7. DISASTER RISK AND EMERGENCY MANAGEMENT PLAN

Please see the Disaster Risk and Emergency Management (DREM) Plan prepared by the Dominica Geothermal Development Company (DGDC). The Plan can be downloaded at: https://www.geodominica.dm/download/disaster-risk-and-emergency-management-drem-plan/

8. WELL BLOWOUT PREVENTION PLAN

8.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensure the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

To promote the Project's alignment to best international practices, DGDC acknowledges that well control measures are an essential part to maintaining environmental and social health and safety of any geothermal project. Any uncontrolled flow of steam, brine or other well fluids constitutes a well blowout. Well control is the process of maintaining pressure inside the drilled wellbore in a manner that prevents gas or fluids from underground reservoirs flowing into the wellbore and escaping to the environment in an uncontrolled manner. This Well Blowout Prevention Plan details the steps to follow for the appropriate management of the wells in order to prevent potential impacts from a well blowout in the Projects area of influence (AOI).

8.1.1 Objective

The objective of this plan is to comply with international best practice when it comes to well stability and control by identify project risks and providing appropriate mitigation. In general, the objectives of this plan include:

- Protect the health and safety of drilling, construction, and operating personnel
- Protect surface and groundwater quality for local users and the environment
- Define measures and procedures for blowout prevention functions including roles and responsibilities and training requirements;
- Comply with applicable regulatory requirements and recommended international guidelines and align with international best practices; and
- Define and implement monitoring and reporting procedures

8.1.2 Scope of Application

This procedure will apply during the development of DGDC's activities and during the Project's life cycle (construction, operations and decommissioning). It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

8.2 Roles and Responsibilities

In order to properly implement the Well Blowout Prevention Plan, DGDC requires the involvement of the people listed below.

Table 8-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Well Blowout Prevention Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Well Blowout Prevention Plan.
Head of ESG	■ Ensure the correct implementation of the Well Blowout Prevention Plan.

Role	Responsibilities
ESG Manager	■ Assure the correct implementation of the Well Blowout Prevention Plan ■ Update the Well Blowout Prevention Plan. ■ Review and approve the contractor project-specific well blowout prevention plans.
Environmental Coordinator or H&S Manager	■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining DGDC's KPIs. In addition, ensure the internal coordination to follow the Well Blowout Prevention Plan.
Contractor Company	■ Develop a project-specific Well Blowout Prevention Plan.
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Well Blowout Prevention Plan.

Typical roles and responsibilities are as follows:

8.2.1 Construction

The Drilling Contractor is responsible for the implementation of DGDC's policies and procedures on well control and will:

- Ensure that all personnel are fully aware of Company policies and procedures, and their own roles and responsibilities.
- Ensure tests and drills are carried out as required and their results are recorded and reported DGDC

It is the responsibility of the Contractor Drilling Supervisor to:

- Acquaint himself with the drill site, the drill rig and drill pad;
- Be knowledgeable of H_2S procedures and verify that all personnel on site are suitably equipped and trained.
- Be acquainted with all project contingency plans;
- Keep DGDC fully informed on any well control situations, and continuously discuss upcoming operations with regards to well control and concurrent operations philosophies.
- Ensure that all well operations are conducted with full primary well control, and that necessary kill mud and mud weight building material are present at all times.
- Ensure that early signs of over pressure are detected and recognized.
- Maintain a system of well control data sheets to be ready for immediate use if required.
- Review in detail the drilling and test programs and advise DGDC of any aspects that might cause well control problems.
- Report the results of tests and drills carried out for well control purposes.

The Rig Drilling Engineer will:

- In conjunction with the engineer in charge of drilling muds, monitor mud logging for indications of abnormal pressure zones or lost circulation zones.
- Calculate the mud weights required to control the well, and supervise operations regarding kill mud preparation.
- Monitor and record details of events.

- Supervise formation strength tests.

Engineer in charge of Data Logger:

The Engineer in charge of the Data Logger has the prime responsibility to ensure the following monitoring systems are both fully operational and well maintained:

- Gas detection (including hydrogen sulfide - H_2S and carbon dioxide – CO_2).
- Drilling fluid data: Density, temperature, flow rates (both in and out of the well), resistivity, and surface volumes.
- Drilling parameters: Hook load, weight-on-bit, rotary torque, pump-rate, standpipe (& casing) pressure, and penetration rates.
- Monitor the resistivity and gamma ray readings that is continuously gathered downhole.

In addition, notify the Driller and Drilling Supervisor of any indications from the data being gathered of potential over pressures.

Engineer in charge of Drilling Muds:

The engineering in charge of the drilling muds is responsible for monitoring mud parameters. They will:

- Inform the Rig Driller and the Drilling Supervisor of changes in mud parameters that may indicate potential over pressures.
- Keep the Driller informed of any mud transfers, treatment, or any other act that will change the mud parameters or volume of the active mud system.
- Plan the maintenance of adequate chemical stocks required for well control purposes

8.2.2 Operation

The capacity, integrity, and security of the geothermal wellhead equipment are the responsibility of DGDC's Plant Manager.

8.3 Blowout Preventers

The main function of the blowout prevention equipment is to safely control the flow of fluids at the surface of a well in case of a blowout. The requirements of the blowout prevention stack are to:

- Close the top of the wellbore to prevent the release of fluids or to allow for the safe diversion of these fluids away from the rig and personnel,
- Allow safe, controlled release of shut in, pressured fluids through choke lines and manifolds,
- Allow pumping of fluids (mud or water) into the wellbore through kill lines, and
- Allow vertical movement of the drill pipe without realizing fluids.

8.4 Prevention Activities

8.4.1 Construction

8.4.1.1 Cementing of Casing

All casing strings will be cemented with a quantity of cement sufficient to fill the annular space back to the surface. The cement utilized will be a Class of cement suitable for the environmental factors of the Site as

determined by the ECP Contractor. Cementing the casing is required in order to provide strength to the casing and prevent the movement of fluids into possible fresh water zones.

8.4.1.2 Equipment Testing

Equipment that may be exposed to well pressure will be pressure tested to a low pressure and then to a high pressure. Pressure testing will be conducted on:

- All blowout preventers and related equipment (when installed, prior to drilling out casing shoes, and following repairs or reassembly of the preventers that require disconnecting a pressure seal in the assembly)
- Casing,
- Choke and kill line valves, choke manifold valves, upper and lower kelly cocks, drill pipe safety valves, and inside blowout prevention equipment

All operational components of the blowout prevention equipment will also be function tested at least once a week to verify the components' intended operations. All flange bolts will be inspected at least weekly and retightened as necessary during drilling operations. The auxiliary control systems will be maintained in working order and inspected daily to check the mechanical condition and effectiveness.

In the event of casing failure during testing, the casing must be repaired or recemented until a satisfactory test is obtained. Results of the pressure tests will be documented and submitted to DGDC for safekeeping.

8.4.1.3 Blowout Prevention Equipment and Procedures

Blowout preventers and related well control equipment will be installed, tested immediately after installation using water, and maintained ready for use until drilling operations are completed. The necessary components, such as packing elements and ram rubbers, will be of high-temperature resistant material. All kill lines, blowdown lines, manifolds, and fittings will be steel and have a temperature derated minimum working pressure rating equivalent to the maximum anticipated wellhead surface pressure.

Blowout prevention equipment will be automated with hydraulic actuating systems and accumulators of sufficient capacity to close all of the hydraulically operated equipment with the required minimum pressure remaining on the accumulator (working pressure of 5,000 psi). The equipment also has three manual locking devices with hand wheels extending outside of the rig’s substructure.

The blowout prevention equipment schematic diagram will indicate the minimum size and pressure rating of all components of the wellhead and blowout preventer assembly. All blowout preventers, choke lines, and choke manifolds will be installed above ground level, as will casing heads. The equipment will have a ram type blowout preventers with one set of pipe rams and one set of blind rams.

The accumulator will have sufficient capacity to operate the blowout prevention equipment. Blowout prevention equipment controls will be located in the dog house.

In addition, a full opening drill string safety valve in the open position will be maintained on the rig floor at all times while drilling operations are being conducted. A kelly cock will be installed between the kelly and the swivel.

Using the returning drilling fluid, the automated mud logger and its supporting sensor system continuously survey the changing rock features, formation fluids, and temperature variations and is the first to evaluate the formation of gas and liquid entries that signals the penetration of high temperature/pressure conditions.

8.4.1.4 Design Standards

Well designs, barriers and cementing program were developed with the involvement of a registered Professional Engineer. The following design and testing standards were used for the plant systems:

Table 8-2: Design Standards

Component	Design Standards
Basis of structural Design	Euro norm (EN) 1990
Actions on structures	EN 1991
Design of concrete structures	EN 1992
Design of steel structures	EN 1993, EN 10025 or EN 10210 (hollow sections)
Design of composite steel and concrete structures	EN 1994
Design of timber structures	EN 1995
Design of masonry structures	EN 1996
Geotechnical design	EN 1997
Design of structures for earthquake resistance	EN 1998
Steel for the reinforcement of concrete – Ribbed bars and welded fabric	EN 10080
Concrete - Specification, performance, production and conformity	EN 206
Foundations for Dynamic Equipment	American Concrete Institute (ACI) 351.3R-04
Connections	Deutsches Institute fur Normung (DIN) 931/EN 24014

8.4.1.5 Drilling Fluid

Sufficient drilling fluid materials to ensure well control will be maintained on site and readily accessible for use at all times in two mud tanks. Mud testing and treatment consistent with good operating practice will be performed daily or more frequently as conditions warrant. Mud testing equipment must be maintained on the drilling rig at all times. In addition, there will be mud pit with a functioning alarm as well as high/low level indicators, degassers, and a solids control system.

The temperature of the drilling fluid going into and coming out of the hole will be monitored, read, and recorded on the driller's or mud log for a minimum of every 30 feet of hole drilled below the conductor casing; and a hydrogen sulfide indicator and alarm will be installed in areas suspected or known to contain hydrogen sulfide gas that may reach levels considered dangerous to the health and safety of personnel in the area.

8.4.1.6 Well Control

Before pulling drill pipe, the drilling fluid will be properly conditioned or displaced. The hole will be kept reasonably full at all times; and, in no event will the annular mud level be deeper than 100 feet from the rotary table when coming out of the hole with drill pipe. A mud logger and cooler will be utilized when necessary to maintain mud characteristics for proper well control and hole conditioning.

8.4.1.7 Wellhead Equipment and Testing

In order to complete the wells, all wellhead connections will be fluid pressure tested to the required working pressure rating (see Design Standards above). A certified welder using materials in conformance with the specifications above will perform welding of wellhead connections.

Completed wells will be equipped with a casing head with side outlets, a master valve, production valve, and an expansion spool. All equipment will have a temperature derated working pressure equal to or greater than the surface shut-in pressure of the well at reservoir temperature. Packing, sealing mediums and lubricants will consist of materials or substances that function effectively at, and are resistant to, high temperatures. Wellhead equipment, valves, flanges, and fittings will meet minimum specifications in the Design Standards table above.

8.4.1.8 Supervision

From the time drilling operations are initiated and until the well is completed or decommissioned, a member of the drilling crew or the tool pusher will monitor the rig floor at all times for surveillance purposes, unless the well is secured with blowout preventers or cement plugs.

The operator will use all necessary precautions to keep all wells under control and use trained and competent personnel and properly maintained equipment and materials at all times.

8.4.2 Operation

During operations, wellheads and blowout prevention equipment will be properly maintained and inspected.

There are subsurface risks to casing due to corrosion and scaling. According to current design details, operation parameters in the system will be maintained so that there is no scaling (high temperatures). A well monitoring plan will be prepared once final site conditions are known (see monitoring section below).

Blowout prevention requirements during remedial work, redrills, recompletions and abandonments, in all geothermal wells, will be evaluated and provided for by the same process of consideration required in during new geothermal well drilling.

8.5 Emergency Response

In the event of a well blowout, response measures will require professional judgement; no operation will be undertaken if it involves risk to personnel. A process needs to be developed to respond to these emergencies by the EPC Contractor during Construction and by DGDC during Operation, which needs to include:

1. Measures for protecting the personnel at the site in the event of a well control emergency
2. Notification protocols at the onset of a well emergency
3. Measures to prevent further damage or injury while adequate equipment and personnel are being mobilized

4. Defining the critical information that is required in order to determine the appropriate response level and strategies
5. Organizing personnel and providing guidelines for their roles during the emergency response and the subsequent management
6. Provide guidelines for evacuation, transportation, and preferred medical facilities in the event of physical harm to personnel
7. Pre-selecting sources and developing mobilization plans for personnel, equipment, materials and services typically required for implementation of well control procedures
8. Notification of the appropriate regulatory agencies

In the event primary well control is lost, a series of escalating responses will be planned to regain primary well control by establishing borehole hydrostatic pressure above formation pore pressures:

It is very important to shut-in the well as soon as possible when uncontrolled flow is suspected. The steps will depend on the phase of the drilling activities (for example, while drilling, while tripping, or testing). Standard practices entail:

- The first response is to close the designated blowout preventer
- Ensure the choke is closed
- Open the choke line hydraulic opening valve
- Verify that the well is shut-in and the flow has stopped
- A detailed blowout response procedure and plan will be developed by the drilling contractor for submittal to DGDC prior to initiation of the drilling activities.

8.6 Documentation and Monitoring

8.6.1 Construction

8.6.1.1 Testing

The results of all blowout prevention equipment pressure tests and function tests must be recorded with all available information including the type of test, testing sequence, low and high pressures, duration of each test, and results of each test.

Casing test results must be recorded in the driller's log and maintained after completion. The casing and lap test reports must give a detailed description of the test including mud and cement volumes, lapse of time between running and cementing casing and testing, method of testing, and test results.

The drilling contractor to DGDC will submit all testing results.

8.6.1.2 Monitoring

The driller will monitor the drilling penetration rate and the drilling fluid circulation during drilling activities. The logger will monitor temperature variations, secondary mineralization and formation fluid entries. The temperature of the drilling fluid going into and coming out of the hole will be monitored, read, and recorded on the driller's or mud log. This information will be used to predict irregularities and risks and inform the drilling engineering and drilling supervisor immediately. All drilling and mud logs must also be maintained until completion of the Project.

8.6.2 Operation

During operation, wells need to be monitored for any warning signs of undesirable changes such as decreasing generating capacity due to lower pressure or flow, insufficient injection capacity, or possible operational problems such as scaling or corrosion in the wells or in the surface equipment.

Monitoring programs have to be specifically designed for each geothermal reservoir, because of their individual characteristics and the distinct differences inherent in the metering methodology adopted. Monitoring programs may also have to be revised as time progresses, and more experience is gained, e.g. monitoring frequency of different parameters. A monitoring program will be developed once more information is known about the specific characteristics at the site. Below is a list of directly observable basic aspects included in conventional geothermal monitoring programs:

- Mass discharge histories of production wells (pumping for low-temperature wells).
- Temperature or enthalpy (if two-phase) of fluid produced.
- Water level or wellhead pressure (reflecting reservoir pressure) of production wells.
- Chemical content of water (and steam) produced.
- Injection rate histories of injection wells.
- Temperature of injected water.
- Wellhead pressure (water level) for injection wells.
- Well status through diameter monitoring (caliper logs), injectivity tests and other methods

8.7 Training

8.7.1 Construction

Prior to drilling activities, all tool pushers and drilling superintendents are required to have completed an API, IADC, or similar governing body sanction well control certification program. The certification must be renewed every two years.

While on site, a blowout prevention practice drill must be conducted weekly for each drilling crew and be recorded on the driller's log.

8.7.2 Operation

Frequent pit drills and mock well control drills will be planned and conducted for all plant personnel. Records of all training and drills will be maintained on site for as long as the personnel are employed.

8.8 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 8-3: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/Frequency
Health and Safety	Employees must be in compliance with the training program (weekly)	100%	Construction and operation	Training Records / Weekly

Health and Safety	Employees must be in compliance with the training program (every six months)	100%	Operation	Training Records / Every six months
Health and Safety	Employees must be in compliance with the drills program and been instructed on incorrect actions and/or deficiencies.	100%	Construction and Operation	Training Records / Yearly
Health and Safety	Percentage of workers who have training on safety and emergency response.	100%	Construction and Operation	Training Records / Yearly
Health and Safety	Number of accidents and incidents	Zero incidents	Construction and Operation	Incident Reports / Monthly
Health and Safety	Contractor's compliance with H&S management plans	Compliance with 100% of H&S management plans	Construction and Operation	Regular Site Inspections/Audits (monthly),

9. EMERGENCY RESPONSE PLAN

An Emergency Reponses Plan details actions to be taken for an effective response in the event of the emergencies that could potentially be experienced by the Project, including physical accidents to personnel fires, and sabotage. The Plan also defines the roles and responsibilities during an emergency response. An Operational Health and Safety Plan which includes Emergency Response Procedures under the potential emergency situations that could be experienced by the Project was prepared by DGDC. The Plan can be downloaded at: https://www.geodominica.dm/download/disaster-risk-and-emergency-management-drem-plan/

10. SECURITY MANAGEMENT PLAN

10.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensure the compliance and implementation of the Environmental and Social Management Plans (ESMP) policies and procedures.

The Security Management Plan will assure an effective protection of people, assets, and operations of the Project, in accordance with the World Bank Performance Standards, Human Rights principles, and minimizing any possible impact on local communities.

10.1.1 Objective

The objective of this plan is to establish and define the guidelines that guarantee the protection and Security of the assets and personnel involved in the execution of DGDC's projects and activities.

10.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during projects' life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

10.2 Roles and Responsibilities

In order to properly implement the Labor Conditions and Workers Selection Plan, DGDC requires the involvement of the people listed below.

Table 10-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Review and approve the Security Management Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Security Management Plan.
ESG Manager	■ Ensure the correct implementation of the Security Management Plan. ■ Review and approve the contractor project-specific Security Management Plan.
H&S Manager	■ Ensure the correct implementation of the Security Management Plan.
EHS Representatives[4]	■ Help with the implementation of the Security Management Plan.
Head of Security	■ Manage the security personnel, implement, update and monitor the Security Management Plan.

[4] The EHS Representative will be the main authority on the Project site in charge of Environmental Health and Safety (EHS).

Role	Responsibilities
Security Personnel (Guards, Drivers, etc.)	■ Understand and carry out the activities set out in the Security Management Plan. ■ Develop their work in compliance with all applicable regulations regarding respect for Human Rights (World Bank PS 4). ■ Know how to proceed with complaints and / or claims of interest groups and local communities.
Contractor Company	■ Develop a project-specific Security Management Plan aligned with this Security Management Plan.
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Security Management Plan.

10.3 Activities

At the beginning of the Project, DGDC must identify potential risks or impacts related to physical security, by using the Risk and Impact Identification process, and determine the level of risk of each situation.

The following are the most common situations that DGDC may face during a Project development:

- Material/equipment robbery;
- Presence of unauthorized personnel in the Project;
- Entry or intrusion of personnel within restricted areas;
- Conflicts between workers; and
- Conflicts between Project's workers and local communities.

To prevent this type of risks and impacts from occurring, there are some measures that can be carried out in the DGDC Project:

- Security services;
- Access Control Service for workers, machinery, suppliers, and external visitors;
- Surveillance rounds;
- Communication system with the security service and the police.

These activities may change depending on the results obtained in the risk analysis. When required, these criteria will be included as contractual measures. Risk and Impact Identification and established prevention / mitigation measures will be reviewed periodically or when there are relevant changes, in order to ensure sufficient protection throughout all phases of the Project's life cycle.

For cases in which this type of situation cannot be prevented, there will be specific (and confidential) procedures for action by workers with Security responsibilities, which favor the control of said situations and minimize their possible conditions.

There will be total coordination between the workers responsible for DGDC's Security and the Local Authorities. If necessary and depending on the circumstances, DGDC may require assistance from Local Authorities, and vice versa. Any incident related to Security must be reported and investigated to analyze its possible causes and avoid its recurrence in the future.

10.3.1 Site Security

In order to provide security, DGDC will fence the entire parcel and construct a security guard facility at the entrance gate. Additional security generally consists of cameras and perimeter monitoring by security. DGDC plans to maintain the existing trees, shrubs, and dense vegetation along the site boundaries.

10.3.2 Recruitment for Security Personnel

To assure that the Security Personnel working for DGDC are aligned with best international practices, the hiring of Security Personnel and their performance, will need to meet the following criteria:

- Security Personnel will have full understanding of DGDC's Safety, Health, Environment and Social Standards, World Bank PS 4, DGDC's Code of Conduct, the Basic Principles on the Use of Force and Firearms by Law Enforcement Officials (United Nations) and applicable local legislation in this matter.
- Security Personnel will require to present a completed Use of Force and Human Rights Training certification before they begin to work at the Project.
- Security Personnel will show professionalism in managing expectations and concerns in conflicts in which local communities may be affected.
- DGDC will not hire as Security Personnel any individual who has been involved in cases of abuse of Human Rights.
- Security Personnel will comply with the confidentiality agreements for sensitive information to which they will have access due to their employment position.
- DGDC will provide the necessary material resources to ensure that prevention and defense work strengthens the necessary levels of physical security.
- The performance of the Security Personnel will be monitored, corrective actions will be identified and lessons learned will be implemented.
- An investigation (documented and registered) will be carried out by DGDC of any abusive situation or in which the previously cited principles have been breached. Such cases will entail the necessary disciplinary measures.

Security personnel must have knowledge of the Internal Grievance Mechanism and their labor rights/conditions at all times. DGDC labor conditions are aligned International Finance Corporation (IFC) Performance Standard (PS) 2.

10.3.2.1 Human Rights and Use of Force Training

All security personnel working on the Project will be required to provide a completed human rights and use of force training certification before starting to work at the Project. The Project aims to maintain a work environment that values the respect for human rights and the treatment with fairness and dignity of all people involved in the Project, as well as the external stakeholders. The training will include subjects such as appropriate conduct in different security scenarios, lawful use of force and use of less lethal weapons, and if applicable, the use of firearms. The Project does not expect to have armed security guards, however, this training will still be compulsory for all security personnel.

Instructions will emphasize that "security personnel are permitted to use force only as a matter of last resort and only for preventive and defensive purposes in proportion to the nature and extent of the threat, and in a manner that respects human rights" (IFC, Guidance Note 4). For example, security guards will refrain from verbal or physical harassment of any kind. Lethal force will be used only where other means are unsuccessful, and only to protect human life.

Training programs can be provided by the Project, the security provider, and/or qualified third parties (or a combination of these). When training is designed and delivered by contractors, the Project will periodically review the training agenda, materials, attendance log, and other aspects of the training, and the Head of Security will also attend a training session. The human rights and use of force training certification will be required before starting to work in the Project and a re-fresher training will be required on a yearly basis.

The Human Resources Manager in collaboration with the Head of Security will keep records of all the security guards on site and the necessary documentation proving the training completion (training certificate, specific training curriculum and date of completion).

10.3.3 Training and Information

In addition, employees with Security responsibilities (Guardians, Drivers, etc.) will receive specific training in order to ensure that the response to any dangerous situation is adequate.

These trainings will consider social aspects and respect for Human Rights. Emphasis will be placed on the identification of stakeholders and local communities, their expectations and possible concerns and the associated potential risks.

In addition, Employees with responsibilities in the field of physical security will understand the External Grievance Mechanism Plan to act on it in cases where they interact as a point of contact between the local communities' members and the Project.

10.3.4 Security Guard Functions

The main functions of DGDC's Security Personnel is to ensure and safeguard the Project facilities, as well as material goods of any kind, along with:

- Reduce the possibility of equipment subtraction, deterioration or improper use.
- Control at all times the entry and exit of staff and guards to the site.
- Manage the existing protection systems (fire detection, surveillance and security systems, alarms, etc.);
- Collaborate in evacuation, alarm, firefighting, first aid, transportation of wounded and intervention, etc.
- Immediate communication with Project supervisors and local authorities in case of an incident (the security guard must always have the phone numbers or contact information to communicate the emergency in a timely manner);
- Control the entry and exit of vehicles in access control; and
- Control of poorly parked vehicles.

10.3.5 Site Access Control

For access to the facilities or sites, workers, contractors and visitors must wear an identification badge in a visible place during their stay.

The identification badge must have at least the following information:

- Name of the company;
- Full name of the employee or in the case of visit must be indicated on the badge;
- Number or validity of the badge; and
- Photograph.

The ESG Manager is responsible for coordinating with the Security Personnel the access of contractors, visitors and workers to the Sites. Visitors will also be provided the appropriate PPE.

During the days when there are no assigned tasks or maintenance routines, personnel will not be allowed access to the sites. Access to any person who intends to sell or promote any item or service within the DGDC Sites or facilities is prohibited.

10.3.6 Additional Measures

For security measures regarding unplanned events and emergencies at the Project, see DGDC's Emergency Management Plan. Furthermore, below are some security related additional measures applicable to DGDC's employees, contractors, subcontractors, service providers and visitors to ensure the physical safety of the Project, these measures will be communicated and monitored by the ESG Manager.

- Smoking is prohibited at all the DGDC Installations.
- The entry of weapons is not allowed.
- The introduction, possession and/ or consumption of alcoholic beverages, drugs or narcotic or psychotropic substances on the Project's sites, as well as access to people to the site under their influence is strictly prohibited.
- When noticing any unsafe conditions, the person of the highest rank on the site must inform the EHS Representative.
- Workers or any other people from the Project will not be allowed to carry out any activity if they are not authorized and trained.
- The areas must be kept clean and free of objects that impede the work.
- The EHS Representative will be informed of any people or vehicles outside or outside their work area.
- Al Project staff will be asked to stay alert to unsafe conditions, correct them and notify them immediately.

10.4 Documentation and Monitoring

The Head of Security will keep evidence and will be maintained through the logbooks and minutes of the meetings, and other applicable documents.

10.5 Key Performance Indicators

The Security Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with the Head of Security. The Project will ensure that contractors update their procedures at least once every six months during the first two years and then annually or as needed.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 10-2: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Security Incidents (internal and external)	Number of security incidents per quarter (involving workers)	Zero security incidents If security incidents occur, 100% of the incidents should be	All phases of the Project	Head of Security's Records and Reports, in coordination with

		reported (including how it was solved, lessons learnt and corrective actions).		Contractors / per quarter
	Number of security incidents per quarter (involving community members of other external stakeholders)	Zero security incidents If security incidents occur, 100% of the incidents should be reported (including how it was solved, lessons learnt and corrective actions).	All phases of the Project	External and Internal Grievance Mechanism / per quarter
	Number of grievances from the community related to security at the Project	100% grievances regarding security concerns addressed and solved in a timely manner	All phases of the Project	
Security Trainings	Security personnel trained at the Project (human rights and use of force trainings)	100% of trained security personnel before starting to work at the Project and re-fresher training on a yearly basis	All phases of the Project	DGDC Human Resources Training Records / Yearly
Inspections	Number of inspections per quarter	At least one internal security inspection will be carried out each quarter	All phases of the Project	Head of Security's Records and Reports, in coordination with Contractors / Quarterly

11. OPERATIONAL HEALTH AND SAFETY MANAGEMENT PLAN

A thorough Operational Health and Safety Plan which includes procedures for potential emergency situations that could be experienced by the Project was prepared by DGDC. The Plan can be downloaded at: https://www.geodominica.dm/download/occupational-health-safety-manual/

12. LABOR CONDITIONS AND WORKERS SELECTION PLAN

12.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the Environmental and Social Management Plans (ESMP) policies and procedures, and the World Bank PS 2 standard.

DGDC considers that its employees represent the true competitive advantage and the main asset of the organization. As such, DGDC believes the culture and the way its employees experience the company is essential and will seek through different actions to promote a culture focused on excellence, by relying on its employees, their permanent development over time and access to professional opportunities and personal growth.

The Labor Conditions and Workers Selection Plan aims to create the framework of action to promote mutual benefits and ensure workers are involved with the vision, mission, objectives, principles and organizational values.

12.1.1 Objective

The overall objectives of the Labor Conditions and Workers Selection Plan are to:

- Base the recruitment, selection and hiring of personnel on merit and competitiveness;
- Establish, maintain and improve worker-manager relationship;
- Promote fair treatment, non-discrimination and equal opportunity of workers, and compliance with healthy and safe (H&S) working conditions; and
- Protect workers' wellbeing.

12.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle (drilling, plant construction, commissioning and operations). It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this procedure and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

12.2 Roles and Responsibilities

In order to properly implement the Labor Conditions and Workers Selection Plan, DGDC requires the involvement of the people listed below.

Table 12-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Labor Conditions and Workers Selection Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Labor Conditions and Workers Selection Plan.
Head of ESG	■ Be familiarized with the Labor Conditions and Workers Selection Plan.

ESG Manager	■ Update the Labor Conditions and Workers Selection Plan. ■ Review and approve the contractor project-specific Labor Conditions and Workers Selection Plan.
Calibration Committee	■ Review the evaluation of its collaborators, as established in this plan.
Human Resources Manager	■ Supervise the implementation of the Labor Conditions and Workers Selection Plan among internal stakeholders upon hiring and reinforce it as necessary. ■ Coordinate, together with the Community Liaison Officer, the implementation of the temporary jobs program, according to the present plan. ■ Supervise the Performance Management Process, according to what is stated in this plan.
Community Liaison Officer (CLO)	■ Coordinate, together with the Human Resources Manager, the implementation of the temporary jobs program, according to the present plan.
Contractor Company	■ Develop a project-specific plan aligned with the Labor Conditions and Workers Selection Plan in accordance with the World Bank Performance Standards, particularly PS 2.
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Operational Health and Safety Management Pan.

12.3 Activities

DGDC acknowledges the importance of basic rights of workers and the value of a solid worker-manager relationship, which will be achieved through a fair treat to direct and indirect workers and the provision of health and safety (H&S) working conditions.

In order to do so, DGDC has developed the Labor Conditions and Workers Selection Plan, which is composed of the steps presented herein.

DGDC will undertake vocational training to assist local people in obtaining jobs with the Project.

12.3.1 Working Conditions and Management of Worker Relationship

A constructive worker-management relationship, and by treating workers fairly and providing them with safe and healthy working conditions, DGDC may create tangible benefits, such as enhancement of the efficiency and productivity of its operations.

12.3.2 Human Resources Policy

DGDC, through the Human Resources Manager, will develop, communicate, explain and make accessible to all the Project's workers an integrated Human Resources Policy upon taking employment.

The Human Resources Policy will provide workers with information regarding their rights under the applicable labor law, including their rights related to wages and benefits. It may also include DGDC' vision, mission, objectives, principles and organizational values.

12.3.3 Working Conditions and Terms of Employment

DGDC, the EPC Contractor and all Subcontractors will ensure a transparent hiring process is conducted to help the community to understand strategic staffing decisions for the Project.

DGDC will prepare a vocational training and job opportunity program. This training program will aim at:

- Making aware hard-to-reach groups of job opportunities
- Facilitating the growth and development of new entrepreneurs, both individuals and groups originating from affected communities

- Providing opportunities for women and women's groups to participate in the work force to the extent they are capable, based on their experience and expressed interest, and assist them in having good quality work standards so they can train others and are able to work with other companies in the future

The yearly communication plan maintained by the Community Liaison Officer will be used to that effect.

As part of the recruitment process, the Human Resources Manager will evaluate the candidates' skills in relation to the minimum requirements of the position to be filled. The workforce will be composed of staff with the experience, education, training and the appropriate skills required for their job functions.

To this end, the Human Resources Manager will establish job descriptions based on the essential functions of the position, as well as knowledge, skills and abilities necessary to perform the required functions.

Prior to a hiring being done, the Human Resources Manager will let the new employee know what their role will be, their contribution to the organization and how this translates into the delivery of better services. Moreover, the Human Resources Manager will make sure the new employee is aware of the exact duration of their contract, this will prevent public false accusations against the company or rumors that could affect DGDC' reputation due to the termination of employment.

The Human Resources Manager will document and communicate to all new employees their working conditions and terms of employment, including wage, benefits, holidays, right to unionize in compliance with applicable local laws.

It is for the aforementioned, that DGDC has established an onboarding process that considers, among others, the following elements:

- Rights and duties of the collaborators and all those regulations that govern their behavior;
- Actions that promote a work environment based on mutual respect between men and women;
- Actions aimed to prevent, tackle and eradicate any type of discrimination;
- Specific induction actions when a person joins the company, to align them with the values and responsibilities in the management of their role within the organization;
- Specific actions that allow an adequate reincorporation of those people who are integrated after a prolonged medical leave, parental post-natal leave or some other situation that for a long time has distanced them from the Project;
- Specific actions in the induction of the position when a person changes functions within the organization, assuming new responsibilities and, especially, when it comes to positions of leadership and with responsibility in the direction of the persons, in such a way, to align them with the values and responsibilities in the management of people who are responsible for it.

12.3.4 Worker's Organizations

As Dominica law recognizes workers' rights to reunite, form and join workers' organizations and to bargain collectively, DGDC will comply with national law. In any instances where national law substantially restricts workers' organizations, DGDC will enable alternative means for workers to express themselves and protect their rights regarding working conditions and terms of employment.

In either case described in the prior paragraph, and where national law is silent, DGDC will not discourage workers from forming or joining workers' organizations or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations.

12.3.5 Non-Discrimination and Equal Opportunity

DGDC will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements, it will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to aspects of the employment relationship, including:

- Recruitment and hiring;
- Compensation (including wages and benefits);
- Working conditions and terms of employment;
- Access to training;
- Promotion;
- Termination of employment or retirement; and
- Discipline.

The Human Resources Manager will ensure that the principle of equality is applied to the company's daily development of activities, by eradicating the existence of preferences or differences that may exist due to gender, religion, country of origin, sexual orientation, ethnicity, pregnancy, age, disability, among others. DGDC will comply with national law with regards to encouraging nondiscrimination in employment. If national laws are silent on nondiscrimination in employment, DGDC will meet the conditions stated in the International Finance Corporation's (IFC) Performance Standard (PS) 2 (e.g., freedom of association, abolition of forced labor, equal remuneration).

12.3.6 Gender Equality

DGDC is committed to promoting gender equality and diversity though its actions. It aims to identify opportunities and strategies to improve the workplace, so both women and men can perform their jobs well, and develop action plans to institute new or strengthen existing policies and practices to recruit, retain, and promote more women.

To this regard, DGDC has assumed the following:

- The rates of violence against women, which were included in this study, will also be part of future social studies of the region where the Project is located, so that mitigation actions can emerge if necessary;
- Possible negative impacts that DGDC' actions may generate will be identified, not only in relation to human life, but also in relation to gender;
- Prioritize the cultural factors of each area, to evaluate important issues:
  - Active female voice;
  - Women's loneliness in the case of male migration to work;
  - The types of help and assistance required these women to become an active voice in employee engagement.
- A safe environment for women in the communities will be created or them to express themselves without fear of reprisal;
- All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and older focus groups, if necessary;
- A welcoming environment will be created for motherhood needs (e.g. take her child to a meeting);

- No woman, child, or elderly person will be put at risk or suffer any kind of reprisal;
- All of DGDC' partnerships on the construction site will have contractual clauses to the detriment of:
  - Zero tolerance for moral and sexual harassment (Gender-based Violence Policy);
  - Minimum percentage of training and local female workforce in construction and project development;
  - Specific personal protection equipment for women's work;
  - Flexible working hours if women are breastfeeding.
- The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.). DGDC will monitor and oversee the handling of complaints of gender-related discrimination.

The Human Resources Manager will personally follow up on all workplace harassment complaints, as well as other gender related issues received through DGDC's Internal or External Grievance Mechanisms.

12.3.7 Retrenchment

If the Project anticipates the elimination of a significant number of jobs or a layoff of a significant number of workers that cannot be avoided, the Human Resources Manager will develop and implement a plan to mitigate the adverse issues, such as:

- The schedule of cutbacks;
- Retrenchment methods and procedures;
- Selection criteria (i.e., the selection criteria for those to be laid off will be objective, fair and transparent);
- Severance payments;
- Offers of alternative employment;
- Assistance in retraining efforts and job placement.

Additionally, in many countries, national law requires advance notice to affected workers, communities and/or governments. DGDC will comply with national law. Where national law is silent on this matter, DGDC will still notify workers and communities in advance, so they are aware if the process that will unfold.

Consultation with governmental institutions may be required by law, and, in addition, DGDC will approach local governments where the scale of layoffs can have a significant effect on communities, and where government assistance may be available to help address the impacts.

DGDC will also consult with employees and their organizations in developing the retrenchment plan for the Project. Consultations are essential for the development of plans to reflect workers' concerns, as well as their ideas about ways to avoid or minimize layoffs, criteria for selection and compensation payments.

The Internal and External Grievance Mechanisms adopted by DGDC will both serve as communication channels to deal with claims that any provisions in the retrenchment plan were not followed.

Nonetheless, it is important to note that the Project does not expect significant retrenchments as the expected number of workers, even during peak construction periods will not exceed 50 workers. During operations, approximately 4-6 employees will work on site.

12.3.8 Internal Workers Grievance Mechanism

DGDC will implement an Internal Grievance Mechanism for employees and all other internal stakeholders to raise workplace related concerns (see Internal Grievance Mechanism Plan). The Human Resources Manager will inform workers of the grievance mechanism at the time of hire, as well as through refresher trainings.

12.4 Workforce

DGDC acknowledges that the workforce is a valuable asset and a key ingredient in the sustainability of a company. Hence, it is committed to protect and prioritize its Project's workers integrity and wellbeing.

12.4.1 Child Labor

DGDC will not employ children in any capacity. DGDC will follow national applicable laws and PS.2/ILO.

12.4.2 Forced Labor

DGDC will not recur to forced labor, which consists of any work or service not voluntarily performed that is requested from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

DGDC will not hold on any personal documentation of workers at any point of the Project development under any circumstances.

12.5 Occupational Health and Safety

DGDC has designed an Occupational Health and Safety Management Plan. The aim of this plan is to ensure workers perform their activities in a safe and healthy work environment, taking into account inherent risks in its particular sector and specific hazards in the Project's work areas, including physical, chemical, biological, and geothermal risks.

DGDC will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of those hazards.

12.6 Temporary Jobs

The temporary jobs that the Project could generate for the community members during its construction and operations play a very important role for the company, as they will allow the establishment of a good relationship with local communities.

The purpose of the generation of temporary jobs, using local, not specialized people, to carry out Project's activities, is to provide a temporary source of income for the people living near the Project. The supply of jobs in the Project's Area of Influence, although short term, could affect positively in the quality of life of the neighboring people.

This process is expected to happen mainly during the construction phase of the Project and will be coordinated by the Human Resources Manager, alongside the CLO.

12.6.1 Hiring Requirements

The potential beneficiaries of the program will be, on an equal footing, men and women over 18 years old, in compliance with current labor legislation.

They must be mainly inhabitants of the communities in the Project Area of Influence who are not public servers and have the necessary skills to carry out the activities.

The Contractor shall where practical maximize the use of local Dominica labor, suppliers and services during the execution of the project. Local Dominican labor shall include non-skilled, semi-skilled and skilled labor as well as Dominica based service providers. Service providers shall include labor hire companies, local civil contracting companies, catering and transport services and the like. Furthermore, Bidders shall provide a methodology statement on how local labor, suppliers and services will be sourced and engaged as well as the proposed conditions of engagement.

DGDC and its contractors will define clear hiring criteria, according to their internal procedures and in compliance with legal requirements, including the DGDC's Human Resources Policy.

DGDC will put an emphasis to attract diverse candidates, addressing bias in selection and will include gender recruitment targets to measure progress towards gender equity goals. These processes are described below.

12.6.1.1 Attracting Diverse Candidates

In order to attract diverse candidates DGDC and its contractors will:

- Check job descriptions for biased terms or gendered language: Gender-inclusive terms are more likely to signal gender inclusivity and opportunities for both men and women. For example, use gender-neutral language, such as "foreperson" instead of "foreman";
- Revise job descriptions if necessary, to encourage gender diversity:
  - DGDC will describe the job requirements, not the person who will fill the job. For instance, for physically demanding jobs, the specific tasks will be described, rather than describing a "physically fit" candidate.
  - Clearly state required or desirable skills; state any formal training/qualifications required (but only require them when they are necessary for the job);
  - Specifically state that the job is open to all type of candidates;
  - Highlight opportunities for career progression;
  - Clarify whether a job requires standard on-site working hours, shift-work, and/or the potential for flexible work arrangements.
- Review job announcements and recruiting material (such as print, radio advertisement, etc.) for gender-biased language:
  - Do they present a gender-diverse and inclusive image?
  - Are men and women featured?
  - Are both men and women featured in operations roles?
  - Do voice-overs in radio, social media or television feature both men and women?
- Revise job advertisements and materials to present a more gender-inclusive and diverse image:
  - Include men and women in a variety of roles;
  - Use men's and women's voices;
  - Highlight career development potential for both men and women.

- Review job applications for questions that may prompt gender bias:

    - Applications will only ask for relevant information—and not request details such as marital status or age;
    - Applications will include opportunities for candidates to highlight previous formal and informal work experiences that support their ability to do the job.

Review job selection criteria that may create bias. For instance, a question asking for years of experience might not directly impact skills or qualifications; however, it could put at a disadvantage male or female applicants who have taken time out of work for family reasons.

12.6.1.2 Address Bias in Selection

In order to address possible bias in the selection process, DGDC and its contractors will:

- Ensure gender diversity in recruitment/selection teams: Selection teams will include at least one male and one female of equal seniority;
- Conduct bias training with HR and selection teams: This will help to identify and combat hidden biases, such as what work is appropriate for women, or how periods of absence from the workforce are judged;
- Ensure all members of selection teams are aware of relevant legislation related to non-discrimination;
- Test HR staff and selection teams for implicit bias: such as associations between women and men and different types of work;
- Develop a standardized, transparent recruitment process: This will ensure that all applicants have equal opportunity. Providing detailed criteria for all advertised positions will reduce reliance on subjective questions of “proper fit”;
- Set minimum targets for the number of shortlisted female candidates: If DGDC uses a recruitment firm, DGDC will make sure the firm knows about the targets and is held accountable for meeting them;
- Develop a policy on appropriate interview questions: DGDC will avoid questions regarding marital status, children, intent to have children, or sexual orientation.

12.6.1.3 Recruitment Targets

Setting targets will help DGDC to measure progress towards gender equity goals. They increase coordination and strengthen commitment to meeting these equity goals. While targets (and quotas) cannot address the underlying reasons for under-representation of women in particular parts of the workforce, they have been shown to be among the most effective means of addressing gaps in gender diversity.

Targets will be specific and challenging. In addition to quantitative metrics, they will include qualitative indicators of the ways in which people work together—for instance, targets that signal a more respectful workplace, more inclusive meeting practices, and more flexibility in work arrangements. Metrics also might include indicators like decreased absenteeism and turnover, and higher employee satisfaction. A table is presented below with DGDC’s targets in order to achieve gender equity in employment and have a gender-inclusive work environment.

Table 12-2: Targets

Type of Target	DGDC TARGET
GENDER EQUITY IN EMPLOYMENT	■ 15% target of women working on the project
REVIEW HR POLICIES AND PHYSICAL INFRASTRUCTURE	■ Review all job descriptions and recruitment material related to positions in all departments for gender-discriminatory or discouraging language; ■ Review HR policies regarding ergonomics, personal protective equipment (PPE), workplace safety, and equipment to ensure that these consider differences in safety needs between, men and women; ■ Ensure that all departments on site comply with HR policies on ergonomics, PPE, workplace safety and equipment; ■ Ensure all toilet and shower facilities to be compliant and gender segregated.
GENDER-INCLUSIVE WORK ENVIRONMENT	■ Improve parity in perceptions on career development opportunities between male and female employees.

Source: ERM based on IFC, Unlocking Opportunities for Women and Business, A Toolkit of Actions and Strategies, 2020.

12.6.2 Communication Mechanisms

Different communication mechanisms will be developed as described in the Stakeholder Engagement Plan, in order to encourage the participation of communities located within the Project Areas of Influence.

Communication activities and the publication of vacancies will contain at least the following information:

- The requirements to be a candidate for the program: Applicants will have the obligation to state their personal data, including name and address, which must be corroborated by the Company's Human Resources Area;
- The jobs offered will specify temporary and/or permanent conditions;
- They will be informed if any type of minimum training related to the position offered is required.

Once the temporary employment vacancies are announced, together with their requirements, those who are in compliance may apply and, on the dates indicated, the beneficiaries of the program will be published.

12.6.3 Workers Engaged by Third Parties

DGDC developed the Contractors Management and Supervision Plan to define the minimum requirements that contractors and subcontractors working on behalf of DGDC must meet, in order to ensure that the environmental, social, and occupational health and safety risks associated with the contracted services, products and equipment are reduced and avoided. DGDC will take into account the risks inherent to their particular sector and specific classes of hazards in work areas, including physical, chemical, biological and geothermal hazards.

12.7 Performance Management Process

DGDC has adopted a performance management process, so that each employee receives timely feedback regarding their performance, either positive to continue in their path of growth or professional development, or corrective, in order to implement corrective actions if necessary.

The process considers, among others, the following elements:

- Evaluation of cultural components, referred to the level of compliance of the competencies of each collaborator in the organization;
- Evaluation of work objectives, which involve three types:
  - Platform Success: DGDC' objectives as a whole;
  - Functional Component: Group or area objectives
  - Individual Component: Specific objectives and goals for each collaborator.

To obtain final performance grade of each collaborator, the responsible evaluator must submit his/her judgment to a calibration committee, formed by DGDC's management team, in which the partial result of the evaluation of its collaborators in charge will be reviewed, as to be able to count on an integral appreciation of the performance of each collaborator.

Likewise, in the calibration committee, the responsible supervisor/evaluator may have solid and consistent arguments that justify the evaluation that will be delivered. Therefore, the evaluator can also have arguments agreed by the entire committee to deliver to the employee when giving feedback.

The performance evaluation process has a duration of one year, understood as the beginning of the evaluation period, the month of January of each calendar year.

12.8 Documentation and Monitoring

The Human Resources Manager will be responsible for the implementation of what is stated in this plane and will keep evidence of it (e.g. documentation on DGDC's policies, recruitment documents and processes, working conditions, internal grievance mechanism, workers who come from local communities, number of women hired by the Project).

DGDC will monitor the number of people being employed by the Project in:

1. The three key villages (Laudat, Trafalgar and Wotten Waven)
2. The wider Roseau Valley, against predicted numbers of employees.

DGDC will undertake surveys to determine the number of new businesses generated by the development and the level of indirect employment.

During the first four years of operation, on a quarterly basis, DGDC will record the number of inhabitants of the three villages affected by the power plant to have received training, and nature of training received, disaggregated by age, sex and village/block.

12.9 Key Performance Indicators

The Labor Conditions and Workers Selection Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with the Human Resources Manager. The Project will ensure that contractors update their procedures at least once every six months during the first two years and then annually or as needed.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 12-3: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool Frequency
Working Conditions	Human Resources Policy distributed in all the onboarding inductions	100% of Inductions shall distribute the Human Resources Policy (as well as the Code of Conduct, and other relevant policies, e.g. Sexual Harassment Policy)	Construction and operations	Human Resources Records and Internal Grievance Mechanism / Quarterly
	Sign Terms of Employment	Terms of employment explained and signed by 100% of the Project's workforce	Construction and operations	
	Non-discrimination and gender-based violence	Zero tolerance of discrimination of any type. 100% reported, evaluated and solved grievances regarding discrimination complaints and gender-based violence in a timely manner	Construction and operations	
	Gender equality: percentage of women working in the Project	15% target	Construction and operations	
	Retrenchments	100% of informed workers regarding the schedule of cutbacks; the retrenchment procedures; transparent and fair selection criteria for those to be laid off; severance payments; and if applicable offers of alternative employment; and assistance in retraining efforts and job placement.	Construction and operations	
Workforce	Child Labor and Forced Labor	Zero child or forced labor.	Construction and operations	Human Resources Manager / Quarterly
Hiring	Recruitment Targets	100% recruitment targets met to attract diverse candidates and avoid biases during selection	Construction and operations	Human Resources Manager / Quarterly

13. INTERNAL GRIEVANCE MECHANISM

13.1 Introduction

DGDC is committed to ensuring compliance in the implementation of the ESMP policies and procedures.

The Project is committed to maintaining lasting, transparent, culturally appropriate and efficient relationships with its internal and external stakeholders, through communication and engagement measures that allow receiving, analyzing and solving any concern, doubt, question regarding the environmental and social performance of the Project in all of its activities.

Based on the foregoing, the Project has developed an Internal Grievance Mechanism with the objective of identifying and managing the potential internal nonconformities and/or complaints in a timely and effective manner.

13.1.1 Objective

Establish an Internal Grievance Mechanism so that the Project can handle internal complaints, presented by its employees and internal stakeholders (e.g. direct workers and their organizations, workers hired by third parties, contractors, subcontractors, supply chain workers), during the development of its projects by giving them an adequate response, generating satisfactory agreements and implementing compensatory and corrective actions, when necessary.

By establishing an effective Internal Grievance Mechanism, DGDC will be able to manage potential conflicts of interest by segregating the roles and responsibilities of individuals involved in the concern, suggestion or grievance management process and avoiding placing individuals in a position where conflicts could be perceived to arise.

The plan does not replace the public mechanisms of resolution of conflicts in Dominica's legal system but covers the legal process in the Grievance Mechanism to minimize the management of grievances and escalation to the judicial system.

13.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

13.1.3 Definitions

The main terms used in this document are defined below:

Table 13-1: Terms and Definitions

Term	Definition
Claim	Concern, suggestion, complaint, or grievance raised by an individual or group of individuals that need to be addressed.
Claimant	Person or group pf people communicating a claim to DGDC.

Term	Definition
Concern	Requests for information or general negative perceptions unrelated to a specific Project impact or incident. If not addressed to the satisfaction of the claimant, concerns may become claims.
Conflict of interest	A conflict of interest exists where there is a divergence between the interests of an employee or contractor and his or her responsibilities or capabilities under this directive, such that an independent observer might reasonably question whether the actions of that person are influenced by his or her own interests.
Contractor	An individual or a company that has entered into a contract to provide goods or services to DGDC. The term covers parties directly contracted by DGDC and those contracted by a Contractor company, also referred to as subcontractors.
Grievance	A problem raised by an individual or group of individuals that needs to be addressed. Claims can result from either real or perceived impacts of DGDC's operations. The terms "claim" and "grievance" can be used interchangeably.
Sexual Exploitation	Actual or attempted abuse of a position of vulnerability, power, or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.
Sexual Abuse	Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
Sexual Harassment	Sexual harassment occurs when differences in power between staff members, are abused (verbally, through touch, use of inappropriate images, etc.). This includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when: · Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, or · Submission to or rejection of such conduct by an individual is used as a basis for employment decisions affecting such individual, or · Such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment.
Suggestion	Proposal, insinuation, or indication that is submitted with the aim of proposing an action to improve DGDC's internal processes.
Retaliation	Any adverse action taken against a Claimant, employee, or contractor whose purpose is to frustrate the operation of this directive.
Worker Representatives	People designated from DGDC or a contactor to represent Project workers. It can be a worker, supervisor, or union representative.
Workers Grievance Mechanism	A procedure through which a grievance can be raised by a worker, assessed, investigated and responded to. It is also a framework through which workers can gain access to remedy for any adverse impacts or damage they have suffered as a result of business activities.

13.2 Roles and Responsibilities

In order to properly implement the Internal Grievance Mechanism, DGDC requires the involvement of the people listed below.

Table 13-2: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Review and approve the Internal Grievance Mechanism.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Internal Grievance Mechanism.
HR Manager	■ Ensure the correct implementation of the Internal Grievance Mechanism. ■ Communicate the Internal Grievance Mechanism among DGDC's internal stakeholders (i.e. employees, contractors and sub-contractors)
HR manager and Head of ESG	■ Ensure the correct implementation of the Internal Grievance Mechanism.
Representative of DGDC's Legal Area	■ Evaluate and determine the origin of the complaints received and define the measures to be taken in response, as suitable according to what is stated in this plan.
Project Manager	■ Communicate the Internal Grievance Mechanism among DGDC's internal stakeholders (i.e. employees, contractors and sub-contractors) at a project level.
ESG Manager	■ Help with the implementation of the Internal Grievance Mechanism. ■ Review and approve the contractor project-specific Internal Grievance Mechanism Plan. ■ Update the Internal Grievance Mechanism.
Grievance Mechanism Team	■ Manage the registration and follow up on to the feedback received. ■ Share the received feedback with the Project Manager, based on what is stated in this document. ■ Sign all responses before being communicated to the employee and/or interested parties. ■ Share the feedback of subcontractors, with the appropriate contractor when applicable
DGDC Employees, Contractors and Subcontractors	■ Read and be familiarized with the Internal Grievance Mechanism. ■ In case of not having a proper mechanism of their own, inform their employees working in DGDC's operations about the existence of this mechanism and monitor its implementation

13.3 Activities

The Internal Grievance Mechanism Plan establishes the guidelines for internal stakeholders to submit complaints, grievances and concerns arising from any project's activities and operations, ensuring the accessibility and effectiveness of the process.

13.3.1 Principles

DGDC recognizes that this plan has to guarantee the same level of integrity and respect for all the people involved, as well as for any type of claim. To this regard, the Project's Internal Grievance Mechanism will be:

- **Understandable and reliable** (e.g. the affected stakeholders must understand the management plan, the confidentiality of the person filing the complaint must be protected, the expected deadline for receiving a response must be shared);

- **Culturally appropriated and accessible** (e.g. complaints can be filed in the local language, the technology required to file a complaint must be of common use, illiterate people can file complaints verbally);
- **Free of charge** (e.g., raising a complaint will not have any cost);
- **Anonymity** (e.g., the claimant will have the option to remain anonymous);
- **Proportional** (e.g., to provide the appropriate level of management to address the grievance promptly);
- **Rights-Compatible** (e.g. outcomes and remedies will be in line with internationally-recognized human rights legislation and national law. No aspect of the mechanism will prevent workers from enforcing their legal rights. Workers will be protected against retaliation for having raised complaints);
- **Inclusive and non-discriminatory** (e.g. all grievances, from all workers regardless of age, ethnicity, mental or physical disability, race, religion, gender, sexual orientation or gender identity, will be accepted, reviewed and solved as needed);
- **Transparent** (e.g. every complaint will be treated seriously, and dealt with consistently and in an impartial, confidential and transparent manner. The process is transparent and provides timely feedback to the claimant).

The present plan establishes the guidelines of the Internal Grievance Mechanism and describes how each Project along with its Grievance Mechanism Team[5] will proceed in order to adequately and satisfactorily address the possible complaints expressed by its internal stakeholders. Complaints related to affected communities and external stakeholders are covered by the External Grievance Mechanism Plan.

The Internal Grievance Mechanism aims to prevent social contingencies and conflicts with the people directly involved in the development of the Project, since it will provide, at all times, effective attention, and it has the obligation to respond to the requests of all claimants.

DGDC has established a process for the reception, registration, review, analysis, resolution and evaluation of complaints, claims and concerns to be implemented in all of its projects. The process will be documented through a physical record file and will end with the closure and written agreement on the resolution of both parties (i.e. the claimant and the Project).

13.3.2 Publication of the Mechanism

Based on the Stakeholder Engagement Plan the Project will inform internal stakeholders about the Grievance Mechanism and the communication channels to submit complaints, claims or suggestions regarding any activities related to the Project, as well as how and where to submit them. This information will be shared through:

- Direct dialogue;
- Printed material such as brochures and posters;
- Informative presentations of the Project;
- Trainings; and
- Didactic educational tools (e.g. games, videos, books, etc.).

[5] The Grievance Mechanism Team is led by the Head of HR ant the Head of ESG.

13.3.3 Internal Grievance Mechanism Procedure

In order to ensure the proper implementation of the Internal Grievance Mechanism, and the resolution of the feedback received, this mechanism is divided into four main steps. These steps are presented in the figure below.

Source: ERM, 2020.

Figure 13-1: Internal Grievance Mechanism Procedure

These steps are designed based on the recommendations of the International Finance Corporation (IFC), through which a communication channel and responsible for monitoring in each of them is designated.

13.3.3.1 Reception and Registration

Once the Grievance Mechanism has been presented to the internal stakeholders, any manager of the Project, Company and/or contractors will be able to personally receive any feedback, which must then be delivered to the Grievance Mechanism Team.

In addition of the feedback collected by the managers, the feedback will be submitted through the following reception channels:

- Website – To be determined prior to the start of construction and operation activities;
- Telephone – To be determined prior to the start of construction and operation activities;
- A Grievances Mailbox placed within the Project's facilities. The mailbox's precise location will be shared with workers during their hiring process.

Any complaint or suggestion that is entered by the aforementioned means must follow the Internal GM form, attached to the present plan as **Appendix 13-A**, which shall contain the following information:

- Place and date of the complaint or suggestion;
- Reason for the feedback, with details of the events;
- Claimant's contact information (In case the grievance is not anonymous);
- Claimant's proposed solution to the issue.

The process will begin with the receipt of a complaint or suggestion by the Grievance Mechanism Team and notify the claimant that the claim has been received, will be reviewed and taken for analysis. Once the suggestions and/or complaints have been received, the Grievance Mechanism Team will complete the Communication Report (**Appendix 13-B**) and the information collected regarding the complaint and/or suggestion will be captured in the Internal GM Database to register the complaints and/or suggestions.

If the claim is readily resolvable (e.g., a request that can be immediately granted or an easy solution can be applied without an investigation process), the person receiving the claim (i.e., immediate manager, human resources or worker representative) takes action to address the issue directly and records the details

in the Internal GM Database. If the claim subject is considered sensitive by the claimant (e.g., in cases regarding abuse, sexual harassment, or other forms of gender-based violence), a special point of contact with adequate training will be provided. The claimant will have the option to talk to a point person of their same gender, if requested. The approach to these claims should be in line with the survivor-centered approach detailed by the WB and IDB: "The survivor-centered approach is based on a set of principles and skills designed to guide professionals—regardless of their role—in their engagement with survivors (predominantly women and girls but also men and boys) who have experienced sexual or other forms of violence. The survivor-centered approach aims to create a supportive environment in which the survivor's interests are respected and prioritized, and in which the survivor is treated with dignity and respect. The approach helps to promote the survivor's recovery and ability to identify and express needs and wishes, as well as to reinforce the survivor's capacity to make decisions about possible interventions." (The World Bank, Good Practice Note: Addressing Sexual Exploitation and Abuse and Sexual Harassment in Investment Project Financing involving Major Civil Works).

Claims will not be applicable in cases when:

1. It is not directly related to DGDC, its contractors, or subcontractors;
2. It is out of DGDC's influence;
3. Its nature exceeds the scope of the present Internal Grievance Mechanism;
4. The claimant has no standing to file (e.g. is not an affected party); and/or
5. There are other formal mechanisms/institutions or community procedures more appropriate to address the issue.

When the claim is classified as **non-applicable** following the above criteria, DGDC will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, DGDC will provide information to help them redirect their claim to the right institution or party.

The Internal Grievance Database is updated weekly to reflect the current state of the claim until the claim has been resolved according to the claimant. Reception of the claim will be acknowledged within three (3) days after the claim is received. If an investigation is needed, this will take up to 15 days (low risk claims), up to 10 days (medium risk claims) and 5 days (high risk claims).

The Project will provide a means by which all workers will be able to raise **anonymous complaints**. This gives the most vulnerable workers confidence that they will not be retaliated against for raising concerns, and can be fundamental to shifting power dynamics in the workplace. Therefore, in case of an anonymous case, the resolution will be published on a visible and accessible notice board on site and communicated in regular staff meetings.

13.3.3.2 Review, Analysis and Investigation

Once the complaints have been filed, the review, analysis and investigation process will unfold as follows:

1. The Grievance Mechanism Team will collect on a weekly basis the complaints presented, whether submitted physically or via website, and will review the nature of the complaint, as well as the company's departments potentially involved;
2. The Grievance Mechanism Team will make an initial assessment of severity in coordination with the H&S Manager, if necessary. The grievances will be classified in four categories:
    a. **Non-Admissible** (e.g. claims that are no directly related to the Project, its contractors or subcontractors, out of DGDC's influence);

b. **Low Risk** (e.g. claims that do not require resolution per se, but instead only require information or a certain clarification to be provided to the claimant. If there are recurring complaints that have been previously received and addressed by the Project, DGDC will reconsider elevating the importance of the complaint, as this might be a sign that the response to the grievance has been insufficient or inadequate);

c. **Medium Risk** (e.g. claims that require resolution and are related to minor risks associated with health, the environment, construction, transportation, and contractor and subcontractor personnel. Although important, they do not pose an immediate risk); and

d. **High Risk** (e.g. claims related to the security and safety of Project personnel and community stakeholders, as well of those that, according to criteria of the Human Resources team, require immediate response as the claim poses an immediate major health and safety risk or a risk to an individual, to a large or small group or several groups of stakeholders. This includes claims regarding illegal and abusive activities).

3. The HR Manager will prepare the Communication Report, that includes the information listed below:

    a. Internal tracking folio number provided to the claimant;

    b. Type of feedback,

    c. Area potentially involved;

    d. Claimant's information (In case the grievance is not anonymous);

    e. Date the complaint or suggestion was originated;

    f. Grievance Risk Category (Low, Medium or High);

    g. Brief description of the complaint or suggestion;

    h. Area responsible for monitoring and solution;

    i. Recommended solution;

    j. Term of resolution.

4. Once the complaint, claim or concern has been reviewed, the investigation must be carried out in the first instance by a member of the Grievance Mechanism Team. In case the feedback transcends and involves more areas of the Project, the suggestions and/or complaints will also be channeled to the Project Manager and the HR Manager, as appropriate, to coordinate resolution with the departments involved, depending on the scope of each, and to determine the actions to follow.

    Regardless of the categorization of the claim, the claimant must always be informed that her or his grievance has been received and is being investigated. The answer must be given in written and/or verbal form, in a clear and precise language, preferably respecting the claimant's language. In cases where the complaint is anonymous, the response will be published in the same way in which the complaint was submitted (through the website or in the module). The deadline for the resolution of a complaint or claim is according to the categories shown in the following table.

5. The evaluation of each complaint claim or concern must be in accordance with the following categories.

Table 13-3: Timeframe per Claim Category

Claim Category	Responsibilities	Response Time
Non-Admissible	Grievance Mechanism Team notifies the claimant	These suggestions and/or complaints will be communicated within fifteen (15) business days once the categorization is done.
Low Risk	The Manager of the area responsible for the resolution receives and follow up the complaint.	These suggestions and/or complaints will be addressed and answered in an average of ten (10) business days. If the complaint could not be resolved within this timeframe for reasons beyond the Project, the claimant will be notified and the time of response will be determined, considering a maximum period of three (3) months.
Medium Risk	The Manager of the area responsible for the resolution receives and attends the complaint.	The response will be carried out within an average of five (5) days after categorizing the complaint or concern, indicating that the resolution period will be of fifteen (15) business days from the complaint's registration. If the complaint could not be resolved within this timeframe for reasons beyond the Project, the applicant will be notified and the time of response will be determined, considering a maximum period of three (3) months.
High Risk	The Manager of the area responsible for the resolution receives and responds to the complaint immediately and communicates it to the Project Manager via email/phone call. Once registered and communicated internally, the ESG Manager will proceed to provide support for the follow-up and resolution of the complaint, collectively with the Manager of the responsible area and the Project Manager.	The response time must be immediate (within 24 hours of its submission) In the event that, for reasons beyond the Project, the complaint could not be resolute within this timeframe, the claimant will be notified, and the time of response will be determined on a case-by-case basis. However, the resolution period will not be longer than five (5) days.

Source: ERM, 2020.

In high-risk situations, where there is a possibility of serious danger (e.g., death, sexual harassment), DGDC will consider involving other member teams to weigh in on the resolution strategy. In these type of cases, an alternative timeline will be established for addressing and involving third parties as needed, such as police and hospitals. The Project will always protect the confidentiality of the claimant, and in cases of sexual harassment or sexual abuse and exploitation, the Project will take the survivor-centered approach described earlier. The special procedure for High Risk Claims is described below.

1. The claim enters an expedited process for investigation and resolution by HR and if applicable other senior management, such as the H&S Manager, when appropriate.

2. DGDC initiates the investigation immediately and coordinates with local authorities to appropriately address the matter for claims related to allegations of illegal or abusive acts.
3. HR meets the claimant to gather additional information as necessary. Subsequently, he or she investigates the claim (e.g., meets with members of the security team involved in the claim), develops, and implements corrective actions in collaboration with other project staff, as necessary.
4. If both the HR staff and other staff involved in the resolution of the claim are all the same gender, and the claimant prefers to speak to a person of his or her same gender, DGDC will facilitate this request. This option will be disseminated when disclosing the procedure. If additional investigations are needed, these are promptly undertaken.

If the person responsible of the claim is not able to obtain a resolution within 5 days of the reception of the claim, he or she submits the claim to Human Resources, who notifies and seeks advice from the H&S Manager.

If the H&S Manager and Human Resources do not reach an agreement on a resolution within the following 5 days, Human Resources arranges meetings and discussions with relevant higher hierarchy personnel and the claimant, as well as other relevant departments, to agree on a final solution.

Before the final resolution is issued, the agreed resolution will be reviewed by the claimant, or his or her worker representative, and will confirm his or her agreement with the solution proposed.

13.3.3.3 Resolution

Once the complaints have been categorized and reviewed, the resolution and closure process will unfold as follows:

1. The first step for the resolution is the determination of the timeframe (considering the periods defined in the Table above) and its inclusion in the registration file previously elaborated.
2. The complaint or claim will be discussed by the managers of the areas involved. However, if a Manager is directly involved in the grievance, that person cannot play a role in the Internal Grievance Mechanism process in order to prevent conflicts of interest. In the case of complaints related to allegations of illegal or abusive acts, the Project will immediately initiate the investigation to adequately address the matter. Based on the investigation, the complaint may or may not proceed.
3. Depending on the risk category, the approach will be defined. The management of the responsible areas, together with a representative of the Legal Area will evaluate and determine the origin of the complaint and define the measures to be taken in response. The ESG Manager must sign all responses before they are communicated to the employee and/or interested parties.
4. If the complaint is not admissible, the claimant will be notified.
5. The Grievance Mechanism Team and the Project Manager will have performed an analysis of all the viable resolutions, seeking to, at all times, provide solutions that respond to the claimant, from a position of dialogue and respect. A complaint will be dismissed only when all the instances of solution have been exhausted, explaining in writing to the claimant, in a clear and indubitable manner, the reasons for the refusal on the resolution of the complaint.
6. All documentation issued during the process by the company to interested parties must be sent by email or written notification. In any case, the answer must have the corresponding record (the folio of complaint or suggestion) and will be properly archived as part of the process.

13.3.3.4 Right to Appeal

A worker who is not satisfied with the procedure or resolution can contest DGDC's decision. The claimant will have a maximum period of fifteen (15) business days to express any disagreement with the response and appeal it. Once the deadline has elapsed and there are no new grounds for complaint, the process will be considered closed.

In the event that a claimant wishes to challenge/appeal DGDC's decision or propose a counter offer, the In-Country Director and the Project Director will decide whether DGDC can resolve the dispute or it is necessary to involve a third party (e.g. a mediator, technical expert, local authority, or ombudsman) to reach an agreement between the parties and resolve the dispute. The claimant will always have the right to seek other legal or administrative resources. The last resort will be the national judicial process.

When a resolution agreement is established, both parties, the Human Resources Manager, acting as the representative of DGDC and the claimant, will sign it in writing. Once the solution is implemented, both parties in recognition of compliance with the agreement will sign a compliance agreement again.

13.3.3.5 Evaluation and Follow Up

It will be the responsibility of the Grievance Mechanism Team to follow up on all responses to suggestions and/or complaints in written and/or verbal form, especially those of medium and high priority, so as to confirm that the response given to the interest group was adequate, given the circumstances and criteria applicable at the time of filing the complaint. The Internal GM Database will be used to follow up each claim until is resolved and closed.

13.4 Confidentiality and Protection from Retaliation

The Project is committed to protecting the identity of claimants and anyone else involved in the claim, and to handling personal information in accordance with legal requirements. This duty extends to all employees and representatives of DGDC and its contractors who participate in the Internal Grievance Mechanism process.

Information about a claim is shared within the company on a need-to-know basis and only to the extent necessary to complete the steps in this directive. DGDC will not share personal information with third parties unless required by law or authorized by the claimant.

When a claim relates to a specific DGDC or contractor employee, that person cannot play a role in the Internal Grievance Mechanism process in order to prevent conflicts of interest.

DGDC does not tolerate retaliation against claimants, be they an employee or contractor. When concerns about retaliation are raised, Human Resources is responsible for leading an investigation into the alleged retaliation under DGDC's Human Resources Policy and Code of Conduct.

13.5 Documentation and Monitoring

Once every two months, the Grievance Mechanism Team will send the Internal GM Database to the Project Manager with information on the feedback received through a consolidated report showing the status of each claim and its indicators.

This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

The Internal Grievance Mechanism Plan will be reviewed annually however, if required, the mechanism could be updated as necessary. It will also ensure that contractors update their procedures at least once a year.

13.6 Key Performance Indicators

The table below present the key performance indicators that will evaluate the implementation of this plan:

Table 13-4: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Method/Tool / Frequency
GM attainment	DGDC will review the Internal Grievance Database, including complaints closed and those unresolved. Number of grievances received per month versus number of grievances resolved.	100% of grievances resolved within the established GM timeframes.	Internal Grievance Mechanism Database and Human Resources Manager / Quarterly
GM time efficiency	DGDC will review the Internal Grievance Database, especially the number of days between the grievances submission until its resolution and closure to calculate the average length of time needed to resolve grievances.	Low risk grievances: Max. 10 days Medium risk grievances: Max. 5 days High-risk grievances: Max. 24 hours	Internal Grievance Mechanism Database and Human Resources Manager / Quarterly
GM Focus/ Risk Areas	DGDC will review the Internal Grievance Database and if necessary talk to managers of technical areas or departments, to breakdown the grievances topics (e.g. health, safety, etc.) and grievance source	Resolve 100% of grievances from all sources and about all topics. Disseminate information regarding the different solutions when there are recurrent complaints in order to decrease recurrent grievances.	Human Resources Manager in coordination with contractors / Quarterly
Method of grievance reporting	DGDC will review the Internal Grievance Database and engage with workers to check the use and success of the different grievance reporting methods (e.g., number of grievances received by phone, at the office, website, and boxes).	100% of reporting methods will be functional and accessible at all times.	Human Resources Manager through direct interviews with workers / Quarterly
GM dissemination	DGDC will monitor all GM informational documents, meetings, and events where the GM was disclosed and explained.	GM dissemination of information in at least 70% of events and regular meetings with staff, including contractors and subcontractors.	Human Resources Manager Records (trainings, meetings, orientation sessions, etc.) / Quarterly

14. COMMUNITY HEALTH AND SAFETY MANAGEMENT PLAN

14.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the implementation of the Environmental and Social Management Plans (ESMP) policies and procedures.

To promote its projects alignment to best international practices, DGDC acknowledges that health and safety measures are an essential part of the management of any project, in order to ensure the wellbeing of the stakeholders (e.g. communities) directly and indirectly involved in its activities. Additionally, DGDC recognizes that the development of its operations, as well as the equipment and infrastructure of a Project, can increase the chances of the neighboring communities of being exposed to potential risks and impacts.

DGDC has adopted risk prevention as one of its main concerns and, through the Community Health and Safety Management Plan, seeks to avoid or minimize the potential risks and impacts to health and community safety that may result from activities related to any of its projects during the construction and operations phase, specially focusing on vulnerable groups.

14.1.1 Objective

The objective of this plan is to establish the necessary mechanisms to prevent the occurrence of incidents and accidents related to the Project that could affect neighboring communities during the different phases of the Project. More specifically, this plan intents to present the appropriate measures to respond to:

- Changes in the health of affected communities, including exposure to disease or changes in the availability and quality of water sources;
- Changes in livelihoods and income generation opportunities that affect the affected communities' access to social infrastructure;
- Changes in the security of the affected communities related to emergencies, unplanned events, crime and conflict; and
- Ensure that the safeguarding of personnel and property is carried out in a legitimate manner that avoids or limits risks to the community's safety and security.

14.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

The geographical scope is described by the Project Area of Influence (AOI), which comprises two parts:

- The physical footprint of the project, comprising the area occupied by direct components and Associated Facilities (Area of Direct Influence, ADI). Direct components are centered on the Project's parcel, well pads, transmission line route, and transportation routes to and from the site.
- The ADI is considered as the area that could be directly impacted; however, the Project will also have implications for employment, the economy, planning, and service provision in the whole of the island of Dominica. Therefore, the entire island of Dominica will be considered as the Area of Indirect Influence (AII).

14.2 Roles and Responsibilities

In order to properly implement the Community Health and Safety Plan, DGDC requires the involvement of the people listed below.

Table 14-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Community Health and Safety Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Community Health and Safety Plan.
Project Manager	■ Be familiarized with, review and update as necessary the Community Health and Safety Plan.
ESG Manager	■ Be familiarized and implement the Community Health and Safety Plan. ■ Review, evaluate and verify the CHS management plans. ■ Review and approve the contractor project-specific Community Health and Safety Plan. ■ Update the Community Health and Safety Plan.
H&S Manager	■ Review, evaluate and verify the CHS management plans. ■ Assure the development of an Emergency Preparedness and Response Plan for each Project ■ Present, alongside the Community Liaison Officer, a monitoring report to the Project Manager.
Community Liaison Officer (CLO)	■ Coordinate and supervise the communication of information activities regarding this plan to the affected communities. ■ Present, alongside the H&S Manager, a monitoring report to the Project Manager.
Contractor Company	■ Develop a project-specific Stakeholder mapping Plan aligned with the Community Health and Safety Plan.
DGDC Employees, Contractors and Subcontractors	■ Read and be familiarized with the Community Health and Safety Plan. ■ Develop a project-specific Community Health and Safety Plan.

14.3 Activities

This plan describes the actions that need to be taken to avoid or manage potential impacts associated with Community Health and Safety (CHS) issues, which may arise from activities related to the Project. DGDC will establish preventive and control measures in line with international best practices, such as the International Finance Corporation (IFC) Performance Standards.

14.3.1 Health and Safety Risk Identification Associated to Affected Communities

Prior to starting operations, the affected communities within the Project Area of Influence must be identified. Likewise, stakeholders will also be identified through the Stakeholder Mapping procedure (see Stakeholder Engagement Plan). At the same time, the risks associated with CHS will be determined and evaluated considering the planned and unplanned events associated with all stages of the Project. This prefeasibility assessment is the basis for defining the mitigation measures of the identified impacts and must be considered as a minimum:

- Water quality and availability;

- Noise levels;
- H_2S levels;
- Increase in local population due to the migration of the Project's workers;
- Community exposure to air, noise and water pollution;
- Design and safety of infrastructure and equipment;
- Road safety;
- Handling, storage and transport of hazardous materials and waste;
- Availability and quality of ecosystem services;
- Community exposure to communicable and non-communicable diseases, as well as vector control;
- Security personnel; and
- Emergency preparedness and response.

A specific plan will be developed by the EPC to mitigate each of these impacts. The affected communities will be consulted during the aforementioned assessment process to ensure a collaborative perspective and common understanding. Likewise, stakeholder engagement activities will be conducted to inform affected communities and other external stakeholders on the potential risks identified and prevent confusion, rumors or misunderstandings. This is done through the Stakeholder Engagement Plan.

14.3.2 Emergency and Preparedness Response Plan

The H&S Manager must assure that DGDC's Emergency Preparedness and Response Management Plan is implemented by the Project, in all its facilities, as well as by all the contractors and subcontractors. The Disaster Risk and Emergency Management Plan along with the Occupational Health and Safety Plan, consider all the possible emergency scenarios that could have an impact on the CHS of the Project's area of influence. These Plans also consider the roles and responsibilities for implementing the Plans, as well as the equipment, resources and skills needed to effectively apply it. All scenarios identified during the prefeasibility assessment will be tested and documented on a regular basis.

14.3.3 Community Health and Safety Measures

A series of Project specific plans will be developed based on the identification and environmental and social prefeasibility assessment of CHS and the ESMP (e.g. Traffic Management Plan, Noise Monitoring Plan,), with the aim of ensuring the safety of communities within the Project Area of Influence; these plans will include the necessary controls to manage the risks. The ESG Manager along with the H&S Manager will review, evaluate and verify the development of this plan. DGDC will ensure appropriate implementation.

DGDC will select and implement the physical, engineering, and administrative controls. The responsibilities of these plans must be communicated and documented.

CHS management measures will be reviewed, evaluated and verified by the H&S Manager of the Project and then presented to the ESG Manager, who will give final approval before they can be implemented.

14.3.4 Communication of Information

The potential Project affected communities, shall be informed in a culturally appropriated manner on the specific content of this Plan and the emergency scenarios and emergency response actions, as well as of the rest of DGDC' ESMP procedures that directly involve them (e.g. Stakeholder Engagement Plan and the

External Grievance Mechanism Plan). The CHS Plan will be communicated alongside the Stakeholder Engagement Plan; this process will be coordinated by the Community Liaison Officer (CLO).

The information will include the type and nature of the risks identified, the actions proposed to avoid and manage those risks, as well as the monitoring activities planned. When evaluating the communication and consultation activity, DGDC will consider within the communication its employees, contractors, affected communities, and other relevant stakeholders.

The affected communities shall have the opportunity to express their views on the identified risks, impacts, opportunities and mitigation measures of the company. DGDC will consider such views and seek to respond to them appropriately.

The CLO will gather the requests, concerns and questions of the affected communities and will ensure that they receive an adequate response in accordance with the External Grievance Mechanism Plan. Specific activities and measures are included below regarding the communication and disclosure of information about health and safety to each relevant stakeholder group.

14.3.4.1 Communication to the Affected Communities

DGDC will communicate relevant health and safety information to communities that may be affected by potential emergency or health and safety situations generated at DGDC facilities or due to their activities. The communication aims at making them aware on what to do in the event of an emergency and the importance of emergency preparedness and response.

DGDC will distribute the Community Health and Safety Management Plan to the communities in the Project's area of influence through different channels:

- DGDC's website;
- Printed copies will be made available at the Community Centre;
- DGDC's Newsletter for the communities/ radio programs/ etc. (for more information about the Newsletter, see the Stakeholder Engagement Plan).

Information will be disclosed before emergency drills that involve the community, these will be diffused through the same channels named above. Special emphasis will be put in the difference between a drill and a real emergency. Notifications of drills will be made in a timely manner to the communities.

DGDC plans to work in conjunction with industry partners, government agencies and community groups to develop programs and/or campaigns that enhance the communities' awareness of safety concerns that can be directly attributed to the Project.

Programs/initiatives may include, but are not limited to, addressing the issues of:

- Road safety;
- Community/ allied health infrastructure;
- Support for community services;
- Community health awareness and promotion; and
- Quality of life issues.

In addition, the Project will monitor the community grievance mechanism, which allows all levels of the community and stakeholders to provide feedback and/or raise concerns about the Project, including health and safety concerns. To achieve this DGDC has an External Grievance Mechanism Management Plan. The Project is committed to providing adequate procedures for the community to provide feedback on the Project and will maintain a database register, which will provide information for future decision making,

stakeholder engagement and reporting. These activities will also be carried under the framework of the SEP.

The Project will measure, audit and publicly report Health, Safety, Security and Environment (HSSE) performance and maintain open dialogue with stakeholder groups and with communities where DGDC operates.

14.3.4.2 Communication to Local Authorities, Governmental Departments and External Resources

DGDC will share the final Community Health and Safety Plan and the emergency plans with the local governmental organizations and external resources that have roles in emergency response scenarios and with authorities required by applicable local regulations.

DGDC will communicate frequently with local emergency response resources, at least once every month during construction and once every quarter during operations, to maintain them informed about the Project's progress and collaborate in drills when necessary.

14.3.4.3 Communication to Workers, Contractors and Subcontractors

The ESG Manager ensures that the Community Health and Safety Plan, as well as the other emergency response and security plans are provided to all contractors. Employees and contractor employees are provided with the applicable plans and notified regarding their roles and responsibilities in the event of an emergency that might affect the community through training. In addition, every member of the Emergency Response Teams is trained in his or her responsibilities and DGDC will ensure that they have an adequate level of competency to carry out these responsibilities in the event of an emergency.

The specific training requirements for personnel and contractors consider the following:

- Training and simulations address the requirements of authorities and any existing mutual aid agreements;
- Relevant personnel receive training after significant updates or changes to this plan;
- Refresher training is conducted at a predetermined frequency for all members of the emergency response organization (typically annually); and

Each of the emergency response position alternates also attend the full training program.

14.3.4.4 Communication to Visitors

Visitors are provided with basic safety instructions and information on evacuation routes before entering a DGDC facility. If a drill is planned that day, they will be informed about it. Assembly points are clearly identified at the facility. In addition, they are accompanied at all times while at a DGDC facility.

14.3.5 Training

The Project will ensure that personnel responsible for the execution of tasks and requirements in this Plan are competent on the basis of education, training, and experience. Health and safety trainings will be carried out through community focal groups at least once a quarter.

Project training activities associated with the Community Health and Safety Management Plan shall be appropriately documented by a training matrix/plan and records of training undertaken. Training will include, but not be limited to:

- COVID-19 prevention awareness;

- STI and HIV/AIDS prevention and awareness training for all employees;
- Respiratory illness and infectious disease management;
- Vector-borne disease awareness including malaria and dengue;
- Speed restrictions in populated areas, safe driving in rural areas, safe driving in dusty environments, safe driving to avoid wildlife, defensive driving and basic first aid;
- Benefits of vaccinations and disease prevention;
- Wildlife Management; and
- Adverse impacts of drug and alcohol usage.

14.4 Documentation and Monitoring

Once every two months, the H&S Manager and the Community Liaison Officer will collectively share with the Project Manager a consolidated report showing the status of the indicators presented below.

This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

14.5 Key Performance Indicators

The Community Health and Safety Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with key stakeholders.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 14-2: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Communities Health and Safety	Number of incidents/accidents or emergencies affecting the community per year	Zero incidents, accidents or emergencies	Construction and operations	Accident and Incident Recording, Reporting and Investigation System / Yearly
	Number of grievances from the community related to health and safety issues	100% grievances addressed and solved in a timely manner related to health and safety issues	Construction and operations	DGDC Community Liaison Officer in collaboration with the ESG Manager. External Grievance Mechanism database log. / Quarterly
Health and Safety Trainings	Number of community members trained in health and safety topics and focused groups per year	One training/ focus group with community members 15 days before construction begins. One health and safety training for community members focused on emergency scenarios	15 days before construction Once every six months during construction and operations	DGDC Human Resources in coordination with Contractors / Yearly

		and road safety near the Project, 15 days before construction begins		
	Number of DGDC's workers and contractors trained in: Community Health and Safety, Code of Conduct, Fit for Work and Drug and Alcohol policies, and Emergency Trainings	100% of trained DGDC workers, contractors and subcontractors	Construction and operations	DGDC Human Resources Training Records / Yearly
Disclosure of Information	Number and topics of health and safety information disclosed for the communities in the Project's area of influence	At least once per quarter during construction and once per six months during operations	Construction and operations	Newsletter for the Communities / Quarterly during construction, bi-annually during operations
	Health and Safety posters and/or flyers available at DGDC's Community Relations Office	Printed copies available at all times regarding health and safety measures for the community	Construction and operations	Community Liaison Officer / Quarterly

15. EXTERNAL GRIEVANCE MECHANISM

15.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the Environmental and Social Management Plans (ESMP) policies and procedures.

The Project is committed to maintaining lasting, transparent, culturally appropriate and efficient relationships with its internal and external stakeholders, through communication and engagement measures that allow receiving, analyzing and solving any concern, doubt, question regarding the environmental and social performance of the Project in all of its activities. The External Grievance Mechanism is an instrument to guarantee transparency and commitment between the Project and the local population.

Based on the foregoing, the Project has developed an External Grievance Mechanism with the objective of identifying and managing the potential external nonconformities (e.g. from the affected communities) and/or complaints in a timely and effective manner.

15.1.1 Objective

Establish an External Grievance Mechanism so that the Project can handle external complaints, presented by stakeholders outside the Project (e.g. affected communities, external stakeholders, interested groups, etc.), during the development of its projects by giving them an adequate response, generating satisfactory agreements and implementing compensatory and corrective actions, when necessary.

By establishing an effective External Grievance Mechanism, DGDC will be able to manage potential conflicts of interest by segregating the roles and responsibilities of individuals involved in the concern, suggestion or grievance management process and avoiding placing individuals in a position where conflicts could be perceived to arise. The Project recognizes that unforeseen impacts may occur, and that the maintenance of an open line of communication with the communities and/or those potentially affected by the Project is important to maintain transparent and cordial relations. In addition, international standards require the establishment of an External Grievance Mechanism in order to address the interested parties' concerns.

As a general policy, DGDC will work proactively towards preventing grievances through the implementation of mitigation measures (as identified by the ESIA) and liaising with the community. These activities are designed to anticipate and address potential issues before they become grievances. This will be the responsibility of the Project Manager and the Community Liaison Officer (CLO).

The sections below consider types of grievances that may arise, confidentiality and anonymity, and the Project's grievance resolution process.

The grievance mechanism covers the various aspects of the Project, including:

- the Project in general, including planning, construction and operation;
- the process of environmental impact assessment; and
- the compensation and resettlement processes.

Each affected person is free to register a grievance, in accordance with procedures specified below. The grievance process focuses on first identifying whether the grievance can be addressed through additional communication between the complainant and members of the Project Team, or by providing additional information to the complainant. If the grievance cannot be resolved internally, the Project Team will then seek to resolve the grievance through mediation by local authorities, and finally, if a resolution cannot be reached, judicial appeal. The procedure does not replace the public mechanisms of resolution of conflicts

in Dominica's legal system but covers the legal process in the Grievance Mechanism to minimize the management of grievances and escalation to the judicial system.

15.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that reception complaints are aligned to international best practices.

15.1.3 Definitions

The main terms used in this document are defined below:

Table 15-1: Terms and Definitions

Term	Definition
Claim	Concern, suggestion, complaint, or grievance raised by an individual or group of individuals that need to be addressed.
Claimant	Person or group pf people communicating a claim to DGDC.
Concern	Requests for information or general negative perceptions unrelated to a specific Project impact or incident. If not addressed to the satisfaction of the claimant, concerns may become claims.
Conflict of interest	A conflict of interest exists where there is a divergence between the interests of an employee or contractor and his or her responsibilities or capabilities under this directive, such that an independent observer might reasonably question whether the actions of that person are influenced by his or her own interests.
Contractor	An individual or a company that has entered into a contract to provide goods or services to DGDC. The term covers parties directly contracted by DGDC and those contracted by a Contractor company, also referred to as subcontractors.
Grievance	An actual or perceived problem raised by an individual or group of individuals that that might give grounds for complaint and needs to be addressed. Claims can result from either real or perceived impacts of DGDC's operations. The terms "claim" and "grievance" can be used interchangeably.
Sexual Exploitation	Actual or attempted abuse of a position of vulnerability, power, or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.
Sexual Abuse	Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
Sexual Harassment	Sexual harassment occurs when differences in power between staff members, are abused (verbally, through touch, use of inappropriate images, etc.). This includes unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when: · Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, or · Submission to or rejection of such conduct by an individual is used as a basis for employment decisions affecting such individual, or · Such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment.
Suggestion	Proposal, insinuation, or indication that is submitted with the aim of proposing an action to improve DGDC's internal processes.
Retaliation	Any adverse action taken against a Claimant, employee, or contractor whose purpose is to frustrate the operation of this directive.

External Grievance Mechanism	A procedure through which a grievance can be raised by a member of the community, assessed, investigated and responded to. It is also a framework through which workers can gain access to remedy for any adverse impacts or damage they have suffered as a result of business activities.

15.2 Roles and Responsibilities

In order to properly implement the External Grievance Mechanism, DGDC requires the involvement of the people listed below.

Table 15-2: Roles and Responsibilities

Role	Responsibilities
Board of Directors	■ Review and approve the External Grievance Mechanism.
Finance & HR Manager	■ Ensure the availability of resources necessary for the implementation of the External Grievance Mechanism.
Representative of DGDC's Legal Area	■ Evaluate and determine the origin of the complaints received and define the measures to be taken in response, as suitable according to what is stated in this plan.
Managing Director	■ Be familiarized with the External Grievance Mechanism and provide the necessary resources to ensure its proper implementation.
Safeguards Manager	■ Ensure the correct implementation of the External Grievance Mechanism. ■ Review and approve the contractor project-specific External Grievance Mechanism. ■ Update the External Grievance Mechanism.
Grievance Mechanism Team	■ Be familiarized and disseminate the External Grievance Mechanism among external stakeholders. ■ Prepare the Communication Report, and follow up on the feedback received. ■ Share the External Grievance Mechanism Database with the Managing Director. ■ Share the received feedback with the Project Manager.
Community Liaison Officer (CLO)	■ Collect on a weekly basis the complaints presented, whether submitted physically or via website. ■ Review the nature of the complaint, as well as the company's departments potentially involved. ■ Solve, as immediate as possible the feedback received, if there are conditions to do so. ■ Keep a record of the solutions that were given for documentation, monitoring or verification of the solution applied.
Employees, contractors and subcontractors	■ Read and be familiarized with the External Grievance Mechanism.

15.3 Activities

The External Grievance Mechanism Plan establishes the guidelines for external stakeholders to submit complaints, grievances and concerns arising from any project's activities and operations, ensuring the accessibility and effectiveness of the process.

15.3.1 Principles

DGDC recognizes that this plan has to guarantee the same level of integrity and respect for all the people involved, as well as for any type of claim. To this regard, the Project's External Grievance Mechanism will be:

- **Understandable and reliable** (e.g. the affected stakeholders must understand the procedure, the confidentiality of the person filing the complaint must be protected, the expected deadline for receiving a response must be shared);
- **Culturally appropriated and accessible** (e.g. complaints can be filed in the local language, the technology required to file a complaint must be of common use, illiterate people can file complaints verbally);
- **Free of charge** (e.g. raising a complaint will not have any cost);
- **Anonymity** (e.g. the claimant will have the option to remain anonymous);
- **Proportional** (e.g. to provide the appropriate level of management to address the grievance promptly);
- **Rights-Compatible** (e.g. outcomes and remedies will be in line with internationally recognized human rights legislation and national law. No aspect of the mechanism will prevent community members from enforcing their legal rights. Community members will be protected against retaliation for having raised complaints);
- **Inclusive and non-discriminatory** (e.g. all grievances, from all community members regardless of age, ethnicity, mental or physical disability, race, religion, gender, sexual orientation or gender identity, will be accepted, reviewed and solved as needed);
- **Transparent** (e.g. every complaint will be treated seriously, and dealt with consistently and in an impartial, confidential and transparent manner. The process is transparent and provides timely feedback to the claimant).

The present plan establishes the guidelines of the External Grievance Mechanism and describes how the Project along with its CLO will proceed in order to adequately and satisfactorily address the possible complaints expressed by the community or other external stakeholders. Complaints related to internal stakeholders (e.g. workers, contractors, subcontractors, etc.) are covered on the Internal Grievance Mechanism Management Plan.

The External Grievance Mechanism aims to prevent social contingencies and conflicts with the people that might be affected by the development of the Project, since it will provide, at all times, effective attention, and it has the obligation to respond to the requests of all claimants.

DGDC has established a process for the reception, registration, review, analysis, resolution and evaluation of complaints, claims and concerns to be implemented in all of its projects. The process will be documented through a physical record file and will end with the closure and written agreement on the resolution of both parties (i.e. the claimant and the Project).

15.3.2 Publication of the Mechanism

Based on the Stakeholder Engagement Plan, the Project Manager and CLO will inform the affected communities and other external stakeholders about the Grievance Mechanism and the communication channels to submit complaints, claims or suggestions regarding any activities related to the Project, as well as how and where to submit them. This information will be shared through:

- Direct dialogue;

- Distribution of printed material such as brochures and posters, which will be proposed by the ESG team and reviewed by the Marketing and Communication management of DGDC;
- Available information at the Project's Community Relations Office;
- Press and media;
- Didactic educational tools (e.g. games, videos, books, etc.).

15.3.3 Grievance Mechanism Procedure

In order to ensure the proper implementation of the External Grievance Mechanism, and the resolution of the feedback received, this mechanism is divided into four main steps. These steps are presented in the figure below.

Source: ERM, 2020

Figure 15-1: General Grievance Mechanism Procedure

These steps are designed based on the recommendations of the International Finance Corporation (IFC) and World Bank Group, through which a communication channel and responsible for monitoring in each of them is designated.

15.3.3.1 Reception and Registration

The CLO will manage the External Grievance Mechanism. The external claimants will be able to submit their grievances through the following reception channels:

- Website – https://www.geodominica.dm/

  Telephone and emails. The points of contact for grievances and comments are:

Table 15-3: Grievance Contacts

Name:	Allan Toussaint
Address:	Floors 1&2, 18 Kennedy Avenue, Roseau
Email:	Allan.toussaint@geodominica.com
Telephone Number:	(767) 448 6178/79; 275 7392

Name:	Lyn John-Fontenelle
Address:	Floors 1&2, 18 Kennedy Avenue, Roseau
Email:	Lyn.fontenelle@geodominica.com
Telephone Number:	(767) 448 6178/79; 235 5462

- A Grievances Mailbox placed at the Community Centre. The mailbox's precise location will be shared with the community during public consultation and other disclosure of information events.

Any complaint or suggestion that is entered by the aforementioned means will be registered by the Project's Grievance Team following the External GM form, attached to the present procedure as **Appendix 15-A**, which shall contain the following information:

- Place and date of the complaint or suggestion;
- Reason for the feedback, with details of the events;
- Claimant's contact information (In case the grievance is not anonymous);
- Claimant's proposed solution to the issue.

The process will begin with the receipt of a complaint or suggestion by the CLO and notify the claimant that the claim has been received, will be reviewed and taken for analysis. DGDC's grievance flow chart is provided in the figure below.

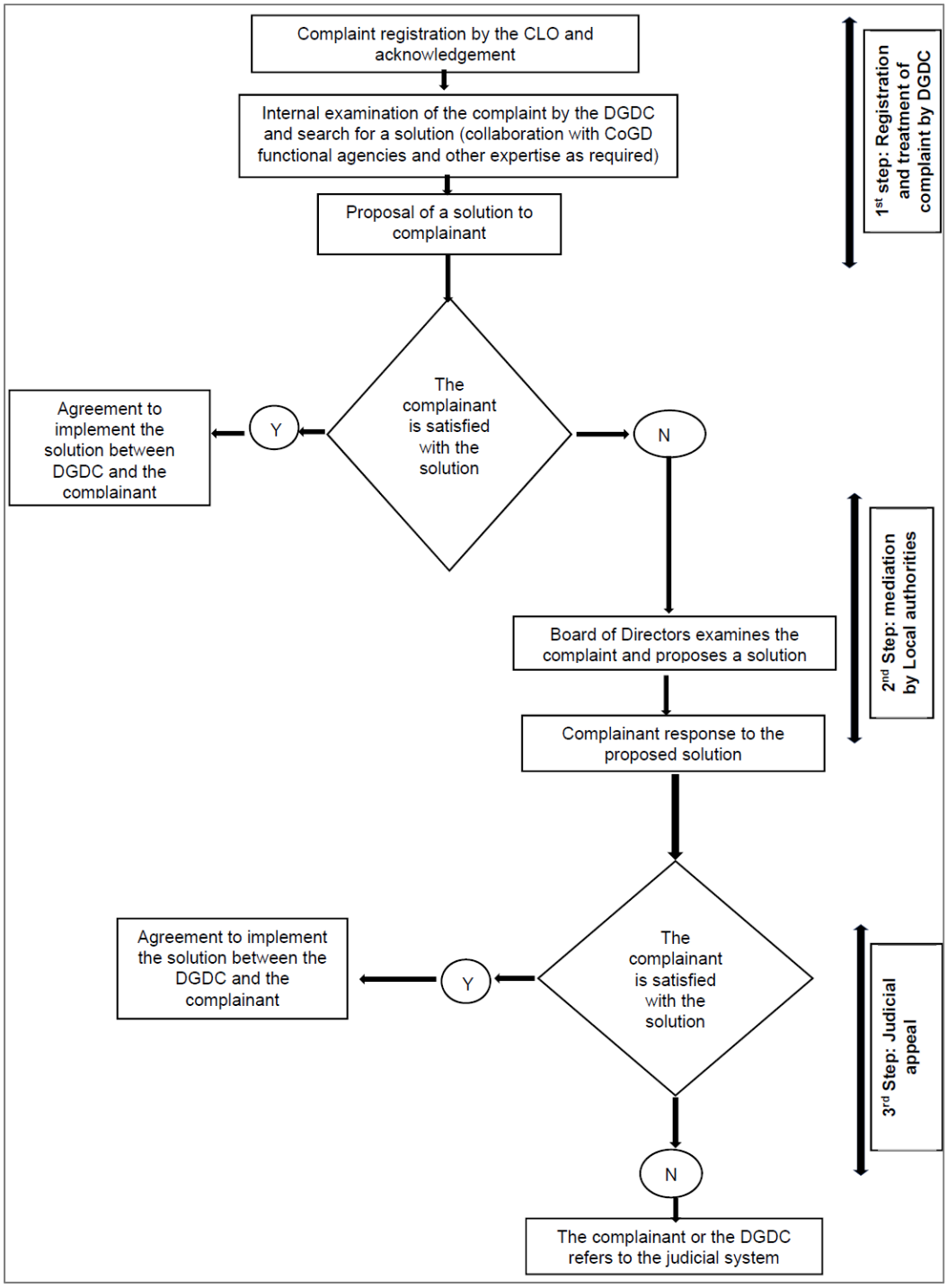


Figure 15-2: DGDC's Grievance Flow Chart

Once the suggestions and/or complaints have been received, the CLO will complete the Communication Report (**Appendix 15-B**) and the information collected regarding the complaint and/or suggestion will be captured in the External GM Database to register the complaints and/or suggestions.

If the claim is readily resolvable (e.g., a request that can be immediately granted or an easy solution can be applied without an investigation process), the person from the CLO receiving the claim takes action to

address the issue directly and records the details in the External GM Database. If the claim subject is considered sensitive by the claimant (e.g., in cases regarding abuse, sexual harassment, or other forms of gender-based violence), a special point of contact with adequate training will be provided, such as the HR Manager. The claimant will have the option to talk to a point person of their same gender, if requested. The approach to these claims should be in line with the survivor-centered approach detailed by the WB and IDB: "The survivor-centered approach is based on a set of principles and skills designed to guide professionals—regardless of their role—in their engagement with survivors (predominantly women and girls but also men and boys) who have experienced sexual or other forms of violence. The survivor-centered approach aims to create a supportive environment in which the survivor's interests are respected and prioritized, and in which the survivor is treated with dignity and respect. The approach helps to promote the survivor's recovery and ability to identify and express needs and wishes, as well as to reinforce the survivor's capacity to make decisions about possible interventions." (The World Bank, Good Practice Note: Addressing Sexual Exploitation and Abuse and Sexual Harassment in Investment Project Financing involving Major Civil Works).

Claims will not be applicable in cases when:

1. It is not directly related to DGDC, its contractors, or subcontractors;
2. It is out of DGDC's influence;
3. Its nature exceeds the scope of the present External Grievance Mechanism;
4. The claimant has no standing to file (e.g. the claimant is not an affected party); and/or
5. There are other formal mechanisms/institutions or community procedures more appropriate to address the issue.

When the claim is classified as **non-applicable** following the above criteria, DGDC will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, DGDC will provide information to help them redirect their claim to the right institution or party.

The External Grievance Database is updated weekly to reflect the current state of the claim until the claim has been resolved according to the claimant. Reception of the claim will be acknowledged within ten (10) days after the claim is received. If an investigation is needed, this will take up to 30 days (low risk claims), up to 15 days (medium risk claims) and 5 days (high risk claims).

The Project provides a means by which all external stakeholders will be able to raise **anonymous complaints**. This gives the most vulnerable members of the affected communities, the confidence that they will not be retaliated against for raising concerns, and can be fundamental to shifting power dynamics in between the Project and the communities. Therefore, in case of an anonymous case, the resolution will be published on a visible and accessible notice board at the Community Centre.

15.3.3.2 Review, Analysis and Investigation

Once the complaints have been filed, the review, analysis and investigation process will unfold as follows:

1. The CLO will collect on a weekly basis the complaints presented, whether submitted physically or via website, and will review the nature of the complaint, as well as the company's departments potentially involved;
2. The CLO will make an initial assessment of severity in coordination with the HR Manager, if necessary. The grievances will be classified in four categories:

Table 15-4: Classification of Grievances

Classification	Risk Level	Validity	Response
Non-Admissible	None	Unsubstantiated	CLO will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, provide information to help them redirect their claim to the right institution or party.
Low	No or low	Unsubstantiated	CLO will conduct investigation, document findings and provide a response
Medium	Possible risk and likely a one-off event	Possible substantiation	CLO and an appropriate investigation team will conduct investigation. The Site Manager or Occupation Health and Safety Manager may decide to stop work during the investigation to allow the corrective preventive actions to be determined. The CLO will provide a response.
High	Probable risk and could reoccur	Probable substantiation	CLO will get the contractor to organise a Major Investigation Team including DGDC and GoCD for prompt investigation and resolution. Work will be stopped in the affected area. The CLO will provide a response.

a. **Non-Admissible** (e.g. claims that are no directly related to the Project, its contractors or subcontractors, out of DGDC's influence);

b. **Low Risk** (e.g. claims that do not require resolution per se, but instead only require information or a certain clarification to be provided to the claimant. If there are recurring complaints that have been previously received and addressed by the Project, DGDC will reconsider elevating the importance of the complaint, as this might be a sign that the response to the grievance has been insufficient or inadequate);

c. **Medium Risk** (e.g. claims that require resolution and are related to minor risks associated with health, the environment, construction, transportation, and external stakeholders. Although important, they do not pose an immediate risk); and

d. **High Risk** (e.g. claims related to the security and safety of the community stakeholders, as well of those that, according to criteria of the Community Relations team, require immediate response as the claim poses an immediate major health and safety risk or a risk to an individual, to a large or small group or several groups of stakeholders. This includes claims regarding illegal and abusive activities).

3. The CLO will prepare the Communication Report that includes the information listed below:

a. Internal tracking folio number provided to the claimant;

b. Type of feedback,

c. Area potentially involved;

d. Claimant's information (In case the grievance is not anonymous);

e. Date the complaint or suggestion was originated;

f. Grievance Risk Category (Low, Medium or High);

g. Brief description of the complaint or suggestion;

h. Area responsible for monitoring and solution;

i. Recommended solution;

j. Term of resolution.

Once the claim has been reviewed, the investigation must be carried out in the first instance by the CLO. In case the feedback transcends and involves more areas of the Project, the suggestions and/or complaints will also be channeled to the Managing Director and the HR Manager, as appropriate, to coordinate resolution with the departments involved, depending on the scope of each, and to determine the actions to follow.

Regardless of the categorization of the claim, the claimant must always be informed that her or his grievance has been received and it is being investigated. The answer must be given in written and/or verbal form, in a clear and precise language, preferably respecting the claimant's language. In cases where the complaint is anonymous, the response will be published at the Community Centre. The deadline for the resolution of a complaint or claim is according to the categories is presented in the table above.

In high-risk situations, where there is a possibility of serious danger (e.g., death, sexual harassment), DGDC will consider involving other member teams to weigh in on the resolution strategy. In these type of cases, an alternative timeline will be established for addressing and involving third parties as needed, such as police and hospitals. The Project will always protect the confidentiality of the claimant. The special procedure for High Risk Claims is described below.

1. The claim enters an expedited process for investigation and resolution by the CLO and if applicable, the Major Investigation Team, when appropriate.
2. The Major Investigation Team initiates the investigation immediately and coordinates with local authorities to appropriately address the matter for claims related to allegations of illegal or abusive acts.
3. The CLO meets the claimant to gather additional information as necessary. Subsequently, he or she investigates the claim (e.g., meets with members of the security team involved in the claim), develops, and implements corrective actions in collaboration with other project staff, as necessary.
4. If both the CLO and other staff involved in the resolution of the claim are all the same gender, and the claimant prefers to speak to a person of his or her same gender, DGDC will facilitate this request. This option will be disseminated when disclosing the procedure. If additional investigations are needed, these are promptly undertaken.

The CLO will log the receipt of a comment, formally acknowledge it, track progress on its investigation and resolution, and respond in writing with feedback to the aggrieved party. They will initiate the investigation and ensure its speedy conclusion aiming to provide a response with **ten** (10) working days, unless there are exceptional circumstances. If the Project receives a large number of unsubstantiated grievances, the process will be reviewed to define instances when no response is needed.

If the person responsible of the claim is not able to obtain a resolution within 10 days of the reception of the claim, he or she submits the claim to the CLO, who notifies and seeks advice from the Safeguards Manager.

Where investigations are required, Project staff and outside authorities as appropriate will assist with the process. The CLO will collaborate with GoCD to identify an appropriate investigation team with the correct skills to review the issue raised and to decide whether it is Project related or whether it is more appropriately addressed by a relevant authority outside the Project.

The investigation will also aim to identify whether the incident leading to the grievance is a singular occurrence or likely to reoccur. Identifying and implementing activities, procedures, equipment and training to address and prevent reoccurrence will be part of the investigation activities. In some cases, it will be

appropriate for the CLO to follow up at a later date to see if the person or organization is satisfied with the resolution or remedial actions.

Before the final resolution is issued, the agreed resolution will be reviewed by the claimant, or his or her worker representative, and will confirm his or her agreement with the solution proposed.

15.3.3.3 Resolution

Once the complaints have been categorized and reviewed, the resolution and closure process will unfold as follows:

1. The first step for the resolution is the determination of the timeframe and its inclusion in the registration file previously elaborated.
2. The claim will be discussed by the CLO, and if necessary, the managers of the areas involved. In the case of complaints related to allegations of illegal or abusive acts, the Project will immediately initiate the investigation to adequately address the matter. Based on the investigation, the complaint may or may not proceed.
3. Depending on the risk category, the approach will be defined. The CLO, together with a representative of the Legal Area will evaluate and determine the origin of the complaint and define the measures to be taken in response. All responses must be signed by the ESG Manager before being communicated to the employee and/or interested parties.
4. If the complaint is not admissible, the claimant will be notified.
5. The CLO and the Project Manager will have performed an analysis of all the viable resolutions, seeking to, at all times, provide solutions that respond to the claimant, from a position of dialogue and respect. A complaint will be dismissed only when all the instances of solution have been exhausted, explaining in writing to the claimant, in a clear and indubitable manner, the reasons for the refusal on the resolution of the complaint.
6. All documentation issued during the process by the company to interested parties must be sent by email or written notification. In any case, the answer must have the corresponding record (the folio of complaint or suggestion) and will be properly archived as part of the process.

Right to Appeal

If an external stakeholder who is not satisfied with the procedure or resolution, she or he can contest DGDC's decision. The claimant will have a maximum period of fifteen (15) business days to express any disagreement with the response and appeal it. Once the deadline has elapsed and there are no new grounds for complaint, the process will be considered closed.

In the event that a claimant wishes to challenge/appeal DGDC's decision or propose a counter offer, the Board of Directors will decide whether DGDC can resolve the dispute or it is necessary to involve a third party (e.g. a mediator, technical expert, local authority, or ombudsman) to reach an agreement between the parties and resolve the dispute. The claimant will always have the right to seek other legal or administrative resources. The last resort will be the national judicial process.

When a resolution agreement is established, both parties, the Head of HR acting as the representative of DGDC and the claimant, will sign it in writing. Once the solution is implemented, both parties in recognition of compliance with the agreement will sign a compliance agreement again.

15.3.3.4 Evaluation and Follow Up

It will be the responsibility of the CLO to follow up on all responses to suggestions and/or complaints in written and/or verbal form, especially those of medium and high priority, so as to confirm that the response given to the interest group was adequate, given the circumstances and criteria applicable at the time of filing the complaint. The External GM Database will be used to follow up each claim until is resolved and closed.

15.4 Confidentiality and Protection from Retaliation

The Project is committed to protecting the identity of claimants and anyone else involved in the claim, and to handling personal information in accordance with legal requirements. This duty extends to all employees and representatives of DGDC, its contractors and community members who participate in the External Grievance Mechanism process.

Information about a claim is shared within the company on a need-to-know basis and only to the extent necessary to complete the steps in this directive. DGDC will not share personal information with third parties unless required by law or authorized by the claimant.

When a claim relates to a specific DGDC or contractor employee, that person cannot play a role in the External Grievance Mechanism process in order to prevent conflicts of interest.

DGDC does not tolerate retaliation against claimants, be they an employee, contractor or external stakeholder. When concerns about retaliation are raised, Human Resources/ CLO is responsible for leading an investigation into the alleged retaliation under DGDC's Human Resources Policy and Code of Conduct.

15.5 Documentation and Monitoring

Weekly during construction and bi-annually during operation, the CLO will send the External GM Database to the Project Manager with information on the feedback received through a consolidated report showing the status of each claim and its indicators, removing identification information to protect the confidentiality of the complainant and guaranteeing anonymity.

This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

The External Grievance Mechanism Plan will be reviewed annually, however, if required, the mechanism could be updated as necessary. It will also ensure that contractors update their procedures at least once a year.

15.6 Key Performance Indicators

The table below present the key performance indicators that will evaluate the implementation of this plan:

Table 15-5: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Method/Tool/ Frequency
GM attainment	DGDC will review the External Grievance Database, including complaints closed and those unresolved. Number of grievances received per month versus number of grievances resolved.	100% of grievances resolved within the GM established timeframe.	External Grievance Mechanism Database and CLO / Quarterly

GM time efficiency	DGDC will review the External Grievance Database, especially the number of days between the grievances submission until its resolution and closure to calculate the average length of time needed to resolve grievances.	Max. 10 days	External Grievance Mechanism Database and CLO / Quarterly
GM Focus/ Risk Areas	DGDC will review the External Grievance Database and if necessary talk to the Community Relations Team to breakdown the grievances topics (e.g. health, safety, etc.) and grievance source	Resolve 100% of grievances from all sources and about all topics. Disseminate information regarding the different solutions when there are recurrent complaints in order to decrease recurrent grievances.	External Grievance Mechanism Database and CLO / Quarterly
Method of grievance reporting	DGDC will review the External Grievance Database and engage with community members to check the use and success of the different grievance reporting methods (e.g., number of grievances received by phone, at the office, website, and boxes).	100% of reporting methods will be functional and accessible at all times.	CLO / Quarterly
GM dissemination	DGDC will monitor all GM informational documents, meetings, and events where the GM was disclosed and explained to the affected communities.	GM dissemination of information in at least 70% of disclosure of information events, consultations and other activities, within each of the stakeholder groups and communities.	CLO Records / Quarterly

16. CONTRACTOR MANAGEMENT PLAN

16.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the implementation of the Environmental and Social Management Plans (ESMP) policies and procedures.

DGDC implements technical and organizational measures to ensure all the conducted work by Contractors and Subcontractors is managed in a correct manner, in conformity with local, state and internal requirements.

16.1.1 Objective

The objective of this plan is to define the minimum requirements for contractors and subcontractors working on behalf of DGDC to minimize environmental, social, health, and safety (ESHS) risks associated with the contracted services. DGDCs own Contractor Management requirements are provided below in order to provide contractors procedures when doing their own subcontractor management.

The Contractor Management and Supervision Plan is a management tool that will be updated periodically to ensure the efficiency of contractor management.

16.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's Environmental and Social Management Plans (ESMP) policies and procedures, which are aligned with international best practices.

Contractors will use this procedure and develop it further to provide specifics on how the various requirements from the Project-specific Environmental and Social Management Plans (ESMP) will be applied on the ground. DGDC will review and approve these documents before any implementation.

16.2 Roles and Responsibilities

In order to properly implement the Contractor Management and Supervision Plan, DGDC requires the involvement of the people listed below.

Table 16-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Contractor Management and Supervision Plan.
Director of Accounts	■ Ensure the availability of resources necessary for the implementation of the Contractor Management and Supervision Plan.
Head of ESG	■ Assure the correct implementation of the Contractor Management and Supervision Plan
ESG Manager	■ Assure the correct implementation of the Contractor Management and Supervision Plan ■ Update the Contractor Management and Supervision Plan. ■ Review and approve the contractor project-specific contractors' supervision plan.
Project Manager	■ Implement the Contractor Management and Supervision Plan. ■ Manage and record the performance of the Contractors
H&S Manager	■ Implement the Contractor Management and Supervision Plan.

Role	Responsibilities
	■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining DGDC's KPIs. In addition, ensure the internal coordination to follow the Contractor Management and Supervision Plan.
Contractor Company	■ Develop project-specific Plans aligned with DGDC's ESMP
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Contractor Management and Supervision Plan

16.3 Activities

The following sections explain the activities and requirements for the proper management of contractors and subcontractors.

16.3.1 Current DGDC Contractor Management Procedures

DGDC does not perform engineering and construction work in-house. Instead, the company contracts out engineering, procurement and construction work to one or more contractors. Contractor management plays a key role in DGDC's business. As of the date of this management plan, DGDC has not selected Contractors for the Project.

DGDC selects and approves its contractors, as well as product suppliers, through a pre-qualification process. Pre-qualification ensures that DGDC only works with suppliers of goods and services that are able to comply with DGDC's policies.

Contractor management can be achieved through six steps:

1. Definition of the scope of work
2. Pre-qualification of the contractor
3. Contractor selection
4. Contract award and terms establishment
5. Contractor monitoring
6. Post contract review

Collaboration between Head of EPC, ESG Manager and Project Manager is essential for the efficient implementation of these steps.

16.3.1.1 Definition of the Scope of Work

Once the project is defined, the DGDC Project Manager reviews the project description and prepares the ESHS-related requirements to be included in the tender specifications. These requirements will address ESHS needs and red flags identified during the Project design process. As appropriate, this will also reflect requirements found in project-related and authorizations (e.g., licenses and permits).

Special design requirements to avoid or mitigate potential impacts must also be included in the ESHS requirements to be disclosed to the contractors in the tender specifications.

If the bidders have any questions before submitting the proposal, the DGDC management may meet with the bidder to provide guidance on how to comply with ESHS requirements. When considered appropriate, the bidders are given the opportunity to address gaps identified in their proposals. The Project Manager

evaluates the proposals once they are received. The objective is to determine if the proposal adequately addresses ESHS requirements. Proposals that do not adequately address these requirements will be either rejected, or returned to the bidder for improvements.

16.3.1.2 Pre-Qualification of the Contractor

DGDC shall maintain a register of qualified contractors. Each contractor shall be evaluated as to the level of risks of supplied products and services in terms of environmental, health and safety and social aspects. For instance:

- A supplier of chemical products is of higher risk that a supplier of pipes
- A provider of electrical installation and maintenance services is of higher risk than a provider of IT services

Information should be systematically gathered from contractors related to high risk activities.

- Requesting information about certifications related to environmental, health and safety and social aspects (ISO14001, OHSAS18001, ISO45001)
- If no such certification is available, asking information about how the contractor manages key risks
- Performing audits of those contractors whenever deemed relevant and feasible.

Contractors with unsatisfactory management of risks should be identified as banned for use in the register of contractors. Other contractors should be identified as qualified for use. Certain may be identified as preferred contractors.

16.3.1.3 Contractor Selection and Award

Depending on the level of risks, the evaluation of the bids from contractors should take into account the environmental, health and safety and social dimensions, on top of other factors such as price, technical aspects and quality.

Records of the tender process demonstrating the integration of environmental, health and safety and social aspects shall be maintained by DGDC.

Once the contractor or supplier has been selected, a contract is drafted. At this point, the Project Manager with help of DGDC's Legal Department includes the necessary clauses in the contract to allow DGDC to enforce compliance with the company's ESHS requirements.

Per the contract with DGDC, the principal Contractor must align with the Project's ESHS standards and procedures, including communication methods, responsibility and contract monitoring.

16.3.1.4 Contractors Responsibility

If the Contractors hire a subcontractor, the Contractors must develop a subcontractor risk management plan in conjunction with DGDC whenever high risk activities are identified. Risk management plans shall:

- Identify key risks related to the activities of the Sub-Contractor and interfaces with DGDC and other contractors, where relevant.
- Define how those risks are going to be managed and monitored.
- Define reporting on the management of those risks.

The latest version of risk management plans shall be communicated to DGDC, who shall record them as part of their ESMS.

If not already in place, the Contractor will establish policies and procedures to manage and supervise its own subcontractors. The responsibilities of the Contractors include, but are not limited to:

- Responsible for complying with all applicable Dominica's ESHS regulations and permit or licenses commitments;
- Work safely to ensure the safety of their own employees, as well as that of other contractors, site visitors, the general public and the environment;
- Ensure that employees are properly trained, certified, qualified or competent for the activities they are expected to perform;
- Conduct or participate in the required meetings of Health, Safety and Environment;
- Provide and ensure that workers use all the required Personal Protection Equipment (PPE);
- Resolve any applicable corrective action that results from agency or DGDC inspections, promptly and to DGDC's satisfaction;
- Report all incidents to the Project Manager; and
- Conduct environmental monitoring for all relevant phases of work and report emerging risks to DGDC management.

Each Contractor is responsible for their employee's and subcontractor activities. Therefore, if the Contractor intends to subcontract part of the service, the third party must meet all the requirements described in this plan for the duration of the contract. The Contractor will be responsible for conducting supervision and enforcing DGDC's standards.

16.3.1.5 Review and Approval of Contractor ESHS Documents

Contractors and subcontractors are required to send all of the ESHS plans and procedures that intend to utilize during the Project to the Project Manager, prior to the initiation of any activities controlled by these documents. DGDC Management and the Project Manager, review the documents to ensure that contractors and subcontractors comply with DGDC policies, and management plans, as well as with Dominica's ESHS laws and regulation. The activities controlled by these documents cannot be initiated until the documents are approved by DGDC Management and the Project Manager. The ESHS documents must be available for DGDC review at the Contractor office and on-site whenever possible.

In the event that a contractor has ESHS documents that cover the same topics as DGDC corporate and/or Project documents, DGDC Management will determine which documents will apply to the contractor's work for the Project. Then, the documents that apply will be listed in a Bridging Document.

Contractor documents must clearly describe the objective, process, responsibilities, and relation to other elements of the ESHS documents. Specifically, management plans will include the following information:

1. Objectives;
2. Legal requirements;
3. Roles and responsibilities;
4. Training;
5. Process description;
6. Monitoring;
7. Performance indicators; and

8. Reporting and notification requirements.

16.4 Training and Competency

Prior to the start of any activity, DCDG must ensure that Contractors provide evidence that their workers have received the necessary information and training to recognize the present work risks to protect their health, and to have the necessary skills to do the assigned activities.

Before starting the assigned work, employees must have, at least the following information:

- Knowledge of materials, equipment and tools;
- Identified risks associated to operations and the control measures;
- Potential risks for health and safety along with prevention measures;
- Health and safety norms that can be applied;
- PPE use;
- Emergency procedure;
- Incidents or accidents reporting method;
- Insurance for risks and environmental associated risks;
- Waste disposal standards;
- Environmental protection norms;
- Understanding of the grievance's mechanism;
- Existence of Human Resources Procedure or mechanism to make sure that work conditions are in agreement with national regulation; and
- Labor law elements.

16.5 Contractor Supervision Procedure

Depending on the level of risks, DGDC shall evaluate the performance of the contractor in the management of environmental, health and safety and social aspects throughout the realization of the contract. Surveillance is made of a combination of the following:

- Kick-off meeting (mandatory)
- Periodic meetings, depending on risks
- Audits
- Reporting by the contractor
- Contract closure and return on experience meeting

The surveillance method shall be defined for each contract.

The above surveillance shall result in an evaluation at the end of each contract, which shall be recorded in the register of contractors of DGDC. The result of this evaluation may be considered for future contracting processes to ensure the provision of quality services and strong commitment in the environmental, social, health and safety occupational dimensions.

The Contractors, in collaboration with DGDC, will establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities and authority to implement the ESMS and ESMP.

Specific personnel with clear lines of responsibility and authority will be designated in this section. Key ESMS responsibilities will be communicated to the relevant personnel and to the rest of the Contractor workforce as well as DGDC and any Subcontractors. Sufficient management sponsorship and human and financial resources will be provided on an ongoing basis to achieve effective and continuous ESMS performance.

16.5.1 Direct Supervision

16.5.1.1 Construction

DGDC shall perform at least the following types of meeting with the EPC Contractor:

Table 16-2: Supervision of the EPC Contractor

Meeting	Frequency	Content	Attendants
Morning meeting	Daily	• Key events from the past day • Presentation of key activities of the day • Identification of activities presenting specific risks; presentation and discussion on how those risks are going to be controlled and monitored	DGDC Head of ESG EPC Contractor representative for operations
Weekly meeting	Weekly	• Activity planning for the coming weeks with key risks • Planning on how to manage key risks	DGDC representative EPC Contractor representative ESG and HR representatives from DGDC and Contractor
Monthly meeting	Monthly	• Actions from last meeting • Monthly ESMS performance • ESMS monitoring activities performed by the contractor • ESMS monitoring activities performed by DGDC • Complaints • Incidents, accidents and resulting actions • Non-conformities and their status • Improvement actions	ESG representatives from DGDC and Contractor
ESMS review	Twice a year	• Actions from last meeting • Key events and changes affecting the ESMS • Surveillance activities and results by the contractor and DGDC • Complaints • Incidents, accidents and resulting actions	DGDC Director(s) and Head of ESG EPC Contractor Director(s) and Head of ESG

		• Non-conformities: analysis, trends • Improvement actions	

The above types of meeting, contents and frequencies shall be regularly reviewed in light of return on experience and risks.

DGDC shall audit the adherence of the EPC contractor to agreed procedures through the audit plan, defined in the audit procedure (DGDC-ESMS-006).

16.5.1.2 Operation

DGDC shall perform at least the following types of meetings with the O&M Contractor:

Table 16-3: Supervision of the O&M Contractor

Meeting	Frequency	Content	Attendants
Weekly meeting	Weekly	• Activity planning for the coming weeks with key risks • Planning on how to manage key risks	DGDC representative O&M Contractor representative ESG representatives from DGDC and Contractor
Monthly meeting	Monthly	• Actions from last meeting • Monthly ESMS performance • ESMS monitoring activities performed by the contractor • ESMS monitoring activities performed by DGDC • Complaints • Incidents, accidents and resulting actions • Non-conformities and their status • Improvement actions	ESG representatives from DGDC and Contractor
ESMS review	Twice a year	• Actions from last meeting • Key events and changes affecting the ESMS • Surveillance activities and results by the contractor and DGDC • Complaints • Incidents, accidents and resulting actions • Non-conformities: analysis, trends • Improvement actions	DGDC Director(s) and ESMS representative O&M Contractor Director(s) and Head of ESG

The above types of meeting, contents and frequencies shall be regularly reviewed in light of return on experience and risks.

DGDC shall audit the adherence of the O&M contractor to agreed procedures through the audit plan, defined in the audit procedure (DGDC-ESMS-006).

16.5.2 Reports

The Contractor must deliver to DCDG's Project Manager a corresponding report of the social and environmental activities carried out, to be delivered monthly for DCDG to review. This report will include:

- Environmental reports (e.g. activities, relevant findings, national legislations etc.);
- Social reports (e.g. activities, relevant findings, compliance to national legislation).

The contractor will also submit reports regarding occupational health and safety activities to the H&S Manager on a monthly basis. Among the information that will be included in the reports are:

- Compliance with the occupational health and safety aspects established in the corresponding Project-level procedures.
- Accident Statistics Report.
- Report of compliance.
- Follow-up report and compliance of audit's findings.

16.5.3 Monthly Audits

DCDGs Project Manager will carry out a monthly audits of the contractors, in order to verify the existence of the documentation requested by the Project and review it. Monthly audits will be scheduled. The documentation review will be randomly as well as the Key Performance Indicators (KPIs); as a result, the level of performance of the contractor and subcontractors will be assessed. Thus, corrective measures will be defined, when applied, as well as the time of its completion.

The H&S Manager will hold monthly audits to the contractor in order to verify that activities are running according to established procedures work, in order to prevent incidents and accidents, while running the activities. The result of the audit is sent to the contractor for monitoring and compliance with the health and safety recommendations established in the audit.

16.5.4 Accommodation Auditing Protocol

During the initial stages of construction, the Project expects to hire local workers located within a daily commute distance of the Project site. However, several construction activities will require workers with specialty skills who will live in local hotels and accommodations. Construction will require up to 50 workers. During operations, DGDC estimates that there will be 4-6 employees on site. DGDC will evaluate the possibility of hiring meal delivery services from local restaurants that have already been mapped and previously contacted. DGDC will also let employees bring their own meals from home if preferred.

The migrant workforce is not expected to be significant; however, as some local hotels and accommodations will be used to lodge migrant workers an accommodation auditing protocol will be required.

The Accommodation Auditing Protocol is a tool to verify and check on the suitability and appropriateness of housing conditions for expatriate subcontractors working on the DGDC Project. The purpose of these audits is to detect, assess, support and control the problems and needs of the expatriate workers, enhancing autonomy and improving the quality of life of the worker for their better performance and productivity on the Project. The audits will be focused on the health of the expatriate workers, if the house complies with health standards, vector control standards, and has basic services (such as water, electricity,

easy access to the project, and if the worker has access to transportation services). Please see Section 18 of this document for specific protocols with regards to COVID-19.

DGDC's Contractors will be responsible to carry out the Home Auditing Protocol to guarantee that the audits are completed according to what is established in this plan and that it is executed in an efficient way.

DGDC's Contractors will perform at least two visits per month to a random sample of the homes. The home visit will consist of the activities listed below.

1. **Planning of the Visit**: The Contractor's staff member (such as the HR manager or ESG manager) will plan and organize the monthly visits to worker homes. The visits will be carried out every month, and will only take place on weekdays.
2. **Arrival at the house**: Once the date and time have been established, the worker is committed to be present at the house while the audit is taking place. A DGDC staff member (such as the HR manager) will accompany the Contractor for the visit.

   Upon their arrival, the team will greet the worker, introduce himself or herself, and personalize the contact. The number of people who live with the worker will be verified, as well as the type of housing in which he/she lives. In addition, the Contractor will verify if the house has basic services such as water and electricity, and whether the house is located in an area where it is easy to get to the Project site, as well as if the house is in an area that represents social risk or is high in crime. The visit will be focused on studying and observing the social and family environment.
3. **Survey**: Attached as an appendix to this Plan (**Appendix 16-A**). Once the inspection has been completed, a survey form will be completed and submitted.
4. **Close of the visit**: Once the visit is over, the Contractor will present a summary report of the audit findings to the Project's ESG Manager about the visit, who will determine the actions that will be carried out according to the social report presented.

16.5.5 Subcontractor Monitoring by the Contractor

The contractor is responsible for the performance supervision of the subcontractor's social, environmental and occupational health and safety performance. It is responsible for their compliance with the required E&S standards.

16.6 Documentation and Monitoring

DGDC will keep a record of the following documents:

- Contractor's pre-qualification documentation;
- ESHS Plan, and any other plans, developed by the Contractor;
- Evidence of compliance with national legislation in environmental, health and safety matters, including work conditions (training certificates, medical care records, work contracts, environmental license, among others); and
- Evidence of compliance with the standards and policies established in the ESMP.

16.7 Key Performance Indicators

The Contractor Management and Supervision Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with contractors and subcontractors.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 16-4: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/ Frequency
Contractor's policies compliance	Contractor's compliance with labor conditions and policies	100% compliance with terms and conditions of employment, with human resources policy and code of conduct (or similar), with labor relations, with non-discrimination and equal opportunities and retrenchment	All Project phases	Contractor's policies and management plans / Quarterly
Worker's Health and Safety	Number of reports generated indicating the number of accidents and incidents	100% of reported accidents (total days and hours). Correct implementation of corrective measures when applicable.	All Project phases	Contractor's Monthly Reports / Monthly
	Contractor's compliance with H&S management plans	Compliance with 100% of H&S management plans	All Project phases	Contractor's Monthly Reports and Management Plans / Monthly
Environmental and Social Impacts	Contractor's compliance with Environmental and Social management plans	Compliance with 100% of Environmental and Social management plans	All Project phases	Contractor's Monthly Reports and Management Plans / Monthly
Community Health and Safety	Contractor's compliance with the Community Health and Safety management plan	Full compliance with the Community Health and Safety management plan	All Project phases	Contractor's Monthly Reports and Management Plans / Monthly
Worker's accommodation	Compliance with the Accommodation Auditing Protocol	100% compliance with the Accommodation Auditing Protocol	All Project phases	Accommodation Auditing Protocol Checklist / Quarterly
Supervision	Number of reports, follow-up meetings and monthly audits	At least one meeting per week. At least one report per month. At least one audit per month.	All Project phases	DGDC records / Weekly and Monthly

17. STAKEHOLDER ENGAGEMENT PLAN

17.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the implementation of the Environmental and Social Management Plans (ESMP) policies and procedures.

Stakeholder engagement is an essential part of the ESIA and project development process. It ensures that stakeholders, including Project-affected communities, are provided with timely and transparent information regarding the Project, and allows stakeholders to provide input on potential issues of concern relating to the Project. This plan is connected and complementary to the External Grievance Mechanism (Section 15).

This Stakeholder Engagement Plan (SEP) outlines the program of engagement for the communities in the Project's Area of Influence. Development, update and implementation of this SEP are the responsibility of DGDC (the Project). This SEP conforms to international good practice and has been developed to align with the IFC's Guidelines for meaningful stakeholder consultation, and to enable a positive community change through community participation. DGDC acknowledges the importance of an adequate management of the environmental and social risks and impacts associated with its Project, alongside the expansion of the positive effects of its activities. DGDC believes that a two-way communication and participation with internal and external stakeholders is essential for the development and success of its operations.

This SEP is designed for an ongoing exchange of information that allows the Project to 1) identify, understand and address community/stakeholders priorities and concerns, and 2) improve decision-making and transparency. Furthermore, this is an evergreen document that will evolve according to DGDC's activities.

Aligned to the above, the Stakeholder Engagement Plan establishes the guidelines for the:

- Identification of Stakeholders within the Project's Area of Influence (AOI) and definition of their characteristics;
- Stakeholder Mapping and prioritization of stakeholders;
- Disclosure of information and community participation;
- Defining the appropriate communication tools;
- Scheduling communication and engagement activities; and
- Keeping a record of the interactions with stakeholders.
- Describing how concerns or grievances will be handled via a Grievance Mechanism and record feedback and resolve any grievances that may arise through a formal feedback mechanism.

17.1.1 Objective

This SEP has been developed to meet the expectations of the DGDC, lenders, regulators and the communities. It also incorporates international standards from the IFC and WB. The SEP describes the stakeholder identification process and outlines an engagement program to promote meaningful, timely and effective engagement with stakeholders. It builds on previous engagement efforts, such as the public consultation carried out in June of 2017.

Engaging stakeholders is an important aspect of managing ongoing social and environmental performance and non-technical risks. The objectives of stakeholder engagement are to:

- Promote the development of respectful and open relationships between stakeholders and DGDC;
- Identify stakeholders and understand their interests, concerns and influence in relation to ongoing activities as well as relevant interested parties such as government agencies and other key stakeholders. Vulnerable groups (elderly, disabled, unemployed) will are also identified as stakeholders;
- Provide stakeholders, both interested and affected stakeholders, with timely information about the Project's activities, in ways that are appropriate to their interests and needs;
- Provide a disclosure plan, including the identification of any locations where relevant project documentation will be available locally and elsewhere as well as languages to be used;

- Guarantee the active participation and consultation of the stakeholders throughout the life of the Project. During the consultations there will not be any form of manipulation, interference, coercion or external intimidation;
- Support alignment with the international requirements, corporate standards and guidelines for stakeholder engagement and identify the local legal framework of consultation activities and disclosure requirements, particularly in respect of those public consultation activities that are directly required under the local permitting process;
- Describe how concerns or grievances will be handled via a Grievance Mechanism and record feedback and resolve any grievances that may arise through a formal feedback mechanism;
- Identify the resources and responsibilities for the SEP execution, including the monitoring activities; and
- Monitor and evaluate the actions carried out to adapt or modify the SEP as necessary.
- Record all consultation activities, including those prior to the commencement of the ESIA process; and
- Provide an action plan for further consultation including at least two meetings bi-annually in each affected community during preparation, construction and operational phases of the Project, including details on appropriate formats for effective and culturally meaningful interaction with the community and relevant stakeholders.

17.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. DGDC will review and approve this document before any implementation.

The geographical scope of the stakeholder engagement plan is described by the Project's Area of Influence (AOI), which comprises Roseau (in the Area of Direct Influence, ADI) and the entire island of Dominica (which is the Area of Indirect Influence (AII).

17.2 Roles and Responsibilities

In order to properly implement the Stakeholder Engagement Plan, DGDC requires the involvement of the people listed below.

Table 17-1: Roles and Responsibilities

Role	Responsibilities
Executive Chairman and Board of Directors	■ Be familiarized, review and approve the Stakeholder Engagement Plan.
Finance & HR Manager	■ Ensure the availability of resources necessary for the implementation of the Stakeholder Engagement Plan.
Managing Director	■ Be familiarized with the Stakeholder Engagement Plan and provide the necessary resources to ensure its proper implementation.
Grievance Mechanism Team	■ Responsible for office management and administration of stakeholder engagement systems, including grievance mechanism.

Role	Responsibilities
Site and Office Attendant	■ Monitor sites for maintenance purposes, to provide local guiding services to visitors and undertake office activities as required
Community Liaison Officer	■ Implement the Stakeholder Engagement Plan. ■ Coordinate, together with the Administration and Safeguards Officer, the implementation of the relationship and communication actions. ■ Ensure a constant communication channel with the Project Stakeholders.
Contractor Company	■ Develop a project-specific Stakeholder Engagement Plan.
DGDC Employees, Contractors and Subcontractors	■ Read and be familiarized with the Stakeholder Engagement Plan.

17.3 Activities

The identification, mapping and analysis of stakeholders will be a dynamic and continuous exercise in the execution of any project, since it allows a deep understanding of its context and guarantees the effectiveness and adaptation of engagement strategies. The activities found in this SEP establish the guidelines for the management of external communication channels, as well as the mechanisms to manage the participation of interested stakeholders.

17.3.1 Stakeholder Identification

The identification of stakeholders is essential, since it provides the basis for designing the relationship strategies with each interest group in order to achieve the greatest possible participation and social acceptance. To the extent that as the participation and acceptance grows, social impacts and risks may be minimized in greater proportion.

Likewise, the mapping helps to define which interest and affected groups DGDC will contact and how to manage the risks. This section of the SEP focuses on the stakeholder identification and mapping identified for the early stages of the Project.

Considering previous experiences, direct sources of information (e.g. interviews, surveys) and publicly available information, the Project's stakeholders have been identified by:

- Analyzing who could be affected by the Project activities and how. For doing so, the Project geographical location as well as its activities and potential impacts will be considered (e.g. primary site, related facilities, transport routes, etc.);
- Avoiding limited criteria for the identification of stakeholders affected and prioritizing groups of neighboring people;
- Phone interviews were carried out with different stakeholders.

17.3.1.1 Methodology

One of the first steps in stakeholder engagement planning is the identification of stakeholders. Stakeholders typically include government officials, regulators, members of the community and public at large, Non-Governmental Organizations (NGOs) and civic leaders, media, employees and contractors, and industry associations. Stakeholders can be individuals working on a project, groups of people or organizations, or even segments or sectors of a population. A stakeholder may be actively involved in a project's work, affected by the project's outcome, or in a position to affect the project's success.

After identifying the stakeholders, it is key to understand their needs and expectations for engagement, and their priorities and objectives in relation to the Project.

As part of this process, it is particularly important to identify individuals and groups who may find it more difficult to participate and those who may be differentially or disproportionately affected by the project because of their marginalized or vulnerable status. It is also important to understand how stakeholders may be affected – or perceive they may be affected – so that ongoing engagement can be tailored to inform them in an appropriate manner and address their views and concerns.

While an interest in an effort or organization could be just that – intellectually, academically, philosophically, or politically motivated attention – stakeholders are generally said to have an interest in an effort or organization based on whether they can affect or be affected by it. The more they stand to benefit or lose by it, the stronger their interest is likely to be; and the more heavily involved they are in the effort or organization, the stronger their interest is as well.

Stakeholders' interests can be many and varied. A few of the more common interests include:

- Labor
- Social Change
- Economics
- Indigenous Peoples Rights
- Environment
- Natural Resources
- Safety and Security

The identification of stakeholder groups for DGDC should be made through publicly available information, local knowledge from the Project team and data collected during the any interviews with stakeholders. The stakeholder groups have been "mapped" according to their influence, interest and probable position in relation to the Project. This assignment is based on knowledge of the social, cultural, political, environmental, and factors associated with the development of the Project.

Vulnerable groups who may be differentially or disproportionately affected by the Project because of their disadvantaged or vulnerable status should also been identified as part of the stakeholder mapping. This group of affected stakeholders should be determined based on factors, data and status of gender, ethnicity, culture, physical or mental disability, poverty or economic disadvantage and dependence on unique natural resources. It should be noted that this is not a comprehensive list, but includes characteristics which may drive inclusion.

Once the stakeholder groups are identified, their position, interest and influence regarding the Project are evaluated. The position has been defined as the degree of acceptance by the interest group towards DGDC. The criteria are presented in the table below.

Table 17-2: Assessment of Position Criteria

Assessment	Position
In favor	The interest group's position in relation to the Project is favorable; given that it perceives that, it has or will have a positive performance in relation to its topics of interest.
Neutral	The stakeholder's position in relation to the Project is neutral, indefinite. They may need more information if it is not clear to them how the Project will be developed in the future.

Against	The position of the group of interest in relation to the Project is unfavorable, since it identifies more negative aspects than positive ones in the current or future development of the Project.

Source: ERM, 2020.

The interest has been defined as the stakeholder's interest degree that he/she has on the issues associated with DGDC. The evaluation criteria are presented below.

Table 17-3: Interest Evaluation Criteria

Assessment	Interest Position
Low	The interested party does not know or recognizes few links between the Project and their own interests, and shows little interest in knowing more about it.
Average	The interested party recognizes some relations between the Project and its interests.
High	The interested party recognizes a set of common interests with the Project and shows a strong interest to know more information about it.

Source: ERM, 2020

Finally, the influence has been defined as the degree of articulation with other actors and the capacity to generate mobilization as seen on the table below.

Table 17-4: Influence Evaluation Criteria

Assessment	Influence Position
Low	The interested party has little capacity for mobilization and/or few networks and relationships with local actors.
Average	The interested party has the ability to articulate and mobilize media, exerts influence in social networks with important connections with local actors such as inhabitants, workers, tourists, politicians, among others.
High	The interested party has a high capacity for articulation and mobilization with significant local networks and actors such as inhabitants, workers, tourists, politicians, among others.

Source: ERM, 2020

17.3.1.2 Stakeholder Groups

Stakeholder groups are individuals, groups or institutions that have a stake or a particular interest in the Project. They may be affected by it (either positively or negatively) or they may have an interest in it and be in a position to influence its outcomes. Therefore, the stakeholder groups have been classified as:

- Interested groups, which can be Project beneficiaries and commonly favor the Project; and
- Affected groups, which are individuals or groups adversely affected by the Project and consequently some might oppose the Project.

The Project will follow a different consultation rationale per stakeholder group. The Project will closely monitor, engage and consult the affected groups in the AOI. Meetings with these groups, described below, are prioritized by the Project. On the other hand, the Project engages with interested groups to keep them informed about the Project, to collaborate in topics related to common issues, such as health and safety measures, and provide specific information when they request it. While the consultation rationale towards interested groups is not as intense and frequent as with the affected groups, DGDC is committed to maintain a close relationship and frequent communication with government entities and financial institutions, among others.

Table 17-5: Affected and Interested Stakeholder Groups in the Project's AOI

Affected Stakeholder Groups	Interested Stakeholder Groups
Communities in the Area of Influence and landowners near the Project site: Residential communities in the Project's wider socio-economic Study Area. Several land plots and houses have been identified near the Project site. For example, Laudat, Trafalgar and Wotten Waven communities.	***Government entities relevant to the Project:*** Government agencies, elected officials and public service providers that may be at the local or national levels. For example, Ministry of Public Works, Energy & Ports, Office of Disaster Management
	Neighboring Projects: Includes companies carrying out activities near the Project.
	Mass media: It refers to media present in the Area of Influence, including social media platforms linked to the Project.
	Contractors: It includes DGDC's contractors and sub-contractors.
	Workers and Staff: It includes all of DGDC's workers and staff.
	Tourism sector: This sector includes different groups within the sector such as hotels, restaurants and government agencies. For example, Wotten Waven Spa Operators and Papillote Wilderness Retreat.
	Vulnerable groups in the AOI: This stakeholder group could include women, children and elderly, indigenous people, families and individuals in extreme poverty, people with physical and psychological disabilities, and individuals that depend on natural resources. These groups are commonly more vulnerable to social inequality. In addition, vulnerable groups have a higher sensitivity to potential Project impacts, in many cases do not have the means to defend their interests and concerns and it is more challenging for them to benefit from the Project's benefits. For example, women.
	NGOs, Associations and civil organizations: Local and regional NGOs and associations that could generate opinions about the development of the Project or that could participate in conflict resolution that could take place within the communities. For example, Community Leaders of the Roseau Valley, Laudat Community, Laudat Improvement Community.

Source: ERM, 2020

17.3.1.3 Stakeholder Analysis

The table below presents each stakeholder group description, identified actors, and their potential position, interest and influence. Ten (10) categories of interest groups have been identified: i) Communities and landowners in the Area of Influence, ii) Neighboring Projects, iii) Tourism Sector, iv) Government Entities, v) NGOs and Associations, vi) Financial Institutions, vii) Mass Media, viii) Contractors, ix) Workers, and x) Vulnerable Groups.

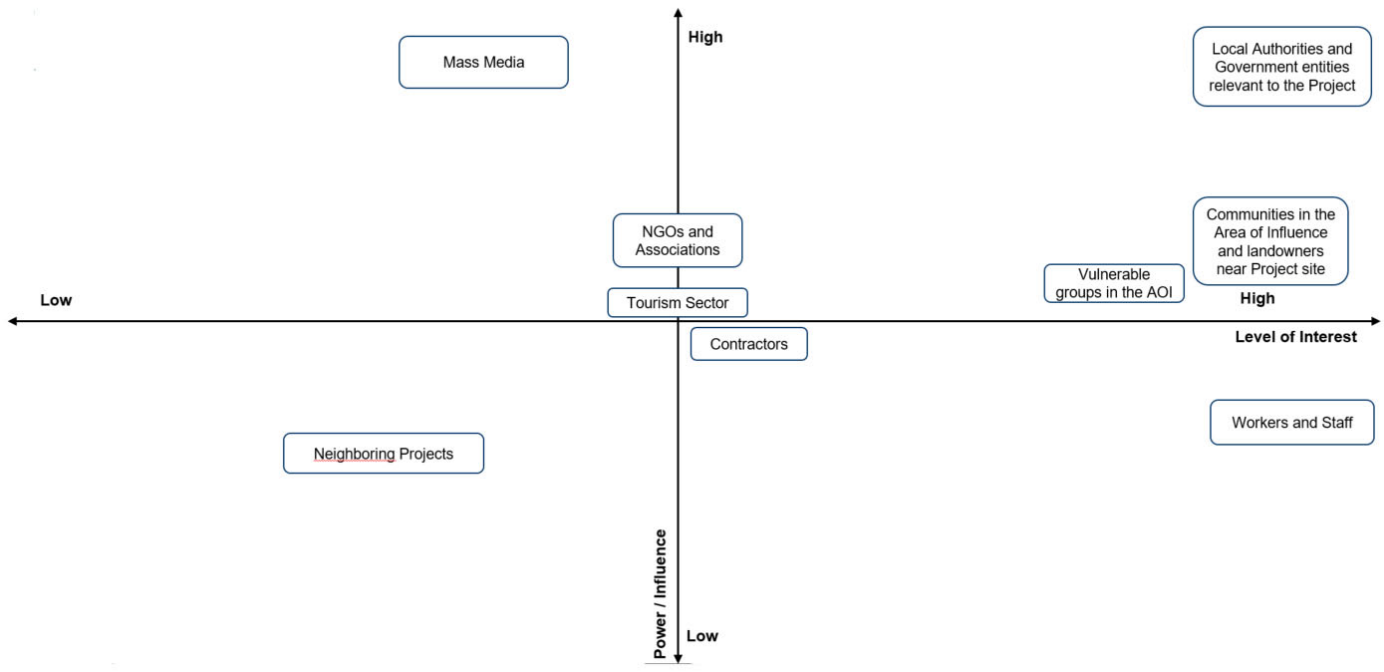
Table 17-6: Analysis and Identification of Stakeholder Groups

Stakeholder Group	Description	Identified Actors	Potential Position (Against, Neutral, In favor)	Interest (Low, Average, High)	Influence (Low, Average, High)
Communities in the Area of Influence and landowners near the Project Site	It refers to those locations that are within the perimeter of the Project or neighboring areas and may be affected by the Project.	Laudat, Trafalgar and Wotten Waven Communities, Roseau Valley Constituency	In Favour	High	Average
Local Authorities and Government entities relevant to the Project, including the management authority of the Morne Trois Piton National Park	It refers to Dominica island authorities that might be interested in or affected by the Project.	Ministry of Public Works, & Digital Economy, Office of Disaster Management, Forestry Department, Invest Dominica Authority, Statistics Department, Environmental Health Department, Discover Dominica Authority, Ministry of Agriculture, DOWASCO, DOMLEC, Ministry for Blue & Green Economy; Ministry of Planning, Economic Development and Investment; Environmental Coordinating Unit; Ministry of Housing & Lands; Ministry of Health and New Health Investment; Independent Regulatory Commission	In Favour	High	High
Tourism Sector	Businesses in the tourism sector, such as restaurants, hotels, or the tourism department.	Wotten Waven Spa Operators, Papillote Wilderness Retreat, Dominica Hotel and Tourism Association, vendors, , Café Mon Plaisis, Rainforest Cottages; Le Petit Paradis;; Symes Zee Villa; Roxy's Mountain Lodge; tour guides	In Favour	Average	Average
Neighboring Projects	Refers to any projects that are being developed near the Project site	■ 3 River's Eco resort	Neutral	Low	Low
Vulnerable Groups in the AOI	This category includes identified vulnerable groups in the AOI (affected people are only those located in the footprint of the project)	■ Women, children and elderly ■ Families and individuals in extreme poverty ■ People with physical and psychological disabilities ■ Individuals that depend on natural resources	In Favour	High	Average
NGOs and Associations	Local and regional NGOs and associations that could generate opinions about the development of	Community Leaders of the Roseau Valley, Laudat Improvement Committee, Geothermal Awareness	Neutral	Average	Average

	the Project or that could participate in conflict resolution that could take place within the communities.	Committee; Laudat Church Committee; Laudat Farmers Group; Wotten Waven Improvement Committee; Wotten Waven Development Committee; Wotten Waven Farmers Group; Trafalgar Village Council; Trafalgar Vendors Association; Trafalgar Church Committee; Trafalgar Farmers Group			
Contractors	It includes DGDC's contractors and sub-contractors.	The Project's clients, suppliers, contractors and subcontractors. They will be defined once the Project begins.	In favor	Average	Average
Workers and Staff	It includes all of DGDC's workers and staff.	The Project's workers,	In favor	High	Low
Mass Media	Includes mass media in the Project area.	■ Dominica Broadcasting Corp, Wice FM, Kairi Radio, Dominica Newsonline	Neutral	Average	High

The following figure shows the identified actors that have been engaged with and their probable position and influence on the Project according to the qualitative analysis.

The categories of stakeholder groups were assigned in an X-Y axis according to their position (X-axis) and the influence (Y-axis) with respect to the Project. A qualitative mapping criteria scale was applied in order to position the stakeholders on the X-Y axis. The level of influence of each interest group was determined as High, Average or Low. Just as the probable position was determined as *Positive* (grey), *Negative* (blue) or *Neutral* (light blue).



Source: ERM, 2020

Figure 17-1: Mapping of the Stakeholder Groups

17.3.2 Community Participation

Effective participation requires sharing information related to the Project with affected communities and other key stakeholders, facilitating a well-informed consultation process and the contribution of interested citizens to the design and planning of the Project.

In order to promote a better understanding of the Project and instill confidence among its stakeholders, DGDC will ensure transparency in the communication of relevant information by:

- Disclosing information on a timely manner;
- Disclosing relevant information by managing expectations adequately (e.g. employment opportunities) and avoiding downplaying the potential negative aspects (e.g. inconvenience during the construction phase);
- Disclosing relevant information in a culturally appropriated manner to facilitate the participation of local population;
- Disclosing information in a way that supports the consultation process, allowing enough time to pass between the communication of information and the start of the consultations.
- Disclosing the existence of the External Grievance Mechanism and its communication channels.

17.3.2.1 Communication Tools

Media and Disclosure of Written Information

DGDC has set up a Project specific website (https://www.geodominica.dm/) which is regularly updated highlighting progress, minutes of meetings that have taken place, the latest grievances that have been raised and other issues as appropriate. This site will be functional throughout the duration of the scoping and construction periods and for at least the first years of operation.

Community Visual Aids

DGDC will produce visual aids to support community engagement. Visual aids shall describe the Project and impacts using images and photographic examples of the types of activities and infrastructure planned. Images shall be used to facilitate discussion potential impacts.

Community Meeting Records

Records of community consultation meetings, meetings with government and civil society shall be kept in a separate document with the detailed stakeholder database. All records shall include attendance lists and photos.

It is recommended that this documentation should include the following, as appropriate:

(a) Date and location of each meeting, with copy of the notification to stakeholders;

(b) The purpose of the engagement

(c) The form of engagement and consultation

(d) Number of participants and categories of participants;

(e) A list of relevant documentation disclosed to participants;

(f) Summary of main points and concerns raised by stakeholders;

(g) Summary of how stakeholder concerns were responded to and taken into account;

(h) Issues and activities that require follow-up actions, including clarifying how stakeholders are informed of decisions.

Language

All community materials shall be translated into Creole and English to meet the needs of local stakeholders. Meetings shall be conducted in English and Creole as necessary. Materials for government and civil society stakeholders shall be in Creole and/or English.

17.3.2.2 Engagement Activities to date

Stakeholder engagement and outreach activities have been carried out by the Project since 2012. Since this date, the Project has carried out some consultation activities to provide the public with information about the Project and its potential impacts, to elicit public input and feedback on various Project aspects and access local knowledge on baseline environmental, social and health conditions in the Project area communities. These activities included:

- In 2012 school visits were conducted in February and March from the Wotten Waven Primary School, Trafalgar Primary School, Morne Prosper Primary School and Laudat Primary School, where students and staffed toured the drilling sites;
- Laudat Public Meetings: January 20, 2011; November 11, 2011; February 15, 2012, April 13 and 16th 2012; November 14, 2013; December 11th 2013; January 23, 2014; July 2017; and March 17, 2018 (for details see Appendix A of Appendix J in Volume 5 of the Jacobs ESIA);
- Trafalgar Public Meetings: January 12, 2011; November 8, 2011; March 28, 2012; November 12, 2013; December 12th, 2013; December 2016; and March 18 and 25, 2018 (for details see Appendix A of Appendix J in Volume 5 of the Jacobs ESIA);
- Wotten-Waven Public Meetings: January 16, 2011; November 10, 2011; June 13, 2012; December 13, 2013; March 24, 2018 (for details see Appendix A of Appendix J in Volume 5 of the Jacobs ESIA);
- A town hall meeting was held in Trafalgar in December 2016 with approximately 40 in attendance, where the project and ESIA were discussed. In July 2017, a town hall was held in Laudat with 43 in attendance. An additional town meeting was held in Wotten Waven in August 2017.
- The Grievance Mechanism was shared with the community during the 2017 social baseline survey process
- 15 focus groups were held in 2016, 2017 and 2018 in Wotten Waven, Trafalgar and Laudat. These included meetings with community women, vendor meetings, meetings with hotels and resorts, hot springs businesses and unemployed parties. Groups consisted of 5-15 people and target questions were asked and recorded. See table below for a summary of interviews with these focus groups.
- The ESIA non-Technical Summary was disclosed to the communities of the Roseau Valley via three public meetings: one in Laudat, one in Trafalgar and one in Wotten Waven in the first week of July 2018. Meetings were attended by Jacobs, DGDC, and approximately 20 members of each community. The community had another opportunity to express concerns and ask questions about the Project and ESIA findings. Concerns generally included community health and safety issues, natural hazards, employment and construction impacts. A summary of the meetings is included in

Appendix 17-A below. For additional meeting minutes, please see Appendix J in Volume 5 of the Jacob's ESIA.

- Two national consultations on the Jacobs ESIA were conducted in February 2019 one in the south and one in the north (Portsmouth). A series of public meetings to update the community on the changes in the project were held in June 2020. Given the COVID-19 public gathering protocols, the DGDC conducted 3 sessions per day for three days to allow for maximum community participation. Eclipse Inc conducted three focus group meetings in August 2020 and another meeting to present the findings of the ESIA to the community in November 2020. Lastly, consultation with landowners was held in October 2020 by Eclipse and by DGDC in June 2020.

Table 17-7: Summary of DGDC Interviews with Key Stakeholders

Consultation	Comment Category	ESIA Reference	Response
Laudat Community at Laudat Primary School (29/06/2017)	Noise level of the project and effect on the community	ESIA Volume 2: EIA, Section 12 – Noise (Section 12.5 Assessment of Impacts)	Operational noise will be within acceptable community noise standards. Noise from construction will be reduced to the extent feasible using best practice mitigation measures.
Papillote Wilderness Retreat (30/06/2017)			
Wotton Waven Spa Operators			
Laudat Community at Laudat Primary School (29/06/2017)	Community Benefits	ESIA Volume 3: SIA, Employment and community benefits, Section 6.1.1 – Assessment of Impacts and Section 8.1.1 Employment and Tourism.	The GoCD is committed to providing a community benefits package for this Project. There are several ideas for community benefit/investment options detailed in the ESIA.
Papillote Wilderness Retreat (30/06/2017)			
Wotton Waven Spa Operators			
Papillote Wilderness Retreat (30/06/2017)	Will there be a social/community development fund	ESIA Volume 3: SIA Employment and community benefits, Section 6.1.1 – Assessment of Impacts and Section 8.1.1 Employment and Tourism	The GoCD is committed to providing a community benefits package for this Project. There are several ideas for community benefit/investment options detailed in the ESIA.
Laudat Community at Laudat Primary School (29/06/2017)	Will the re-injection pipeline pass through villages?	ESIA Volume 3: SIA, Preferred route of reinjection pipeline, Figure 4.3 - Location of Power Plant and Reinjection Pipeline.	The re-injection route pipeline has been selected with the intent of avoiding settlements to the extent feasible.
Papillote Wilderness Retreat (30/06/2017)	What will be the visual impact of the project?	ESIA Volume 2: EIA, Section 9 – Landscape and Visual (Section 9.3 – Assessment of Impacts).	The Project is expected to have minor visual impacts with the exception of those living immediate adjacent to the power plant.

Consultation	Comment Category	ESIA Reference	Response
Papillote Wilderness Retreat (30/06/2017)	What will the impact on tourism be? Concerns that it will have a negative impact	ESIA Volume 3: SIA, Tourism impacts: Section 6.2.5 Impacts to Tourism. ESIA Volume 3: SIA, Tourism enhancement and mitigation, Section 8.1.1 Employment and Tourism.	Impacts are tourism including thermal spas, etc. are considered to be minor. The thermal resource is not likely to be reduced as a result of the Project and the Project could become and educational tourist destination.
Papillote Wilderness Retreat (30/06/2017) Wotten Waven Spa Operators	Traffic impacts on the community and local businesses	ESIA Volume 2: EIA, Traffic impacts, Section 16 – Traffic and Access (Section 16.3 Assessment of Impacts).	Traffic congestion could result during construction and will be mitigated to the extent feasible. Long-term traffic increases are considered minor.
Papillote Wilderness Retreat (30/06/2017) Wotten Waven Spa Operators	Air quality impacts	ESIA Volume 2: EIA, Air Quality impacts, Section 4 – Air Quality (Section 4.3 Assessment of Impacts).	Air quality emissions will be within acceptable community standards. Dust from construction will be reduced to the extent feasible using best practice mitigation measures.
Papillote – Community Leaders of the Roseau Valley Papillote Wilderness Retreat (30/06/2017) Wotten Waven Spa Operators	Resettlement and land acquisition impacts and plans for the community and businesses	ESIA Volume 3: SIA, Resettlement mitigation plans, Section 8.1.2 Physical and Economic Displacement. ESIA Volume 3: SIA, Land acquisition impacts, Section 6.2 Land Acquisition, Physical Displacement and Resettlement Impacts.	Impacted land owners will be properly consulted and compensated in accordance with International Standards.
Wotten Waven Spa Operators	What would happen if the reinjection pipe has a leak and dangerous fluids are flowing on the surface?	ESIA Volume 2: EIA, Section 15, Hazardous Substances and Waste and ESIA Volume 3: SIA, Emergency Response Plan.	An Emergency Response and Disaster Management Plan will be developed and implemented for the Project in line with best practices.
Laudat Community at Laudat Primary School (29/06/2017)	When and how will payment be made for property and land acquisitions?	See the ARAP.	Impacted land owners will be properly consulted and compensated by the GoCD in accordance with International Standards prior to the commencement of any construction activity.
Laudat Community at Laudat Primary	Potential for	Outside the scope of the ESIA.	This is outside the scope of the ESIA.

Consultation	Comment Category	ESIA Reference	Response
School (29/06/2017)	community shares in the Project		
Papillote Wilderness Retreat (30/06/2017)			
Papillote Wilderness Retreat (30/06/2017)	Why was solar power not considered?	ESIA Volume 2: Introduction, Section 4, Project Alternatives.	This Project evolved on the basis of the geothermal resource.
Papillote Wilderness Retreat (30/06/2017)	Why was this type of consultation not done before decision was made to drill?	See SEP for a full list of consultation activities in Appendix C of the ESIA.	Consultation has been conducted throughout the development of the Project.
Papillote Wilderness Retreat (30/06/2017)	Total cost of the Project.	Outside the scope of the ESIA.	This is outside the scope of the ESIA.
Wotten Waven Spa Operators	Project start date and duration	ESIA Volume 2: Introduction, Section 3, Project Description.	Construction date estimated to be first quarter 2019. Estimated 18 -24 months for construction of Project.

Figure 17-2 Stakeholder Engagement with the Laudat Community

17.3.2.3 Disclosure of Information

The Project will select which information will be communicated, taking into account the following:

- Project phase, activities and schedule;
- Analysis of previous interactions between DGDC and the stakeholders;
- Area where the information will be communicated;
- Stakeholder type (affected vs. interested and considering their potential influence and position regarding the Project);
- Tool chosen to share the information;
- Type of information to be communicated;
- Date of communication; and
- Responsible party for sharing the information (whether DGDC or a contractor).

The Community Liaison Officer, together with DGDC Management, will select what type of environmental, social, or occupational or community health and safety documentation regarding the Project's phases and activities will be communicated. This information will be confirmed with the contractor at each site and addressed taking into account the identified key stakeholders. There are some documents that will require

disclosure, such as updates to the ESIA and to some plans within the ESMP, such as the Grievance Mechanism.

The main topics to consider during engagement activities with stakeholders are:

- Project status update: Publicize all the activities and stages of the Project;
- Project objectives in the short, medium and long term, to avoid creating misguided expectations among stakeholders;
- Information and update regarding positive and negative impacts, when applicable: Provide information on the impacts generated during each phase of the Project, as well as the mitigation measures to be implemented or already being implemented;
- Grievance mechanism: take into consideration the opinions of stakeholders to continually improve the external grievance mechanism procedures (e.g. preferred location of grievance boxes), and continue to reinforce its communication, according to positive or negative experiences;
- Emergency Plan and Community Health and Safety Plan: Share the procedures of the Project Emergency Plan and the Community Health and Safety Plan to all communities and related stakeholders for their knowledge and implementation;
- Aspects of the Project that have attracted stakeholders' attention: Contemplate the opportunity to learn about the perception of stakeholders that may not have been formally transmitted through the grievance mechanism (e.g. retrenchment plans of the Project);
- Invitations to meetings or information communication sessions where general information on the Project will be provided (stages, activities, times); and
- Other relevant plans such as the, Traffic Management Plan.

The Project will keep photographic evidence of all the relevant activities carried out with stakeholders as well as Project related developments (e.g., construction development, labor training, flora and fauna rescue and preservation activities). This will complement the communication process with stakeholders.

DGDC is aware that the lack of information can lead to an erroneous perception of the Project, and trust from local communities may be affected. DGDC will continue to share and distribute meaningful and relevant information among the Project's stakeholders throughout the Project's life cycle.

In order to do this, the Project will build solid relationships with external stakeholders (e.g. government institutions, universities, other academic entities, influential NGOs) who can help DGDC to be known among local communities and people directly or indirectly involved in the Project (e.g. through press announcements). DGDC will work with these stakeholders to perform actions that could represent an improvement in the quality of life of community members and/or the region where the Project is located.

Depending on the type of stakeholder the means of communication will be defined, such as through the Project's website, by phone, mems, letters, email, informative sessions or meetings, brochures and copies of relevant documents placed in accessible and strategic locations.

17.3.2.4 Consultation and Participation Action Plan

Public consultation is a process that promotes a two-way dialogue between local communities and the Project, which will aim to ensure the establishment and maintenance of constructive relationships throughout the life of the Project. For local communities, the consultation process offers the opportunity to obtain information about the Project's activities, to update the company of the local context in which the Project is framed, to share problems and concerns, to ask questions and even, to make suggestions. The

consultations will provide an opportunity for feedback on the Project, which could influence some solutions or management measures.

The consultation process and participation plan with local communities will follow the five basic steps detailed below, which can be repeated as many times as necessary throughout the different phases of the Project.

1. Plan ahead, before beginning a process of consultation with local communities, it will be clear who will be consulted, on what issues and for what purpose, and the consultation topic will be shared with communities in advance in an accessible manner;
2. Conduct the consultations applying the basic principles of the recommended practices and adapted to the local situation and to the local communities;
3. Consider the opinions and observations received and make every effort to resolve the issues raised;
4. Document the consultation process and its results;
5. Prepare reports for stakeholders, in order to keep them informed about which of the concerns raised will be addressed and how, and explain what suggestions have not been taken into account and the reasons, so as to promote credibility, control expectations and maintain interest. The report will be shared with the communities.

The table in the section below presents the consultation and participation plan per each stakeholder group. The table includes the consultation and participation methods, the consultation topics, shared information and objectives, the Project phase and frequency, the priority and person in charge.

17.3.2.5 Engagement in Extraordinary Situations

DGDC will endeavor to maintain engagement with stakeholders throughout the project's continuity. In the case of health-related crises, pandemics and or epidemics, DGDC will develop, when necessary, an action plan for engagement with stakeholders in this scenario.

The action plan must be developed in order to guide DGDC's performance during this period, and must contain at least the following items: (i) target audience; (ii) organizational structure; (iii) communication channels; (iv) risk prevention and mitigation measures for the teams involved in the engagement actions; and (v) list of actions.

Table 17-8: Consultation and Participation Action Plan

Stakeholder Groups	Consultation and Participation Methods	Consultation Topics, Shared Information and Objectives	Project Phase and Frequency	Priority	Person in Charge
Interested Stakeholder Groups					
Government entities	Meetings with representatives, either in groups or individually	■ Identify any concerns regarding Project impacts and progress ■ Answer their questions regarding the Project ■ Receive feedback about the Project's social management plans, health and	Construction: At least once a month Operations: at least once per six months	High	Managing Director
Neighboring Projects	Meetings with other Project developers		Construction: At least bi-monthly	Medium	Community Liaison Officer

		safety measures, community communications and community grievance mechanism	Operations: at least once per six months		
Mass media	Meetings with representatives, either in groups or individually		Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Liaison Officer
Workers	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	HR Manager
Contractors	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	Safeguards Manager
Tourism sector	Meetings with tourism representatives, either in groups or individually	■ Identify any concerns regarding Project impacts and progress ■ Answer their questions regarding the Project ■ Receive feedback about the Project's social management plans, health and safety measures, community communications and community grievance mechanism	Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer
Vulnerable populations in the Area of Influence	Vulnerable groups will be invited and encouraged to attend the community meetings The Project will contact representatiaves of vulnerable groups and the Project will organize an individual meeting with the person or particular group if requested.		Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer
NGOs	Meetings or communication exchange by email or phone call	■ Identify their concerns regarding the Project's impacts and progress ■ Answer their questions regarding the Project ■ Receive feedback about the Project's social management plans, health and safety measures, community communications and	Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer

		community grievance mechanism ■ Discuss collaboration opportunities (e.g. environmental and social programs)			
Affected Stakeholder Groups					
Communities and landowners near the Project site	Group meetings (virtually) with people from nearby residences, including women, young people and other vulnerable groups	■ Identify any concerns regarding Project impacts and progress ■ Answer their questions regarding the Project ■ Receive feedback about the Project's social management plans, health and safety measures, community communications and community grievance mechanism	Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer

17.3.3 Registration Process: Stakeholder Database

Every time a communication or activity is carried out with any stakeholder, the CLO will register the details in the Stakeholder Engagement Database in order to reflect the development of the relationship with each stakeholder and the evolution of the respective negotiations.

The stakeholders' database will include a summary of each contact, participants, issues or agreements with stakeholders, including, but not limited to:

- Stage and activity of the Project;
- Stakeholder being represented;
- Type of interaction;
- Date of interaction;
- Place of the interaction;
- Background of the interaction with the stakeholder (if applicable);
- Reason for the interaction (e.g. information disclosure, follow-up meeting);
- Type of information provided (if applicable); and
- Reference to evidence supporting the interaction (e.g., minutes, photographs).

In the event that complaints or feedback are received, these will be dealt through the External Grievance Mechanism (see the External Grievance Mechanism Plan) as appropriate.

17.4 Documentation and Monitoring

Evidence of meetings and interactions with stakeholders will be maintained through the Stakeholder Engagement Database. For all stakeholder meetings, evidence will be collected, such meeting minutes,

videos, attendance lists and photographic evidence. The CLO will be responsible to maintain the documentation and records.

17.5 Reporting

Further, there will be internal and external reporting. The following sections describe the minimum reporting to be conducted.

17.5.1 Meeting Minutes

Records of community consultation meetings, meetings with government and civil society shall be kept in a separate document with the detailed database maintained by the CLO. All records shall include attendance lists and photos.

17.5.2 Recording Grievances

A formal log of grievances will be developed and the CLO will be responsible for logging all grievances except those related to land acquisition which will be handled directly by designated government representative] of the GoCD. A comments sheet will also be provided for complaints or other comments. Comments or complaints can be made directly to DGDC or the contractor, through the CLO or through a community representative (e.g. through the village elders).

17.5.3 Commitments Register

DGDC will maintain a commitments register that keeps track of the commitments made by DGDC throughout stakeholder consultation (including any commitments made by any contractors or members of the Project Team).

17.5.4 Reporting

The CLO will maintain engagement reports on a monthly basis. The objective of these engagement reports are to demonstrate and record the ongoing engagement process and progress made. These reports may include records of engagement including meeting registers, photographs.

These reports will be used to address and incorporate social issues into Project management. Engagement reports shall be stored with the detailed stakeholder database and retained for a minimum of five years.

At a minimum these reports will contain:

- Engagement activities undertaken;
- Grievances received as per grievance management;
- Updated stakeholder database;
- Feedback received during the engagement process;
- Update on complaints and grievances, expectations and requests,
- Investment made, and commitments and promises made; and
- Key records of communication with stakeholders.

17.6 Key Performance Indicators

The Stakeholder Engagement Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with key stakeholders.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 17-9: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
External Grievance Mechanism	Number of confirmed grievances resolved within prescribed timeframe	100%	Construction, Operations	External Grievance Database / Quarterly
	Audit the grievance mechanism to ensure implementation and that grievances are being adequately addressed	Every six months, the first two years, and then once a year.	Construction, Operations	Community Liaison Officer / Every six months during the first two years; then yearly
Local Community & Stakeholders	Number of resolved incidents involving local community members	100% resolved incidents	Construction, Operations	Stakeholder Engagement Database, External Grievance Database and the Community Liaison Officer / Quarterly
	Number of consultation and participation activities	100% reported meetings and activities, with 100% evidence provided	Construction, Operations	Stakeholder Engagement Database and the Community Liaison Officer / Quarterly
	Type, materials and methods of Disclosure of Information during consultations	Cover 100% of the relevant topics as established in the Consultation and Participation Action Plan	Construction, Operations	Stakeholder Engagement Database and the Community Liaison Officer / Quarterly
	Report back and feedback to the local community and stakeholders regularly (e.g. implementation of the grievance mechanism, conflicts solved and implemented solutions, etc.)	Delivery of reports to the community and communication channel chosen	Construction, Operations	Community Liaison Officer / Quarterly
	Number of women engaged by the Project	Track women engaged by the Project and ensure it is a representative number	Construction, Operations	Stakeholder Engagement Database and the Community Liaison Officer / Quarterly
	Audit the stakeholder engagement activities	Every six months, the first two years, and then once a year.	Construction, Operations	Community Liaison Officer / Every six months during the first two years; then yearly
Community Relations Staff/ Team	DGDC will monitor the number of new community relations staff and staff changes per period. This will be reported on the community engagement performance report.	Every six months.	Construction, Operations	Community Liaison Officer / Every six months during the first two years; then yearly

18. COVID-19 CONTINGENCY PLAN

18.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the implementation of the Environmental and Social Management Plans (ESMP) policies and procedures.

This plan aims to establish good practices to be adopted by the Project with regards to the current new coronavirus (COVID-19) pandemic, including minimum procedures and strategies that must be observed by DGDC, its subsidiaries and its employees. DGDC aims to develop its activities in safe conditions, especially concerning health and safety conditions, as well as preserving its jobs and activities.

This document will be shared with DGDC's contractors and subcontractors to incorporate the presented best practices throughout all their activities.

18.1.1 Objective

The overall objectives of the COVID-19 Contingency Plan are to:

- Define guidelines and practices regarding COVID-19;
- Establish procedures and strategies to contain and protect workers, contractors and subsidiaries from COVID-19;
- Develop activities in healthy and safe conditions;
- Promote fair treatment, non-discrimination and equal opportunity of workers, and compliance with healthy and safe (H&S) working conditions; and
- Protect workers', contractors' and local community members' wellbeing, health and safety.

18.1.2 Scope of Application

This plan will apply for the duration of the pandemic while the development of DGDC's activities take place. It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to DGDC's Environmental and Social Management Plan (ESMP) policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP and COVID-19 measures will be applied on the ground. DGDC will review and approve this document before any implementation.

18.2 Roles and Responsibilities

In order to properly implement the COVID-19 Contingency Plan, DGDC requires the involvement of the people listed below.

Table 18-1: Roles and Responsibilities

Role	Responsibilities
Board of Directors	■ Be familiarized, review and approve the COVID-19 Contingency Plan.
Finance Manager	■ Ensure the availability of resources necessary for the implementation of the COVID-19 Contingency Plan.

Role	Responsibilities
Managing Director	■ Be familiarized with, review and update as necessary the COVID-19 Contingency Plan.
ESG Manager and HR Manager	■ Be familiarized and implement the COVID-19 Contingency Plan. ■ Review, evaluate and verify the COVID-19 Contingency Plan. ■ Review and approve the contractor project-specific COVID-19 Contingency Plan. ■ Update the COVID-19 Contingency Plan.
H&S Manager	■ Review, evaluate and verify the COVID-19 Contingency Plan. ■ Assure the development of an Emergency Preparedness and Response Plan for each Project ■ Present, alongside the Community Liaison Officer, a monitoring report to the Managing Director
Community Liaison Officer	■ Coordinate and supervise the communication of information activities regarding this plan to the affected communities. ■ Present, alongside the H&S Manager, a monitoring report to the Project Manager.
Contractor Company	■ Develop a project-specific COVID-19 Contingency Plan.
DGDC Employees, Contractors and Subcontractors	■ Read and be familiarized with the COVID-19 Contingency Plan. ■ Develop a project-specific COVID-19 Contingency Plan.

18.3 Activities

In the light of the declaration of Public Health Emergency of International Importance (ESPII) by the World Health Organization (WHO) in January 2020, international, national and local health authorities have issued a series of recommendations. DGDC will adopt and recommend preventive and mitigating measures as well as best practices as described below throughout the Project's development and implementation and its corporate activities.

The best practices and recommendations are directed to prevent the spread and contagion of COVID-19 in the work environment and work activities. DGDC is committed to maintain safe working conditions for the people involved in the development and implementation of the Project, especially for those people whose activities and functions require face-to-face action.

18.3.1 DGDC COVID-19 Committee

DGDC will designate an internal COVID-19 Committee to:

- Provide support and information to assist the DGDC Directors' decision-making process regarding crisis management related to COVID-19.
- Define and monitor the guidelines for this Contingency Plan and its updates.
- Call meetings and disseminate the results to all participants.
- Archive the documents generated in the execution of the contingency plan and other actions related to COVID-19.
- Ensure the active participation of all DGDC areas involved in the Committee.

The COVID-19 Committee may suggest the creation of specific Working Groups, including groups between DGDC and its contractors in order to monitor compliance with actions to control the spread of the virus among workers and the community; or other actions such as enabling communication between the Project and contractors and subcontractors, among others.

18.3.2 Monitoring of Normative Acts and COVID-19 Cases

Daily, through the COVID-19 committee and their regulatory and legal areas, DGDC will monitor the measures adopted by the National and Public Administration entities to contain the spread of COVID-19, strengthen the health system and safeguard the economy. All information will be shared on internal communication channels and serve as a reference for adapting measures to prevent and respond to the pandemic internally.

DGDC's COVID-19 committee will monitor the number and location of COVID-19 cases in the world, especially in the Caribbean region, in Dominica, and locally on a daily basis. When necessary, and taking into the account the evolution of the statistics, this Contingency Plan will be further adjusted to prevent and respond to the pandemic in the Project's areas of influence.

18.3.3 Disclosure of Information

DGDC will reinforce the importance of communication and information disclosure and trainings to reduce the risks of COVID-19 both internally (workers and contractors) and for the nearby communities in the Project's areas of influence. DGDC will adopt the following main initiatives:

- Reinforcement of communications and information disclosure on best practices for preventing COVID-19 transmission, especially regarding specific recommendations on social distancing and hygiene measures;
- Training of teams to be able to recognize the COVID-19 symptoms;
- Identification of the Project's focal points and communication channels (WhatsApp, e-mail, internal social network, internal grievance mechanism) to address workers' concerns about COVID-19 on a regular basis;
- Creation of a specific working group in charge of the institutional communication actions between DGDC and its contractors; and
- Adaptation of DGDC's internal communication materials and those of the contractors to distribute them to external stakeholders, as a way of reinforcing social responsibility and the joint work between DGDC and its contractors.

As long as there are preventive measures and recommended guidelines from the health authorities in favor of social distance, DGDC will adhere at all times to those guidelines, including observing social distancing in its interaction with the local community and where practical, replacing in person activities with virtual tools. In addition, DGDC will enable internal communication channels for its workers and its contractors (toll-free phone, email, website and direct communication with DGDC teams) to ensure access and interaction between employees, the local community and the Project when needed.

In addition, while the pandemic continues, DGDC's Stakeholder Engagement activities will also be adjusted to avoid in-person events. DGDC will put a special emphasis to distribute information regarding the external grievance mechanism and other tools to disclose information, such as participating in local radio programs or distributing a newsletter, for more details see the section below.

18.3.4 Social Actions and Community Engagement

As mentioned in Section 18.3.3, as a preventive measure and in order to respect the health authorities' guidelines that recommend social distancing, all activities that require direct contact with the local community will be either postponed or replaced with virtual tools. The External Grievance Mechanism and other available communication channels (toll-free phone, e-mail, website and direct communication with

DGDC teams) will continue to function normally. When possible, DGDC will collaborate with the local authorities to contribute to the fight against the spread of COVID- 19.

In order to have a positive impact in reducing the pandemic cycle, from prevention to response, DGDC plans to implement the following lines of action:

- **Disclosure of Information**: In order to prevent the spread of COVID-19, DGDC will disseminate clear and accurate information and guidance documents, using simple and accessible language to reach the largest number of people;
- **Support health professionals**: Should PPE for health professionals be needed, DGDC will consider contributing on this line of action as a response to the epidemic;
- **Support the most vulnerable population in the AOI**: One of the side effects of the pandemic is the economic crisis, mainly affecting the population in a situation of socioeconomic vulnerability. DGDC aims to contribute with actions specifically aimed at the vulnerable groups located in the Project's AOI.

18.3.5 Identification of Essential Activities to Begin and Continue the Project

DGDC aims to identify and define the services and activities essential to begin and continue the Project, considering activities of design, pre-construction and construction, and if applicable later on for the operations phase by monitoring the evolution of the pandemic, the competent authorities' guidelines, regulatory aspects, recommendations from shareholders and financiers, among others. Furthermore, attention will be given to technical criteria regarding the number of workers needed without compromising the practice of social distancing and the preservation of everybody's health and safety throughout the different activities.

18.3.6 Social Distancing Measures

Scientific studies have demonstrated there is a spread of expelled micro droplets, not only during sneezing or coughing, but also during human speech, capable of carrying the virus over long distances, especially in closed and poorly ventilated environments. Consequently, DGDC will implement strict social distancing measures, preferably 2 meters (6 feet apart), in all activities and environments, including transportation, accommodation, cafeterias, bathrooms, meeting rooms, and workstations, in order to minimize the potential COVID-19 contagion.

Social distancing measure will also be implemented for the field and construction activities. Thus, as a good practice for the continuity of the activities considered essential during the emergency period, it is advisable that the contractors (especially EPC directly involved in the implementation of the Project) act in order to respect the 2 meters-social distancing in all their activities. Social distancing in the field and construction areas is considered critical and necessary to maintain optimal health and safety conditions at the Project during the emergency period and avoid exposure and contagion of workers. All activities in closed environments with little ventilation will be forbidden. The following specific measures will be adopted in order to implement health and safety guidelines at work:

- Maintain a safe distance (2 meters between people) in places where people work or meet regularly.
- Identify all places where people normally work within 2 meters of each other and adjust those areas to meet the safe distancing requirements, as well as establishing a regular inspection routine in offices, control rooms, meeting rooms, construction sites, work fronts. A checklist and photographic records will be completed in order to confirm adherence. In places where 2 meters of spacing cannot be reached, the possibility of expanding the workplace in previously vacant areas or placing acrylic dividers between workplaces will be evaluated.
- Increase the frequency of cleaning and spacing of sanitary appliances and offices.

- Install marks or signs on the floor, indicating safe distances, where people normally wait in lines (access to buses, time clock, cafeteria, among others).
- Expand the use of videoconferencing to replace face-to-face meetings, safety dialogues and trainings, as well as the possibility of distributing videos of HSE campaigns to workers and contractors through WhatsApp and DGDC social networks.
- Establish alternate working days or extra shifts to reduce the total number of workers at any given time, allowing workers to maintain the recommended distance between them and, at the same time, ensuring the completion of work activities and comply with the construction schedule.

18.3.7 Activity Security Analysis and Work Permit

Based on the field activities' assessment, those considered critical and necessary to start during this emergency period will need to reinforce in the routine of such activities the need to avoid exposure of workers to social proximity less than 2 meters (whenever possible) and precautionary measures for carrying out activities in closed environments, such as places with poor ventilation. Each activity will be described in the Activity Safety Analysis and, eventually, in the Work Permit. These documents will be completed as evidence of the application of COVID-19 preventive measures at work.

18.3.8 Control Measures and Working Conditions

DGDC will distribute surveys to identify the workers' physical and health conditions to prevent potentially ill workers from feeling under pressure to show up for work, risking the transmission of the virus to the rest of the workforce. The surveys will contain a simple checklist with information on the workers' conditions, which can be confirmed by establishing a routine inspection.

In addition, DGDC and its subcontractors will ensure that their employees have access to in-person or remote medical consultation services (by phone or video call) if they encounter COVID-19 symptoms. DGDC will closely collaborate with local authorities to benefit its workers and the local community.

DGDC and its contractors will provide and enforce face protection masks for all people in the working areas. DGDC will specify the type of mask required, the replacement frequency and will provide appropriate training. DGDC and its contractors will make 70% alcohol gel available in all working areas.

18.3.9 Food Supply and Preparation Measures

DGDC will evaluate the possibility of hiring meal delivery services from local restaurants that have already been mapped and previously contacted. DGDC will also let employees bring their own meals from home if preferred.

18.3.10 Control Measures for Mobilizing Workers

If mobilization of workers from other communities or regions is required for the Project, both DGDC and its contractors will take the following measures:

- Lists of workers and their arrivals will be reviewed at least 7 days in advance, to analyze the workers that might come from high-risk areas (areas with higher community transmission rates). These cases must be subjected to prior isolation for 15 days before starting work and access the Project area or nearby community.
- Monitor the list of workers, indicating the city of origin, estimated start of work and address at which the worker(s) will be kept in isolation.

- Ensure that when accessing to the Project area, all workers are wearing identification badges and essential service documentation.

DGDC will observe the travel restrictions imposed by the local, national and international authorities, as well as the recommendations of the health authorities. DGDC will implement the following protocols about mobilization and travel for its employees:

- International Corporate travel: suspension of international corporate travel. Any exceptions to the recommendations described here will be dealt on a case-by-case basis and aligned with the authorities' guidelines, as well as approved directly by the DGDC Managing Director.
- Private trips: workers shall inform HR about their private trips by email and/ or phone.

18.3.11 Control Measures for potential Workers' Accommodations

DGDC does not expect to have a significant number of workers that will need accommodation, as the Project will focus on hiring locally. Nonetheless, workers who need accommodation, will be either placed in hotels or rented homes.

The following best practices will be applied in the workers' accommodations:

- Promoting, respecting and applying occupancy density limits in workers' accommodation;
- If new workers arrive from countries or areas with high COVID-19 risk, these people will have to complete a proper quarantine in accordance with local regulations and/ or recommendations of relevant international organizations;
- Whenever possible, the accommodation coordinator or the persons in charge of managing the accommodation will coordinate the daily health and safety measures of the residents, such as taking the persons' body temperature with thermometers to prevent contagion;
- Carry out the necessary measures and efforts in order to ensure that all workers have access to medical professionals, including adopting measures that remove possible language barriers, in the case of foreign workers.
- Provision of hand soap for workers in all bathrooms, as well as the adoption rigorous daily cleaning routine.
- Implement the necessary measures and efforts in order to ensure that door handles, taps, TV/ media devices, kitchen equipment, controls, buttons and any other common objects located in the areas that are touched regularly are cleaned several times a day. The cleaning frequency will be determined by each installation. Likewise, ensure that necessary measures are taken to ensure that common surfaces, including those on vehicles that transport workers from their accommodations to the workplace, counters, floors and walls, will be treated as potentially contaminated areas and therefore will be cleaned regularly.
- Keep a minimum distance of 2 meters between the beds, as well as reducing the number of people in a single room, when possible let only one person per bedroom.
- Carry out actions to maximize natural or forced ventilation within the limitations of comfort, safety and privacy, as well as considering any changes in the installation to allow ventilation during working hours.
- Mandatory use of a mask, also during off-hours. Additionally, exits that are not for the purpose of essential needs should be avoided, and it is important to have clear rules for the use of common areas in the accommodation.

- The Project will guarantee workers' access to medical services.

18.3.12 Preventive Measures for Drinking Water Supply, Sanitation and Solid Waste Management

This section presents the main guidelines to prevent the contagion of COVID-19 through the drinking water supply, sanitary sewage and solid waste management services in all DGDC activities and its contractors (offices, construction sites, work areas). The content was adapted from the Interim guide about Water, sanitation, hygiene, and waste management for COVID-19, published on March 19, 2020 by the World Health Organization, considering the DGDC context and characteristics.

18.3.12.1 Safe Water Supply

DGDC will take several measures to improve the water supply, by protecting the water source; treat water at the point of distribution, collection or consumption; and ensure that treated water is safely stored at the DGDC facilities in regularly cleaned and covered containers.

For effective centralized disinfection, there must be a residual concentration of free chlorine of ≥0.5 mg / L after at least 30 minutes of contact time at pH <8.0. A chlorine residual must be maintained throughout the distribution system.

18.3.12.2 Safe Management of Waste Water and Feces Waste

Best practices to protect the health of workers in sanitation treatment facilities must be followed. Workers must wear appropriate personal protective equipment (PPE), which includes protective clothing, gloves, boots, glasses or face shield and mask; they must wash their hands frequently; and avoid touching their eyes, nose and mouth with unwashed hands.

18.3.12.3 Hand Hygiene

Hand hygiene is extremely important. Hand cleaning with soap and water or an alcohol-based hand scrubber will be carried out according to the instructions as stated in "My 5 moments for hand hygiene" (WHO, Infection prevention and control) available at https://www.who.int/infection-prevention/campaigns/clean-hands/5moments/en/.

When the hands are not visibly dirty, the preferred method is to perform hand hygiene with alcohol (rub your hands for 20 to 30 seconds using the appropriate technique). When hands are visibly dirty, they will be washed with soap and water for 40 to 60 seconds using the appropriate technique. Hand hygiene must be carried out before putting on the PPE and after removing it, when changing gloves, after any contact with a patient with suspected or confirmed COVID-19 infection or its residues, after contact with some respiratory secretion, before eating and after using the bathroom.

Functional facilities to wash the hands must be present for all workers throughout the Project site and in areas where PPE is placed or removed. These facilities must be available within 5m of bathrooms, as well as in public areas.

18.3.12.4 Cleaning Practices

The recommended cleaning and disinfection procedures must be followed consistently and correctly. Clothes will be washed and surfaces in all environments will be cleaned at least once a day. Many disinfectants are made to kill viruses, such as COVID-19, including commonly used hospital disinfectants. WHO currently recommends the use of:

- 70% ethyl alcohol to disinfect small areas between uses, such as dedicated reusable equipment (for example, thermometers);
- 0.5% sodium hypochlorite (equivalent to 5000 ppm) for disinfecting surfaces.

18.3.12.5 Disposal of Dirty Water from Washing PPE, Surfaces and Floors

The WHO recommends to clean public utility gloves or heavy reusable plastic aprons with soap and water and decontaminate them with 0.5% sodium hypochlorite solution after each use. Disposable gloves (nitrile or latex) and aprons must be discarded after each use and not reused; hand hygiene will be performed after removing the PPE. If the gray water includes disinfectant used in the previous cleaning, it will not need to be chlorinated or treated again. However, it is important that this water be discharged into drains connected to a septic or sewer system or into a drainage well. If gray water is discharged into a submerged pit, the pit will be enclosed within the health facility to prevent tampering and to avoid possible exposure in the event of an overflow.

18.3.12.6 Sanitation and Hygiene Practices at Homes, Accommodations and Communities

Maintaining best practices for drinking water supply, sanitation, hygiene and solid waste management at home and in communities near the Project is also important to prevent the spread of COVID-19 and to care for patients at home. Regular and correct hand hygiene is of particular importance.

- Hand Hygiene:

Regular hand washing is one of the most important measures that can prevent COVID-19 infection. In homes, schools and crowded public spaces - such as markets, places of worship, train or bus stations, regular washing of hands will occur before preparing food, before and after eating, after using the bathroom or changing a child's diaper and after touching animals. Functional hand washing facilities with soap and water must be available within 5 meters of the bathroom.

- Other recommendations:

The safe management of human excreta will be considered, starting with ensuring access to regularly cleaned, accessible and functioning toilets or latrines, as well as containment, transportation, treatment and eventual disposal of sewage.

When there are suspected or confirmed cases of COVID-19 in the home environment, immediate measures will be taken to protect healthcare professionals and other family members from the risk of contact with respiratory secretions and excrement that may contain the COVID-19 virus.

Surfaces that are touched frequently throughout the patient care area will be cleaned regularly, such as next to tables, beds and other bedroom furniture. Bathrooms will be cleaned and disinfected at least once a day. Regular household soap or detergent will be used for cleaning first and then, after rinsing, a common household disinfectant containing 0.5% sodium hypochlorite (i.e. equivalent to 5000 ppm or household bleach with 1 part hydrochloride sodium to 5% water and 9 parts water) be applied. PPE will be used while cleaning, including wearing a mask, goggles, liquid-resistant apron and gloves, and hand hygiene with a hand rubbing alcohol or soap and water will be carried out after removing the PPE.

18.3.12.7 Rapid Tests to Diagnose COVID-19

Rapid antibody tests for the new coronavirus (Sars-CoV-2) can be used to support the assessment of the immune status of workers who have symptoms of COVID-19. This type of examination indicates whether or not the person had contact with the virus, through the detection of antibodies produced as a defense mechanism of the organism. According to ANVISA (http://portal.anvisa.gov.br/coronavirus), the

examination is done using blood, serum or plasma samples. The method used is called immunochromatography, which is the generation of color from a chemical reaction between antigen (substance foreign to the organism) and antibody (defense element of the organism). The results obtained are called IgM and IgG. IgM and IgG are the body's defenses against an external agent, such as the virus that causes Covid-19.

DGDC contractors will perform rapid tests for the diagnosis of COVID-19 following technical criteria that consider good industry practices, guidance to health agencies and specificities of each service provision contract (e.g. location, duration, occupational risks, number mobilized workers, and need for accommodation). The following testing strategy is suggested:

- Monitoring of workers who might need testing by applying a rapid test every 15 days;
- Application of a rapid test to all non-local workers after a quarantine period of 15 days of arrival on island;

All suspected cases will be referred to the local health authorities as per national guidelines.

18.3.12.8 Internal Grievance Mechanism and Employment Protection

Within the measures related to the pandemic period, it is important to note the need and concern of DGDC to protect its employees, their jobs and health and safety. DGDC will also emphasize this to its contractors, to take the necessary care so that the employment protection measures are also applied to their employees, reducing the workers' general insecurity and concerns in the pandemic scenario.

The internal grievance mechanism will be monitored regularly in order to identify claims and concerns regarding COVID-19 or any grievance related to the pandemic circumstances.

DGDC will avoid layoffs, and will only use layoffs as a last resort. DGDC will adopt government measures and policies issued in the context of this public crisis to reduce employer costs, while ensuring the maintenance of jobs. DGDC will maintain a constant communication with workers and their representatives to understand their demands and insecurities in order to periodically review internal contingency plans to guarantee the continuity of the Project's activities, as well as their job security.

18.3.13 Measures for the Office Spaces

DGDC will adopt specific corporate preventive and mitigating measures at the offices in the Project and for its subcontractors, if applicable.

18.3.13.1 Preventive Measures at Work

DGDC will reinforce all guidelines and recommendations for medical health and hygiene care in the work environment, especially in the corporate environment. DGDC will disclose information through its communication channels, as well as constantly refilling the alcohol gel containers placed in different locations of the DGDC offices and working areas for the hygiene of its employees and people who have access to DGDC facilities.

More frequent cleaning will take place in areas where exposure to possible contamination is higher, such as meeting rooms, pantry, bathrooms, material/ work equipment, etc. In cases when a suspected case of contamination is reported or confirmed, a thorough cleaning process will be carried out.

DGDC will take the individual body temperature using digital infrared thermometers, twice a day. If the temperature is 37.7ºC or above, preventive social isolation measures, medical assistance and monitoring will be recommended.

DGDC will disclose information constantly, including Health and Safety guidelines for employees and contractors, on hygiene measures to prevent the spread and contagion of the virus, such as washing hands with soap and water or alcohol gel whenever possible, maintain preventive social isolation and avoid greeting with a hand or hug.

If a worker suffers any of the symptom associated with COVID-19 (fever, cough, difficulty breathing), the employee will be instructed to stay at home and contact the health teams available to assist employees and their families. Workers shall also inform the Human Resources team, by email and/ or telephone. The HR team shall provide the necessary support and immediate referral to medical care, whenever this is recommended by the medical evaluation. HR is responsible for gathering and controlling the employees' information related to symptoms and / or suspicious cases, as well as monitoring their situation during the duration of the contingency period.

18.3.14 Management of Meetings or Events

DGDC and its contractors' organizers of meetings and events will be required to evaluate the need and potential risk from a COVID-19 infection due to:

- The risk of people attending the meetings or event might be unwittingly bringing the COVID-19 virus to the meeting. Others might be unknowingly exposed to COVID-19.
- While COVID-19 is a mild disease for most people, it can make others very sick and even risk their lives. Around one of every five people who are infected with COVID-19 need hospital treatment.

Key considerations to prevent or reduce COVID-19 risks in meetings or events:

BEFORE the meeting or event DGDC and its contractors will:

- Double-check the authorities' advice where the meeting or event takes place. DGDC and its contractors will follow the official guidance and advice.
- Develop and agree a preparedness plan to prevent infection at the meetings or events.
- Consider whether a face-to-face meeting or event is needed. Should the face-to-face meeting or event be replaceable, DGDC and its contractors must choose a teleconference, videoconference or any other online mean for such meeting or event.
- Evaluate the number of people for the meeting or event is required. In case of the number of attendees could potentially be lower, the number of people will be reduced even further.
- Ensure and verify information and communication channels in advance with key partners such as public health and health care authorities.
- Pre-order sufficient supplies and materials, including tissues masks and hand sanitizer for all participants.
- Advise participants in advance that if they have any symptoms or feel unwell, they are not allowed to attend.
- Make sure all organizers, participants, caterers and visitors at the event provide contact details: mobile telephone number, email and address where they are staying. State clearly that their details will be shared with local public health authorities if any participant becomes ill with a suspected infectious disease. If they disagree with these measures, they will not be allowed at the event or meeting.
- Develop and agree a response plan before the meeting occurs, in case someone at the meeting becomes ill with symptoms of COVID-19 (dry cough, fever, malaise). This plan will include at least:

- Identification of a room or area where someone who is feeling unwell or has symptoms can wait alone (no contact with other coworkers or meeting participants) until he/she can be safely evacuated or transferred to receive proper medical attention.
- A plan for safely transfer meeting participants with symptoms, or meeting participants that have had contact with someone who is confirmed to have the disease, to a health facility.
- DGDC will make its best efforts to identify meeting participants who might have a higher risk factor or be more affected/sensitive to the disease, for instance people older than 60 years old, pregnant women, people with chronic diseases such as a cardiovascular illness, diabetes, or any other condition advised by the governmental authorities. This type of personal information will be kept as confidential and obtained based on medical records. People with this kind of conditions will not participate in meetings.
- Inform local authorities if a meeting participant, staff member or service provider appears to have COVID-19 symptoms during or just after the meeting.

DURING the meeting or event:

- The organizers will provide information or a briefing, preferably both orally and in writing, on COVID-19 and the measures that have been taken to make the event safe for participants, such as:
  - Avoid touching common surfaces.
  - Encourage regular hand washing or use of an alcohol rub by all participants at the meeting or event.
  - Encourage participants to cover their face with the bend of their elbow or a tissue if they cough or sneeze. Supply tissues and closed bins to dispose of them in.
  - Provide contact details or a health hotline number that participants can call for advice or to provide information.
  - Display dispensers of alcohol-based hand rub prominently around the venue.
- If there is space, arrange seats so that participants are at least two meters apart.
- Open windows and doors whenever possible to make sure the venue is well ventilated.

AFTER the meeting:

- Organizers will retain the names and contact details of all participants for at least one month. This will help public health authorities trace people who may have been exposed to COVID-19 if one or more participants become ill shortly after the event.
- If someone at the meeting or event was transferred to a room alone without any contact with other persons as a suspected COVID-19 case, the organizer will let all participants know this. They will be advised to monitor themselves for symptoms for 15 days and take their temperature twice a day.
- If someone develops even a mild cough or low-grade fever (i.e. a temperature of 37.3 C or more) will stay at home and self-isolate. This means avoiding close contact (2 meters or nearer) with other people, including family members. They will also call their healthcare provider to give them details of their recent travel and symptoms.
- The room where the meeting or event took place shall be cleaned and disinfected thoroughly.

18.3.15 Visitors

DGDC will not allow visitors at the Project sites or offices for an indefinite period until the COVID-19 pandemic is resolved. Any exceptions to the recommendations described here must be dealt with on a case-by-case basis and approved directly by the DGDC's Managing Director.

18.3.16 Remote Work (Home Office)

If possible, and to prevent the spread of the virus, DGDC will enable remote work (home office) for employees that solely carry out administrative activities at the Project, in order to maintain a minimum number of employees in the office, whose activity is related to functions that cannot be performed remotely.

DGDC will generally consider these three case scenarios:

1. Employees whose remote presence severely impacts the continuity of DGDC's activities, with the physical presence of the employee being indispensable, even in the contingency scenario.
2. Employees whose remote presence impacts the continuity of DGDC's activities, making it possible to work in the home office.
3. Employees whose remote presence has a slight impact on the continuity of DGDC's activities, making it possible to work in the home office.

The assessment of remote work (home office) requests will also take into account the higher-risk groups who could suffer from more severe consequences of a possible viral contamination, such as, older employees (over 60 years old), employees with pre-existing respiratory diseases or immunodepressants, employees who live with elderly people or with family members who suffer from respiratory diseases, or immunodepressants.

The remote work options will be evaluated and resized, with the possibility of implementing a rotation system among employees allocated within each level, depending on work demands, in order to guarantee the continuity of activities and workers' safety.

DGDC will provide the appropriate infrastructure for remote work, such as laptops and access to DGDC’s virtual private network by employees, which shall include the company's internal systems, file sharing networks and platforms for electronic timekeeping. Employees will have support from the Project's IT services for remote access.

18.4 Documentation and Monitoring

The Human Resources Manager and Health and Safety Manager will be responsible for the implementation of what is stated in this plan and will keep evidence of it (e.g. checklists, COVID-19 cases at the Project, working conditions, internal grievance mechanism, workers who come from other communities, etc.).

18.5 Key Performance Indicators

The COVID-19 Contingency Plan is to be reviewed on a monthly basis until the pandemic is resolved in consultation with the Human Resources Manager and Health and Safety Manager. The Project will ensure that contractors update their procedures as needed.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 18-2: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Health and Safety Conditions at Work	Availability of preventive COVID-19 material (cleaning products, disinfectant, masks, gloves, alcohol gel, etc.)	All Project areas shall have cleaning materials and available PPE at all times.	Until the pandemic is resolved.	Human Resources, Internal Grievance Mechanism and Health and Safety Manager / Daily
	Hand hygiene facilities	One sink available to wash the hands per 20 workers. Alcohol gel available in all Project areas at all times.	Until the pandemic is resolved.	
	Internal Grievance Mechanism	100% reported, evaluated and solved grievances regarding COVID-19 claims or concerns	Until the pandemic is resolved.	

19. CHANCE FIND PLAN

19.1 Introduction

This Chance Find Procedure complies with Dominica laws and ESIA commitments and aligns with international standards for the protection of cultural heritage. It includes a Cultural Heritage Monitoring Program, Chance Find Plan, Cultural Heritage Training Program, and Site Protection Program, as detailed in the sections below.

19.1.1 Objective

This Chance Find Plan has the following objectives:

- To protect known cultural heritage from Project-related impacts; and
- To properly identify and mitigate impacts to cultural heritage inadvertently discovered during ground-disturbing construction activities (i.e., chance finds).

19.1.2 Scope of Application

This Chance Find Procedure applies to all Project activities that involve ground-disturbing activities.

19.2 Roles and Responsibilities

The Table below presents the roles and responsibilities for the implementation of this Chance Find Procedure.

Table 19-1: Roles and Responsibilities

Role	Responsibilities
ESG Manager	■ Implementation of the Cultural Heritage Monitoring Program, including contracting an on-call Cultural Heritage Specialist. ■ Implementation of the Chance Find Procedure, including notification of chance finds to relevant governmental authorities and cultural heritage stakeholders. ■ Implementation of the Cultural Heritage Training Program, including ensuring that workers involved in ground-disturbing activities are properly trained in the identification of chance finds and implementation of the Chance Find Procedure. ■ Implementation of the Site Protection Program, including ensuring that the Hamilton Estates sugar work ruins are properly marked with flagging tape and signs throughout the construction phase.
Cultural Heritage Specialist (On call)	■ Evaluation of potential chance finds. ■ Development of chance find treatment plans in consultation with governmental authorities and cultural heritage stakeholders. ■ Implementation of chance find treatment plans. ■ Reporting on the results of chance find evaluations and on the implementation of chance find treatment plans.
Contractor	■ Implementation of the chance find procedures.

19.3 Regulatory Background

19.3.1 National Requirements

Neither the DGDC nor the EPC will disturb any chance finds further until a competent specialist (Cultural Heritage Specialist) appointed by either the Ministry of Youth, Sports, Culture and Constituency

Empowerment, or the Dominica Museum has assessed the situation and actions identified the appropriate measures to be taken. The DGDC will liaise closely with the GoCD and the EPC to ensure that the assessment and recommended actions are carried out in a manner that will not be prejudicial to the planned works.

Upon discovery of a physical artefact work will be stopped, the site will be fenced and procedures for reporting will commence. Following internal reporting, the first external notification will be to the GoCD Ministry of Youth, Sports, Culture and Constituency Empowerment, followed by the Dominica Museum in Roseau.

19.3.2 International Standards

The principal international standard for the protection of cultural heritage is Performance Standard (PS) 8 (Cultural Heritage) of the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012). The objective of PS 8 is to "protect cultural heritage from the adverse impacts of project activities and support its preservation… [and] promote the equitable sharing of benefits from the use of cultural heritage." PS 8 defines cultural heritage as:

- Tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values;
- Unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls; and
- Certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles.

PS 8 differentiates between replicable, non-replicable, and critical cultural heritage, which are defined as follows:

- Replicable Cultural Heritage: Defined as "tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures."
- Non-replicable Cultural Heritage: Includes "(i) cultural heritage [that] is unique or relatively unique for the period it represents; or (ii) cultural heritage [that] is unique or relatively unique in linking several periods in the same site."
- Critical Cultural Heritage: Includes "(i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; or (ii) legally protected cultural heritage areas, including those proposed by host governments for such designation."

The preferred mitigation measure for all cultural heritage impacts is avoidance. When this is not possible, PS 8 provides the following mitigation hierarchy (from preferred to least preferred) for replicable cultural heritage:

- Minimize adverse effects and implement in situ restoration measures;
- Restore the functionality of the cultural heritage in a different location;
- Permanent removal of historical and archaeological artifacts following national laws and internationally recognized practices by competent professionals; and
- Compensation for the loss of cultural heritage.

The removal of non-replicable cultural heritage will only take place if there is no technically or financially feasible alternative and the benefits of the project outweigh any heritage losses. The removal of critical cultural heritage will only take place in "exceptional circumstances" and after extensive consultation with affected communities and other stakeholders.

PS 8 also requires the development and implementation of chance find procedures. Chance finds are defined as "tangible cultural heritage encountered unexpectedly during project construction or operation," and a Chance Find Procedure is defined as "a project-specific procedure that outlines the actions to be taken if previously unknown cultural heritage is encountered." The requirement is a recognition of the fact that no survey, regardless of methodology, is sufficient to ensure that all archaeological resources are identified in a project area, and that there is therefore always the potential for the inadvertent discovery of cultural heritage during ground-disturbing construction or operational activities.

According to the IFC Guidance Note 8, the Chance Find Procedure will "include record keeping and expert verification procedures, chain of custody instructions for movable finds, and clear criteria for potential temporary work stoppages that could be required for rapid disposition of issues related to the finds. It is important that this procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority, as well as any agreed consultation procedures. The procedure will be incorporated into the Management Program and implemented through the client's Environmental and Social Management System."

19.4 Cultural Heritage Monitoring Program

Current baseline information collected by Caraïbes Environnement Développement & Coll in 2015 identified some culturally significant aspects in the Roseau Valley, including those related to agricultural heritage and architectural heritage.

DGDC will implement a Cultural Heritage Monitoring Program for all construction activities in consultation with the GoCD Ministry of Youth Sports, Culture and Constituency Empowerment (Ministry) and other cultural heritage stakeholders (the Dominica Museum in Roseau), as appropriate. The purpose of this monitoring is to:

- Identify, record, and protect cultural heritage that has not been previously identified (i.e., chance finds); and
- Protect cultural heritage identified during previous cultural heritage investigations (i.e., known resources).

The program will utilize "passive" cultural heritage monitoring. Passive monitoring means that there will be no Cultural Heritage Specialist on site during construction. Instead, all Project and contractor personnel are responsible for cultural heritage monitoring during their daily activities. Relevant Project and contractor staff will receive training in the identification of potential chance finds and the Chance Find Procedure described below, and will be responsible for reporting any potential chance finds to the ESG Manager. The ESG Manager will then report the potential chance finds to a CHS to be retained by the Project (i.e., on call).

19.5 Chance Find Procedure

The following types of cultural heritage are the most likely to be encountered during construction:

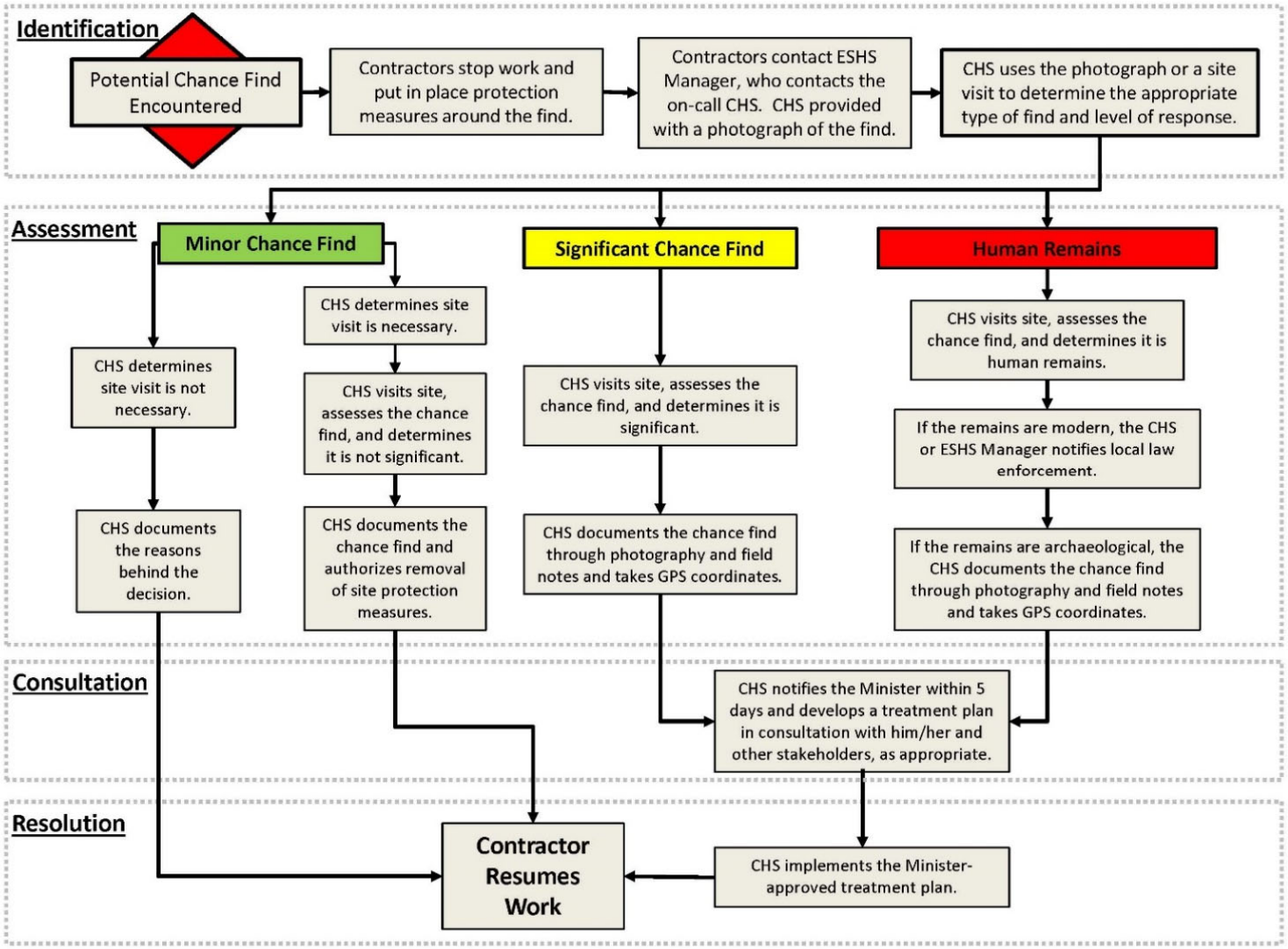
- Pre-Columbian archaeological features (e.g., habitations, hearths, burials);
- Pre-Columbian artifacts (e.g., ceramic sherds, stone tools);
- Historic archaeological features (e.g., brick wells and foundations); and

- Historic artifacts (e.g., clay pipes, bottle fragments and coins).

The Chance Find Procedure will use a multi-tiered approach for identifying, assessing, and resolving potential chance finds. The purpose of this approach is to empower the Cultural Heritage Specialist to resolve minor chance finds without requiring consultations with the Ministry and minimize construction delays by allowing for the quick resolution of non-significant finds by the Cultural Heritage Specialist in the field. The defining characteristics of each chance find tier and the processes for assessing them and determining if consultation is required will be developed in consultation with the Ministry and other cultural heritage stakeholders, as appropriate. A preliminary three-tiered chance finds hierarchy is presented in Table 19-2. All potential chance finds identified by Project personnel will be reported to the ESG Manager, who will then notify an on-call Cultural Heritage Specialist. The Cultural Heritage Specialist will determine if the potential find is a chance find and assign it to a chance finds tier. Figure 19-1 provides a flowchart of the Chance Find Procedure.

Table 19-2: Three-tier Chance Find Hierarchy

Chance Find Type	Characteristics	Evaluation Process
Minor Chance Finds	Modern features or objects. Isolated historic or prehistoric artifacts that are out of context or lack research potential or value.	Construction work will stop in the area of the find. The potential find will be reported to the ESG Manager, who will then notify the on-call Cultural Heritage Specialist, within 24 hours. The Cultural Heritage Specialist will then examine the potential find via photographs or a site visit. If the find is determined to represent a minor chance find, the find will be documented and collected/resolved in the field by the Cultural Heritage Specialist without Ministry consultation. Construction activities will then resume in the area.
Significant Chance Finds	Significant historic or prehistoric features or artifacts.	Construction work will stop in the area of the find. The potential find will be reported to the ESG Manager, who will then notify the on-call Cultural Heritage Specialist, within 24 hours. The Cultural Heritage Specialist will then conduct a site visit to examine the potential find. If the find is determined to represent a significant chance find, the Cultural Heritage Specialist will notify the Ministry within five days. The Cultural Heritage Specialist will develop a treatment plan in consultation with the Ministry. Construction activities will resume in the area upon completion of the Ministry-approved treatment plan.
Human Remains	Modern, historic, or prehistoric burials, isolated human remains, and/or associated features and/or artifacts (i.e., grave goods).	Construction work will stop in the area of the find. The potential find will be reported to the ESG Manager, who will then notify the on-call Cultural Heritage Specialist, within 24 hours. The Cultural Heritage Specialist will then conduct a site visit to examine the potential find. If the find is determined to represent modern human remains, the Cultural Heritage Specialist or ESG Manager will notify local, regional, or national law enforcement agencies. If the find is determined to represent archaeological human remains and/or burial goods, the Cultural Heritage Specialist will report the find to the Ministry within five days. The Cultural Heritage Specialist will develop a treatment plan in consultation with the Ministry and other stakeholders (e.g., potential descendent communities), as appropriate. Construction activities will resume in the area upon investigation and removal of the remains by law enforcement (modern) or completion of the Ministry-approved treatment plan (archaeological).



*CHS = Cultural Heritage Specialist

Figure 19-1: Chance Find Procedure Flowchart

Artifacts collected in connection with chance finds will be minimized. Photos of artifacts with a scale included in the frame will be taken as soon as possible. Artifacts and associated notes and photographs taken by any Project personnel will be given to the Cultural Heritage Specialist. Details of how artifacts will be collected and stored and what notes and photographs will be taken at the time of discovery will be provided in the Cultural Heritage Training. Artifacts found belong to the government of Dominica, and the Cultural Heritage Specialist will be responsible for giving them to the appropriate Ministry.

The Cultural Heritage Specialist and the ESG Manager will maintain records on chance finds and the implementation of management plans. These will include:

- Monthly reports summarizing reporting period activities, including chance finds identified, the results of any chance find assessments, internal and external communications and instructions, and supporting photographic documentation (or other reference materials as appropriate); and
- Any additional reports prepared to fulfil specific requirements of the Ministry.

19.6 Cultural Heritage Training Program

Relevant Project personnel will receive training and demonstrate competency in the identification of chance finds and the Chance Find Procedure described above. This training will be incorporated into the overall induction process for Project and contractor personnel, and will include a quick reference handout. The ESG Manager will maintain records of all Cultural Heritage Training provided to Project personnel.

All employees must be aware that it is illegal and forbidden to disturb or remove cultural heritage objects offsite for personal gain. To support the training process, the Project will develop training materials for use in the overall induction process.

19.7 Site Protection Program

Known cultural heritage sites will be protected from Project-related damage. This includes sites identified in advance of construction activities (if any) and those found during construction (i.e., chance finds). Sites may be located in Project areas or adjacent to them. In some cases, it may be necessary to modify construction techniques to protect sites in work areas. Site information will be provided to Project personnel in written and verbal form in official transmittals, meetings, and toolbox talks as appropriate to ensure that known cultural heritage sites are protected.

The following procedures will be followed for protecting archaeological resources located within the Project area (i.e., significant chance finds), when required by the Ministry, and for known archaeological sites located adjacent to or near ground-disturbing construction activities:

- The perimeter of the archaeological resource or site will be marked with high-visibility caution tape;
- Signs will be posted that the marked area is a protected archaeological site and that entry with mechanized vehicles is prohibited; and
- When ground-disturbing activities in the area are concluded, the caution tape and sign will be removed.

19.8 Key Performance Indicators

Table 19-3 presents the key performance indicators that will evaluate the implementation of this Chance Find Plan.

Table 19-3: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Disturbance of Archaeological Remains	Number of chance finds encountered, evaluated, and treated	100% evaluation of potential chance finds 100% treatment of significant chance finds and archaeological human remains	Construction	Quarterly Reports
	Cultural Heritage Training of workers involved in ground-disturbing construction activities	100% of workers trained	Construction	Quarterly Reports

20. TRANSPORTATION MANAGEMENT PLAN

A Transportation Management Plan establishes measures to minimize the effects of the Project's construction and operations on traffic, road infrastructure, and accident risk within the Area of Influence. An Operational Health and Safety Plan which includes Traffic Management Procedures was prepared by DGDC. The Plan can be downloaded at: https://geothermaldominica-my.sharepoint.com/:w:/g/personal/admin_geodominica_com/EWke9HU0lM1IhZR75oRu0x8BUE7KaEzKt-swWcXzzT4bFA?e=6YRBrF

21. TRAINING PLAN

21.1 Introduction

The Dominica Geothermal Development Company (DGDC) is committed to ensuring compliance with the implementation of the Environmental and Social Management Plan policies and procedures.

To promote the Project's alignment to best international practices, DGDC acknowledges that all personnel involved in the project, during both the construction and operation phases of the project, must be trained in order to ensure compliance with all of the requirements of the ESMP. This Training Plan compiles all of the training requirements detailed throughout the individual management plans specifically developed for all workers, including contractors and subcontractors.

21.1.1 Objective

The objective of this plan is to provide a quick reference guide which compiles all of the training requirements detailed throughout the individual Project's ESMP. The purpose of the required training is to ensure all Project personnel and their contractors are trained in all health, safety, environmental, social and Emergency Response procedures and requirements. All contractors, including their workers, will be responsible for complying with this Plan, as well as executing the works in accordance with current environmental and safety regulations. The specific objectives of the training requirements in the ESMP are:

- To be aware of the legal framework;
- To become familiar with International Standards, such as the IFC Performance Standards, and any other standards pertaining to the Project;
- To know the relevant aspects of environmental and social management in all Project activities and promote their implementation;
- To train technical personnel in relation to threats, possible risk situations, in order to adopt strategies to reduce the effects on the different processes, communities and resources in the area of influence; including potential accidents associated with the construction, operation and maintenance of the Project components;
- Train staff on environmental issues including the concept of non-hazardous and hazardous waste management including the implementation of the five (5) "Rs" (reuse, recycle, reduce, repair, reject) where appropriate, water conservation, and wildlife protection;
- Encourage an environmental culture in all Project workers, including staff sensitization on the importance of environmental sustainability;
- Train staff on social issues that include, for example, gender aspects, grievance mechanisms, workers' code of conduct, among others; and
- Train staff on health and safety matters.

21.1.2 Scope of Application

These procedures shall apply during the development of DGDC's activities and during the Project's life cycle (construction, operations and decommissioning). It is DGDC's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to ESMS policies and procedures, which are aligned to international best practices.

This Training Plan provides training requirements related to all Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific training of engaged parties. Contractors will use this plan and develop their specific training protocols to meet the various requirements of the Project's ESMP and how they will be applied on the ground. DGDC will review and approve these document before any implementation.

21.2 Roles and Responsibilities

In order to properly implement the Training Plan, DGDC requires the involvement of the people listed below.

Table 21-1: Roles and Responsibilities

Role	Responsibilities
Board of Directors	■ Be familiarized, review and approve the Training Plan
Finance Manager	■ Ensure the availability of resources necessary for the implementation of the Training Plan
Head of ESG	■ Assure the correct implementation of the Training Plan
ESG Manager	■ Assure the correct implementation of the Training Plan ■ Update the Training Plan ■ Review and approve the contractor project-specific Training protocols and/or plans
Environmental Coordinator or H&S Supervisor	■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining DGDC's KPIs. In addition, ensure the internal coordination to follow the Training Plan
Contractor Company	■ Develop a project-specific Training Plan or training protocols
DGDC Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Training Plan

21.3 Required Training Activities

The following table presents the different types of training required by topic, their frequency and the required personnel for both the construction and the operational phases of the Project.

Table 21-2: Required Training Activities by Topic

Topic	Project Phase	Required Training	Personnel Required	Frequency of Training
Biodiversity Management	Construction and Operation	Code of Conduct: ■ Training and induction on the importance of biodiversity in the region, including: - Restrictions and prohibitions on harassment, hunting, trapping, gathering, buying, and/or selling of flora and fauna species (included contractors); - Information on species present within the area, especially endangered or threatened species; - Procedures regarding how to proceed if alive, injured, or dead animals are found;	All Employees of DGDC, contracts, and public	Induction training/yearly refreshers

Topic	Project Phase	Required Training	Personnel Required	Frequency of Training
		- Delimitation of work areas; and - Information regarding appropriate behavior prior to beginning construction.		
Erosion and Sediment Control	Construction and Operation	■ General awareness and procedures concerning water management and the prevention of erosion and sedimentation; ■ General awareness on key indicators of erosion and sedimentation in order to apply corrective actions; ■ The appropriate disposal methods of collected stormwater.	All Employees of DGDC, contracts, and public	Induction training/yearly refreshers
Waste Management	Construction and Operation	Employees and contractors will be trained in proper waste management, including classification.	All Employees of DGDC, contractors	Induction training/yearly refreshers
Water Management	Construction and Operation	■ General awareness and procedures concerning water management and conservation ■ Emergency procedures in case of water leaks ■ The appropriate disposal methods of hazardous materials or industrial wastewater to ensure they are not disposed of in the facility's sanitary sewer system.	All Employees of DGDC, contractors	Induction training/yearly refreshers
Air Emissions	Construction and Operation	■ General awareness and procedures concerning emissions management. ■ Personnel involved with the air emissions generation will receive additional training including refresher and updates to the training.	All Employees of DGDC, contractors	
Noise Management	Construction and Operation	All Project construction and operational staff will be trained regarding proper use of PPE, and will be informed of tasks where noise levels exceed 85 dBA to ensure that PPE is used during completion of these tasks.	All Employees of DGDC, contractors	Induction training/yearly refreshers
Natural Disasters	Construction and Operation	All personnel on site will receive training on procedures and actions to perform before, during, and after an emergency. After organizing the site's Emergency Brigade, they will be trained on the content of the Natural Disasters Management Plan and their responsibilities and duties in case of each type of emergency will be explained.	All Employees of DGDC, contractors	Induction training/yearly refreshers
		In addition to the training, emergency response drills will also be conducted at least yearly. The drills will be conducted without notice and the response times will be monitored and recorded.	All Employees of DGDC, contractors	Yearly

Topic	Project Phase	Required Training	Personnel Required	Frequency of Training
		The Emergency Response Plans will be reviewed and revised if improvements are needed after the drills. After the drill, trainings will be organized to resolve any faults encountered during the drills.	All Employees of DGDC, contractors	When changes are made to the plan in response to a drill or an emergency response.
Well Blowouts	Construction	Well control certification program (API, IADC, or similar governing body)	All tool pushers and drilling superintendents	At employment inception and every two years after
	Operation	Emergency Response Training and mock drills	All Plant Personnel	Induction training/yearly refreshers
Emergency Response	Construction and Operation	Drills – Practice Emergency Response Drills and evaluation	All Plant Personnel	Every 6 months
	Construction and Operation	Emergency Response Training – Implementation of the Emergency Response Plan, roles and responsibilities.	All Plant Personnel	Yearly for plant personnel, refresher every 6 months for Emergency Response Team
Site Security	Construction and Operation	Receive specific training on: ■ Site Security Plan and its implementation in order to ensure that response to any dangerous situation is adequate. ■ External Grievance Mechanism	Employees with Security responsibilities	Induction training/yearly refreshers
Workers Health and Safety	Construction and Operation	During Health and Safety Training, all personnel will be trained on: ■ Risk Identification and Analysis ■ High risk activities and work permits ■ PPE ■ Personnel Health ■ Emergency response ■ Traffic and Site Access ■ Obligations and forbidden actions ■ Code of Conduct	All Employees of DGDC, contractors	Induction training/yearly refreshers
Labor Conditions	Construction and Operation	Anyone who has a supervisory role and/or a direct hiring role is required to be trained on: ■ Working Conditions and Management of Worker Relationship ■ Human Resources Policy ■ Working conditions and terms of employment ■ Worker's organizations ■ Non-Discrimination and Equal Opportunity ■ Gender Equality ■ Retrenchment	Managers and Human Resources Personnel	Induction training/yearly refreshers

Topic	Project Phase	Required Training	Personnel Required	Frequency of Training
		■ Grievance Mechanism ■ Workforce Requirements ■ Occupational Health and Safety ■ Hiring Requirements ■ Communication mechanisms ■ Workers engaged by third parties ■ Performance Management Process		
	Construction and Operation	All Employees will be trained on their rights including: ■ Working conditions and terms of employment ■ Grievance Mechanisms	All Employees of DGDC, contractors	Induction training
Internal Grievances	Construction and Operation	All Employees will be trained on the implementation of the Internal Grievance Mechanism, its confidentiality and their protection from retaliation.	All Employees of DGDC, contractors	Induction training
	Construction and Operation	The Grievance Mechanism Team will be trained on: ■ Roles and Responsibilities, ■ GM Database ■ Grievance Mechanism Procedures	Grievance Mechanism Team	Induction training/yearly refreshers
Community Health and Safety	Construction and Operation	Trained on: ■ Health and Safety Risk Identification Associated to Affected Communities ■ Emergency and Preparedness Response Plan ■ Community Health and Safety Measures ■ Communication of Information	Community Relations Team, Community Relations Supervisor and anyone else tasked with implementing the Community Health and Safety Plan	Induction training/yearly refreshers
External Grievances	Construction and Operation	The Community Relations Team will be trained on: ■ Roles and Responsibilities, ■ GM Database ■ Grievance Mechanism Procedures	Community Relations Team	Induction training/yearly refreshers
Contractor Management	Construction and Operation	Anyone who has a supervisory role and/or a direct hiring role is required to be trained on: ■ Contractor Management Procedures ■ Training and Competency ■ Contractor Supervision Procedure	Managers and Human Resources Personnel	Induction training/yearly refreshers
Stakeholder Engagement	Construction and Operation	Training on the Stakeholder Engagement Plan, including: ■ Identification of Stakeholders ■ Stakeholder Mapping and prioritization of stakeholders ■ Disclosure of information and community participation ■ Communication tools ■ Scheduling communication and engagement activities ■ Recordkeeping	Community Relations Team, Contractors	Induction training/yearly refreshers

Topic	Project Phase	Required Training	Personnel Required	Frequency of Training
COVID-19	Construction and Operation	All personnel will be provided guidelines and practices regarding COVID-19	All Employees of DGDC, contractors	Document shared at the start of site activities
Archeological Change Finds	Construction	All Project Construction personnel will receive training and demonstrate competency in the identification of chance finds and the Chance Find Procedure	All Construction Personnel	Induction training
Transportation	Construction and Operation	Personnel will be trained on the implementation of the Traffic Management Plan, including: ■ Driver Safety Measures ■ Vehicle Integrity ■ Route Management ■ Road Condition ■ Noise, Vibration and Dust ■ Transportation Safety within the Site ■ Communication with Community Stakeholders	All Employees of DGDC, contractors	Induction training/yearly refreshers

21.4 Documentation and Monitoring

Documentation of all training is required to be kept on-site, by Human Resources, for DGDC and all contractors. Implementation of this procedure is reviewed through internal and external (when applicable and available) audit results and other inspection processes.

21.5 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 21-3: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/Frequency
Trainings	Total number of trainings carried out in the stipulated time frame	100% of trainings carried out in the stipulated time frame	Construction and Operation	Human Resources training records / monthly
Workers	Percentage of trained workers	100% of trained workers	Construction and Operation	Human Resources training records / monthly

22. ESMP ESTIMATED COSTS

This chapter provides a list of proposed and recommended management and mitigation measures and provides a preliminary estimated cost for their implementation. These preliminary estimated costs will need to be reviewed at the exact moment of the implementation of the management plan. Some of the costs presented here will vary depending on the local market conditions and availability of the resources.

The final budget should be reviewed and updated by the Contractor, when, based on this estimate (Table 22-1), the contractor will prepare the Contractor's ESMP (C-ESMP). The E&S budget will form part of the total project budget.

Table 22-1: ESMP Estimated Costs

Plan	Resource	Management Measure	Cost Type	Project Phase	Preliminary Estimated Cost
All	Staff	Personnel per roles and responsibilities of ESMP		Pre-construction	$70-90k $15-25k
Biodiversity Management Plan	Flora and Fauna	Pre-vegetation clearing surveys by a terrestrial plant and fauna specialists	Labor	Construction	$3-5k
		Wildlife Specialist for Oversight and Animal rescue and relocation	Labor	Construction	$2-4k
		Tree Fellers for vegetation removal	Labor	Construction	$1-2k
		Revegetation	Labor and Supplies	Construction	$3-5k
Biodiversity Management Plan	Health and Safety	Training and signs	Labor and Supplies	Construction	$2k
Erosion and Sediment Control Plan	Soil and Water	Monitoring – Sample analysis	Labor and Supplies	Operation	$3-5k
		Erosion and Sediment Control Measures – Silt fences, berms, temporary storage, seeding, tarps	Labor and Supplies	Construction	$5-10k
		Monitoring – Sample analysis	Labor and Supplies	Construction	$3-5K
	Health and Safety	Training and Inspections	Labor	Construction	$2k
		Training and Inspections	Labor	Operation	$2k
Waste Management Plan	Soil and Water	Material Storage	Supplies	Construction	$1k
		Material Disposal Costs	Supplies	Construction	$5-10K

Plan	Resource	Management Measure	Cost Type	Project Phase	Preliminary Estimated Cost
		Monitoring – Sample analysis	Labor and Supplies	Construction	$3-5k
		Material Storage	Supplies	Operation	$1k
		Material Disposal Costs	Supplies	Operation	$2-4k
		Monitoring – Sample analysis	Labor and Supplies	Operation	$1-2k
	Health and Safety	PPE	Supplies	Construction	$6-10k
		Training and Inspections	Labor	Construction	$2k
		PPE	Supplies	Operation	$2-4k
		Training and Inspections	Labor	Operation	$2k
Water Management Plan	Soil and Water	Monitoring – Sample analysis	Labor and Supplies	Construction	$3-5k
		Wastewater storage and disposal	Supplies	Construction	$1-5k
		Monitoring – Sample analysis	Labor and Supplies	Operation	$1-2k
		Septic System maintenance	Labor and Supplies	Operation	$1-2k
	Health and Safety	Potable water and storage	Supplies	Construction	$5-10k
		Potable water and storage	Supplies	Operation	$5-10k
Air Emissions Management Plan	Air and Health and Safety	Air Emissions Monitoring – Includes Hydrogen Sulfide and n-pentane	Supplies	Construction	$5-10k
		Dust control practices – soil wetting, seeding.	Supplies	Construction	$1k
		Training and Inspections	Labor	Construction	$2k
		Air Emissions Monitoring – Includes Hydrogen Sulfide and n-pentane	Supplies	Operation	$3-5k
		Dust control practices – soil wetting, seeding.	Supplies	Operation	$1k
		Training and Inspections	Labor	Operation	$2k
Noise Management Plan	Fauna and Health and Safety	Noise Monitoring	Supplies	Construction	$3-6k
	Health and Safety	PPE	Supplies	Construction	$2-4k
		Training	Labor	Construction	$2k
		Noise Monitoring	Supplies	Operation	$3-6k

Plan	Resource	Management Measure	Cost Type	Project Phase	Preliminary Estimated Cost
		PPE	Supplies	Operation	$2-4k
		Training	Labor	Operation	$2k
Natural Disaster Management Plan	Health and Safety	Training	Labor	Construction	$2k
		Emergency response equipment (flashlights, water, etc.)	Supplies	Construction	$1-2k
		Audible Alarms	Supplies	Construction	$1-2k
		Training	Labor	Operation	$2k
		Emergency response equipment (flashlights, water, etc.)	Supplies	Operation	$1-2k
		Audible Alarms	Supplies	Operation	$1-2k
Well Blowout Prevention	Health and Safety	Training	Labor	Construction	$2k
		Training	Labor	Operation	$2k
Emergency Response Plan	Water, Soils, Health and Safety	Emergency response equipment – first aid/PPE, fire, spill response, security	Supplies	Construction	$3-5k
		Emergency response equipment – first aid/PPE, fire, spill response, security	Supplies	Operation	$3-5k
	Health and Safety	Training	Labor	Construction	$2k
		Training	Labor	Operation	$2k
Security Management Plan	Health and Safety	Training	Labor	Construction	$2k
		Security Equipment – Cameras, fences, locks.	Supplies	Construction	$3-4k
		Training	Labor	Operation	$2k
Workers Health and Safety Management Plan	Health and Safety	Training	Labor	Construction	$2k
		PPE/Safety Equipment for personnel – for example: steel toe boots, hard hats, high visibility vests, earplugs, safety glasses	Supplies	Construction	$4-6k
		Training	Labor	Operation	$2k
		PPE/Safety Equipment for personnel – for example: steel toe boots, hard hats, high visibility vests, earplugs, safety glasses	Supplies	Operation	$3-5k
Labor Conditions	Socioeconomic, gender and social inclusion	Additional External Communications	Fees/Supplies	Construction	$1-3k
		Training	Labor	Construction	$2k

Plan	Resource	Management Measure	Cost Type	Project Phase	Preliminary Estimated Cost
and Workers Selection Plan		Additional External Communications	Fees/Supplies	Operation	$1-2k
		Training	Labor	Operation	$2k
Internal and External Grievance Mechanism	Socioeconomic	Additional External Communications	Fees/Supplies	Construction	$1-3k
		Training	Labor	Construction	$2k
		Additional External Communications	Fees/Supplies	Operation	$1-2k
		Training	Labor	Operation	$2k
Community Health and Safety Plan	Health and Safety	Training	Labor	Construction	$2k
		Additional External Communications	Fees/Supplies	Construction	$1-3k
		Training	Labor	Operation	$2k
		Additional External Communications	Fees/Supplies	Operation	$1-2k
Stakeholder Engagement Plan	Socioeconomic	Additional External Communications, Public Consultation, Disclosure of Information, Stakeholder Database	Fees/Supplies	Construction	$2-4k
		Training	Labor	Construction	$2k
		Additional External Communications, Public Consultation, Disclosure of Information, Stakeholder Database	Fees/Supplies	Operation	$1-2k
		Training	Labor	Operation	$2k
COVID-19 Engagement Plan	Health and Safety, Socioeconomics	Training	Labor	Construction	$2k
		Additional External Communications, Community Engagement	Fees/Supplies	Construction	$1-3k
		PPE – Face masks, hand sanitizer, cleaning supplies, testing kits	Supplies	Construction	$2-3k
		Training	Labor	Operation	$2k
		Additional External Communications, Community Engagement	Fees/Supplies	Operation	$1-2k
		PPE – Face masks, hand sanitizer, cleaning supplies, testing kits	Supplies	Operation	$1-2k
Chance Find Plan	Cultural Heritage	Training	Labor	Construction	$2k

Plan	Resource	Management Measure	Cost Type	Project Phase	Preliminary Estimated Cost
Transportation Management Plan	Health and Safety	Training	Labor	Construction	$2k
		Vehicle Inspections	Labor and Supplies	Construction	$1k
		Vehicle, Equipment and Road Maintenance (includes dust suppression, erosion control, etc.)	Labor and Supplies	Construction	$5-8k
		Road Signs/PPE	Supplies	Construction	$1k
		Additional External Communications, Grievance Mechanism	Fees/Supplies	Construction	$1-3k
		Training	Labor	Operation	$2k
		Vehicle Inspections	Labor and Supplies	Operation	$1k
		Vehicle, Equipment, and Road Maintenance	Labor and Supplies	Operation	$3-5k
		Road Signs/PPE Repairs	Supplies	Operation	$1-2k
		Additional External Communications, Grievance Mechanism	Fees/Supplies	Construction	$1-2k

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APPENDIX 13-A INTERNAL CLAIM FORM

INTERNAL CLAIM FORM			
GRIEVANCE FORM **GRIEVANCE Nº** **EMPLOYEE COMPANY** **GRIEVANCE TYPE** *(indicate whether this is a concern, claim, or a suggestion)* **PERSONAL INFORMATION***			
*Surnames:		*Address:	
*Names:		*Telephone:	
Gender:		Address:	
Age:		Professional occupation:	
Labor relationship with DGDC	Permanent	Professional Service	Other (specify)
* Not mandatory information. You may submit this form anonymously.			
REASON FOR THE CLAIM			
Details: *(indicate when did the events of this claim occurred, who was involved, foundations, evidence and any other relevant information).*			
Response requested (describe what is requested based on the claim)			
Attached and/or delivered documents Information attached: YES □ NO□ Indicate which are the documents and attach them.			
Signature:		Date:	
Receptor Signature:		Date:	
We appreciate your comments; please keep a copy for follow-up. Thank you.			

APPENDIX 13-B COMMUNICATION FORM

Communication Report

File No.:	_____	Contact Date:	_____
Stakeholder Name:	_____	Next Contact Date:	_____
Municipality:	_____	Contact Reason:	_____
State:	_____	Phone:	_____

Comments and/or Agreements:

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_____ _____

Manager **Coordinator**

Note: This community report can be filled in by legible handwriting or by computer.

APPENDIX 15-A EXTERNAL CLAIM FORM

EXTERNAL CLAIM FORM			
GRIEVANCE FORM **GRIEVANCE Nº** **EMPLOYEE COMPANY** **GRIEVANCE TYPE** *(indicate whether this is a concern, claim, or a suggestion)* **PERSONAL INFORMATION***			
*Surnames:		*Address:	
*Names:		*Telephone:	
Gender:		Address:	
Age:		Professional occupation:	
Labor relationship with DGDC	Permanent	Professional Service	Other (specify)
* Not mandatory information. You may submit this form anonymously.			
REASON FOR THE CLAIM			
Details: *(indicate when did the events of this claim occurred, who was involved, foundations, evidence and any other relevant information).*			
Response requested (describe what is requested based on the claim)			
Attached and/or delivered documents Information attached: YES □ NO□ Indicate which are the documents and attach them.			
Signature:		Date:	
Receptor Signature:		Date:	
We appreciate your comments; please keep a copy for follow-up. Thank you.			

APPENDIX 15-B COMMUNICATION FORM

Communication Report

File No.:	_____	Contact Date:	_____
Stakeholder Name:	_____	Next Contact Date:	_____
Municipality:	_____	Contact Reason:	_____
State:	_____	Phone:	_____

Comments and/or Agreements:

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Manager **Coordinator**

Note: This community report can be filled in by legible handwriting or by computer.

APPENDIX 16-A WORKERS ACCOMMODATION AUDIT

Key Performance Indicator	Yes	No	N/A	Comments
Accommodation				
The location of the facilities is designed to avoid natural hazards (storms, floods, etc.)				
Accommodation facilities are located at a reasonable distance from the workplace				
Accommodation facilities are constructed of suitable materials, maintained in good condition and clean				
Accommodation facilities have electricity and adequate drainage				
Accommodation facilities are heated/ventilated/air-conditioned (depending on climate)				
Accommodation facilities have adequate lighting systems				
Accommodation facilities have specific containers for garbage collection and are emptied regularly				
Pest extermination, vector control and disinfection are carried out on a regular basis				
Rooms/bedrooms are kept in good condition, and are ventilated and cleaned at regular intervals				
The rooms/bedrooms and sanitary facilities are located in the same buildings				
The number of workers sharing the same room/bedroom does not exceed five				
Mobile partitions or curtains are provided				
There are separate sleeping areas for men and women				
There is a separate bed for each worker				
There is a minimum space of 1 meter between beds				
The use of double-decker bunks is minimized				
When using double-decker bunks there is sufficient space between the upper and lower bed				
Triple deck bunks are prohibited				
Workers are provided with comfortable mattresses, pillows and clean bedding				

Bedding is washed frequently and applied with appropriate repellents and disinfectants				
The accommodation areas are separated from the kitchen space				
Adequate washing and drying facilities are provided				
Workers are provided with basic collective social spaces and adequate recreational areas				
Health and safety measures (including emergency preparedness and response measures) are visible within the facility				
The regulation with the rights and duties of the workers is visible inside the facilities				
Regulations regarding alcohol and tobacco consumption and third party access to the camp are visible inside the facilities				
Community relations management guidelines are visible within the facilities				
Worker housing policies and management plans are periodically reviewed and improved.				
The person appointed to manage the accommodation has the background, competence and experience necessary to carry out its mission and is given the appropriate responsibility and authority to do so.				
There are sufficient staff to ensure proper implementation of housing standards (cleaning, cooking, security, etc.)				
Transport				
Transportation provided to workers is safe				
An adequate transport system is provided to and from the surrounding communities				
Water				
Workers have easy access to an adequate supply of potable water within the Site				
Workers have easy access to an adequate supply of clean water within their accommodation				
The quality of the drinking water is regularly monitored.				
Medical services				
First aid kits are provided in adequate quantities				

Are the first aid kits properly stored				
There is an adequate number of staff/workers trained to provide first aid				
There are medical/paramedical staff on site.				
Ambulance or other means of transport are available for the transfer of staff to health facilities.				
Accommodation facilities have a first aid kit				
Food				
The kitchen facilities are built with adequate and easy to clean materials.				
The kitchen floor, ceiling and wall surfaces, adjacent to or above the cooking areas, are constructed of fire-resistant, non-absorbent, durable, non-toxic and easy-to-clean materials.				
The surfaces of the food preparation tables and adjacent walls are equipped with a smooth, durable, non-corrosive, non-toxic and washable surface.				
Suitable sealable containers are available for depositing food and other waste.				
Garbage is frequently removed from the kitchen to avoid accumulation				
The people in charge of the kitchen are adequately trained in the handling and cooking of food.				
The food provided to workers contains nutritional value appropriate to the activities they perform.				
The food provided takes into account the religious/cultural background of the workers.				
Workers are provided with sufficient space in the canteen/dining room.				
Health services				
The sanitary and cleaning facilities are built with easy to clean materials.				
Sanitary and washing facilities are frequently cleaned and maintained in working order.				
Toilets, shower/bathrooms and other sanitary facilities are designed to provide workers with adequate privacy, including roof-to-floor partitions and lockable doors.				
There are separate toilet and washing facilities for men and women.				

There are an adequate number of toilets, urinals and sinks.				
Toilet facilities are conveniently located and easily accessible.				
The shower floor is made of durable, washable anti-slip materials.				
There are an adequate number of showers.				
The shower facilities have an adequate supply of hot and cold running water.				

APPENDIX 17-A SUMMARY OF COMMUNITY MEETINGS

Laudat

In Laudat, a community meeting was held on Tuesday 4th July 2018. Concerns expressed by the community included technical questions about the pipeline and public health considerations associated with operations of the plant. Community members also voiced concerns about the risks associated with volcanic activity near the project, equipment failure, and other natural disasters. Community members also expressed the desire to see policy changes associated with the Project and the need for some community benefit projects that would be realised in the community. They also asked about land acquisition and noted that Laudat has been the location for several other projects where few benefits were realised in the local community. The DGDC Team explained the costs and the benefits of the project and the ESIA findings in terms of H2S. DGDC also explained the technology being utilised in the plant and the low risks associated with this type of equipment. The DGDC Team further explained the risks and the planning and design measures that were selected for this project given the topography, risk of landslides and recent flooding from Hurricane Maria and the EPC Contractor requirements that will be put in place to reduce nuisance and community health and safety impacts such as the emergency response and other planning procedures. The current status of land acquisition was also explained and the need to complete compensation before construction can begin, as per OP 4.12. Ongoing monitoring and preventative measures such as the traffic management plan and erosion control measures were also explained. Comments on policy and community benefits were noted, but it was explained that this is ultimately under the control of government and policymakers, rather than the project.

In July 2019, prior to an emergency drill on the production site, a meeting was held with the residents of Laudat

In third quarter of 2019, the DGDC had two consultations with the community of Laudat. The consultations were centered around the production well flow test carded for early October. Presentations at the first consultation, held on September 26, 2019, concentrated on defining a flow test and the flow test process and duration of the activity. Approximately twenty members of the community attended that meeting. The Engineering Department delivered a power point presentation explaining the flow test process and the mitigating measures to be employed for the duration of the test. Participants were allowed to ask questions and voice their concerns after the presentation. The consultation was recorded, and participants were requested to fill-out attendance forms. A second community consultation was held four days after the start of the flow test to receive feedback from the community and inform of any changes to plan.

In June 2020, community meetings were held to provide updates to the project following existing COVID-19 protocols. Further updates were provided in October 2020.

Trafalgar

In Trafalgar, a community meeting was held on Wednesday 5th July 2018. Fewer comments were made at this meeting than in Laudat or Wotten Waven, likely because the community is further from the power plant site. The community asked a few technical questions about the distance of the pipeline and natural hazards that could affect the project. They also asked about the proximity to the nearby communities from the power plant and emergency response. The DGDC Team explained the risks and the planning and design measures that were selected given the topography, risk of landslides and recent flooding from Hurricane Maria. DGDC also explained the emergency response and planning procedures that will be put in place for the Project. Examples of other projects where a geothermal plant was located in close proximity to the community were given.

In September 2019 prior to the flow test of the production well, One-on-one engagements were held with vendors of Trafalgar Village, Papillote Hotel owners and employees of the Trafalgar Tourist Facility. This was done to inform of the flow test and to highlight the restricted access to the Trafalgar Falls during the first few hours of the flow test. An information poster was placed at the Trafalgar facility to inform visitors of the planed test.

Wotten Waven

In Wotten Waven, a community meeting was held on Thursday 6th July 2018. A lot of concern was expressed at the meeting particularly about public health issues, employment, and direct benefits to the community. Specifically, people asked about job requirements, accidents at the plant and/or the pipeline, detrimental effects on thermal spas, the expected lifespan of a well, consumer benefits on electricity bills, health impacts of construction and noise, and property acquisition. A community member also suggested the need for a weekly briefing in the community during the construction phase. The DGDC Team explained the design of the plant and reinjection route given the topography, risk of landslides and recent flooding from Hurricane Maria and to reduce noise and visual affects at properties near the power plant. DGDC also explained the technology being utilized in the plant and the low risks associated with this type of equipment. The lack of changes anticipated for the thermal surface features were also explained given the depth of the wells and associated activity and the plan to conduct ongoing monitoring of these features was also shared. The DGDC Team further explained in detail the noise associated with the steam blowing phase and the limited timeframe for this testing. The current status of land acquisition was also explained and the need to complete compensation before construction as per OP 4.12.

Following the disclosure of the NTS, the full ESIA was made available to the community in August 2018 via the internet, and a hard copy being available at DGDC's offices. The DGDC held two public consultations on the Jacobs ESIA in February 2019. The first took place on 6 February 2019 in Roseau at the Goodwill Parish Hall and targeted persons living in Roseau and environs. The second consultation took place in Portsmouth of 7 February 2019 at the Central Cooperative Credit Union Hall and targeted persons living in Portsmouth and environs. Thirty-four (34) persons attended the consultation in Roseau while nineteen persons (19) attended at Portsmouth.

Engagements were also held with schools; during the period January to March 2019, a total of 25 schools were engaged - seven secondary and fifteen primary schools. Schools from the south, central, west, north and north east were part of the engagement. Three primary schools from the Kalinago territory were also part of our school engagement drive. Participation in these sessions amounted to a total of 1,049 students and 68 teachers. During April to June 2019, a total of 10 schools were engaged – nine primary schools and the Dominica State College. Participation in these sessions amounted to a total of 322 students and 24 teachers.

APPENDIX B Resettlement Action PLAN (RAP)

Appendix B
Resettlement Action Plan

December 2021

Document No.: RZ020300-002-RPT-0015| V2

Powering a New Generation

Document details	The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.
Document title	Resettlement Action Plan
Document No.	RZ020300-002-RPT-0015| V2
Date	December 2021
Version	2.0
Author	DGDC Safeguards Department

Resettlement Action Plan

Dominica Geothermal Development Company Ltd.
18 Kennedy Avenue, Roseau
Commonwealth of Dominica

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Acronyms and Abbreviations

Name	Description
AoI	Area of Influence
RAP	Resettlement Action Plan
CIA	Central Intelligence Agency
CLO	Community Liaison Officer
DGDC	Dominica Geothermal Development Company Limited
DOMLEC	Dominica Electricity Services Limited
DOWASCO	Dominica Water and Sewerage Company Limited
DSWMC	Dominica Solid Waste Management Corporation
EC	Eastern Caribbean Dollar
EIA	Environmental Impact Assessment
EHS	Environmental Health and Safety
EPC	Engineer, Procure and Construct
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GoCD	Government of the Commonwealth of Dominica
HSE	Health, Safety and Environment
IFC	International Finance Corporation
kW	Kilowatt
LRP	Livelihood Restoration Plan
MTPNP	Morne Trois Pitons National Park
MW	Mega Watt
NZ	New Zealand
PAP	Project Affected Person
PS	Performance Standard
ROW	Right of Way
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
ToR	Terms of Reference
USD	US Dollars
WB	World Bank
WBG	World Bank Group
WHO	World Health Organisation

1. INTRODUCTION

1.1 Background

This Resettlement Action Plan (RAP) was prepared by Dominica Geothermal Development Company (DGDC) for the Dominica Geothermal Power Plant Project, located in the Roseau Valley, Dominica. The Project seeks to construct a 10 MW geothermal plant in Laudat utilizing binary technology. There are five existing wells – three exploratory wells (WW01-03), a production well P1 and a reinjection well R1, which were funded by the European Union and the Agence Francaise de Developpment through grant and loan financing. The Government of Dominica finances all land acquisition activities. After a cancelled procurement in 2019, the project was redesigned in three major ways:

1. Power production increased from 7 to 10 MW; a back-up production well RVP2 was also included;

2. The reinjection moved from Wotten Waven and Trafalgar to Laudat thereby decreasing the reinjection footprint from a 7 Km to 1.2 km pipeline and the drilling of a new reinjection well RVI2 and;

3. OCR (Binary technology) specified.

The construction of the Power Plant will be undertaken by the DGDC and a consortium of partners through financing which is being negotiated. The drilling of the two new wells and associated infrastructure i.e., drill pads and access to drill pads is financed by the World Bank and the power plant and steam gathering system by debt financing from the CDB/IDB.

The RAP has been developed using the ARAP published in 2018, including the census information, and using the information from the updated reinjection pipeline route. This RAP has been updated with additional data collected by Eclipse Inc. during consultations for the ESIA for the reinjection well and pipeline and biodiversity assessment for RVP2.

It is also important to note that, in September 2017, the Island was devastated by Hurricane Maria. This RAP has been developed post Hurricane Maria and reflects changes in land use, land acquisition and livelihood restoration for the Project post the disaster.

1.1.1 Legacy Properties in ARAP of 2018

Following the project redesign, the project decided that an updated RAP would be needed to combine the PAPs affected by the original design provided in ARAP of 2018 with those being affected by the updated designs.

Section 4.4.3 of Volume 3 of the Jacobs's 2018 ESIA (Social Impact Assessment), describes lands impacted during the original drilling phase. Five parcels of land were acquired for the drilling of the five existing wells; with the exploratory well WW-03 and production well WW-P1 being located on the same parcel of land, Parcel 1. These lands are referred to as legacy lands in this RAP and a summary of their status is presented in the Table 1.1 below. It is worth noting that the ARAP of 2018 does not include the land acquired for two wells WW-03 and WW-P1 (Parcel 1); however, these are included in the current RAP. Based on the Bank guidance, the PAP was compensated following OP 4.12 in 2018. In addition, Parcel 4 for WW-02 was originally leased by GoCD but later the government decided to acquire it and the negotiations for the parcel is underway.

Table 1.1 Legacy Properties from ARAP of 2018

Resource	WW-01	WW-02	WW-03/P1[1]	WW-R1
PAP number of RAP 2021	PAP #9[2]	PAP #8	No PAP number is attached since compensation was finalized in 2018[3]	No PAP number is attached since compensation was finalized in 2018
Land	Parcel 3	Parcel 4	Parcel 1	Parcel 2 and Parcel 5[4]
Lot Size	1.06 acres	Originally two lots of 1,619,561 sq ft & 37,620 sq ft. Only 37,620 sq ft (adjusted to 37035 after final survey)will be acquired due to the design change	3.852 acres	Two lots measuring 3.98 and 4.12 acres
Current Ownership/Land Arrangements	Acquired via compulsory acquisition by the Government.	Acquired via compulsory acquisition by the Government	Acquired via compulsory acquisition by the Government.	Acquired via compulsory acquisition by the Government.
Land Use prior to Drilling Phase	Unoccupied.	Business.	Unoccupied.	Unoccupied.
Compensation Status (Dec 2021)	Paid 9 Oct 2018 for 1.06 acres and additional 242, 150 sq ft is under negotiations	Negotiations in progress for 37035	Paid 9 Oct 2018	Paid 9 Oct 2018
Additional Notes	See more detailed description below	See more detailed description below	Not in ARAP of 2018 or current RAP	Not in ARAP of 2018 or current RAP

The new design involves drilling of a new reinjection well in Laudat and discontinuing of the use of two existing wells of WW-01 and WW-R1. As a result, the lands belonging to PAPs 9-10-11 (for WW-01) and PAP-13 (for WW-R1) included in ARAP of 2018 are no longer required but will be maintained under the Project. No additional lands are required for the power plant infrastructure but there are adjustments to lands to be acquired around WW-01 (additional 224,150sq ft) and WW-02 (decreased from 37 acre to 1

[1] While WW-03/P1 was not included in the 2018 RAP, based upon World Bank guidance the PAPs were compensated in 2018 according to WB OP 4.12.

[2] PAP 9 has two parcels to be paid.

[3] WW-03/P1 and WW-R1 are not included in RAP 2021 because their compensations have been paid and closed in 2018.

[4] Both pieces of land are referred to as parcel2 and belong to the same owner -PAP No 13 under ARAP of 2018.

acre) due to the changes in pipeline network as described below and will be incorporated in this RAP. PAPs 1-7 have remained unchanged as lands required for the power plant construction and adjoining lands. The change in the lists of PAPs in ARAP of 2018 and this RAP is shown in Table 1.2.

- WW-01[5]- The parcel of 1.06 acres was originally acquired at full replacement costs and paid for during the 2018 following WB OP 4.12. However, the drilling location was changed during the well PAD preparation after additional geological surveys prompting additional land of 224,150sq ft. The initial acquired land (1.06 acres) is still needed for access to the well. A new acquisition process for the additional land of 224,150sq ft is currently ongoing and negotiations have been completed.

WW-02 - A lease agreement existed with the former owners and one year payment was paid on June 25, 2013 covering the period Sept 1, 2011 to August 31 2012. Negotiations for the 37,620 sq ft needed for the well PAD has been under way and payment is pending after the negotiations be finalized which is expected in Q1 of 2022. WW-02 corresponds to PAP # 8 in this current 2021 RAP but with a reduced amount of land (reduced from originally two lots of 1,619,561 sq ft & 37,620 sq ft. to only one lot of 37,620 sq ft).

Table 1.2 Comparison of 2018 PAP List and 2021 PAP List

2018 PAP #	Affected Plot Size (Sq.ft.)[6]	Included in 2021 RAP Y/N	2021 PAP#
1	439520	YES	1
2	158994	YES	2
3	34151	YES	3
4	45128	YES	4
5	23217	YES	5
6	17688	YES	6
7	4797	YES	7
8	Two lots of 1619561 & 37620	YES	8 (only lot 2 of 37035)
12	Two lots of 242150 and 261229	YES	9 (but only lot 1 of 242150)
9	143443	NO	
10	8537760	NO	
11	646648	NO	
13	3008079	NO	

Land acquisition and resettlement issues have been approached by first dealing with the legacies of the compulsory acquisition by the GoCD of four parcels of land in 2013 during the exploration and drilling phase. Since such properties were acquired for uses that are instrumental to the proposed Project, they form part

[5] WW-01 corresponds to PAP #12 under the 2018 ARAP and listed as PAP #9 on the 2021 RAP.

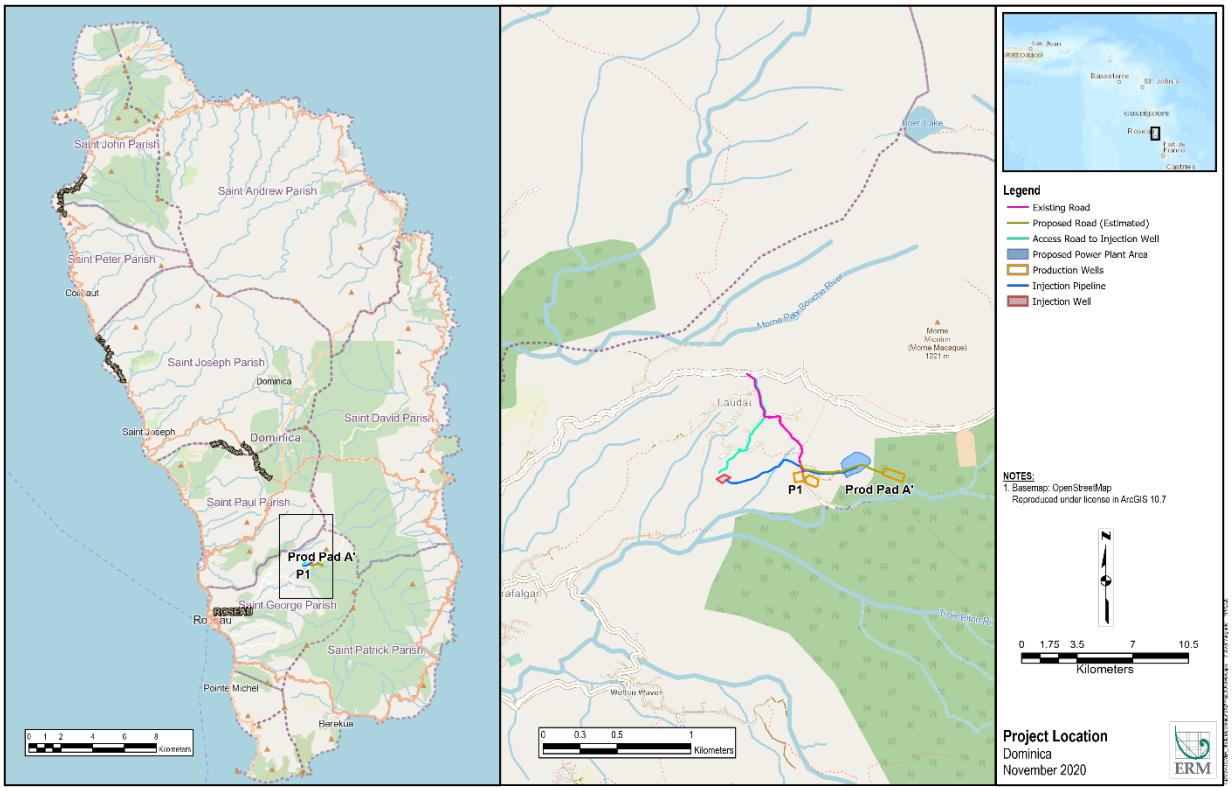
[6] Table 6.1 refers to the total parcel sizes of PAPs and % of land acquisition.

of the project-affected areas and land acquisitions must be executed in compliance with OP 4.12. Upon Bank's suggestion and as part of ESIA preparation for the Project, in 2017 DGDC carried out a "Land Acquisition Review". Based on the results of this review, gaps were identified, and corrective actions have been discussed and the DGDC developed and Action Plan to bring standards up to level. Compensations were made to landowners in 2018 in line with OP 4.12.

1.2 Project Location

The Project is located in the Commonwealth of Dominica, a small island developing state in the Caribbean with a population of approximately 72,000 people and a land area of approximately 750 km^2. Dominica is located near the centre of a string of islands known as the Lesser Antilles, between the neighbouring French territories of Martinique and Guadeloupe. The Project is located in the Roseau Valley in the Wotten Waven Geothermal System (Figure 1.1).

Within the Roseau Valley, a primary area of influence has been identified, comprising the three main communities in closest proximity to the proposed Project footprint. Due to their proximity, they are the most likely to affected by any employment, resettlement, community health and safety issues which arise from the Project. These communities of relevance are namely Trafalgar, Wotten Waven and Laudat, as shown in Figure 1.1.

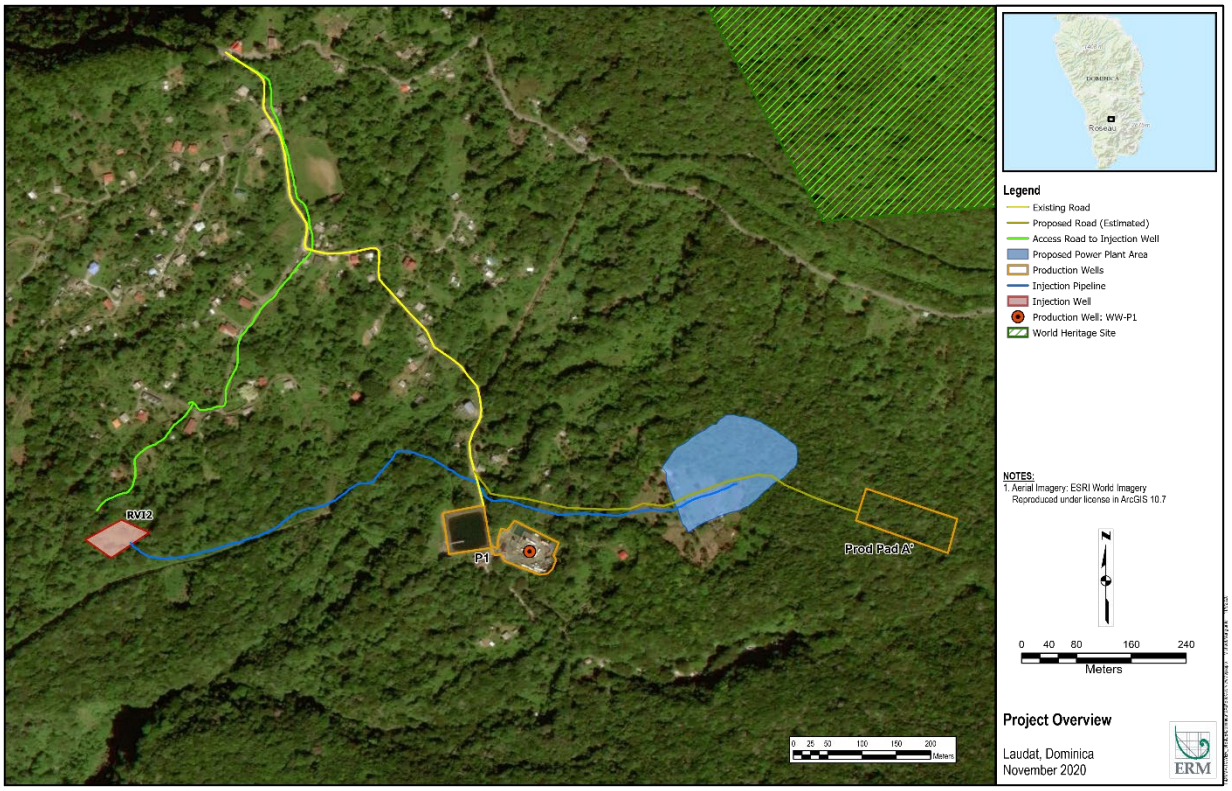


Source: ERM, 2020

Figure 1-1: Location of Roseau Valley and Site of proposed

1.3 Project Components

The Project components will be located in four separate areas: Power Plant Site; Injection Area, Production Well Area, and the back-up Production Pad A. The Figure below depicts the location of these general areas as well as the access roads and the approximate location of the injection pipeline route.



Source: ERM, 2020

Figure 1-2: Project Component Location

The proposed geothermal facility will consist of the following main components, which are explained in more detail in the Addendum to the ESIA:

Plant Equipment:

- Production and Injection Wells;
- SGS and Brine Reinjection Pipeline and Wellpads;
- Turbine Generator;
- Heat Exchangers;
- Recuperators;
- Condensers;
- Pumps (feed, wells, ponds, firefighting system);
- Storage Tanks;
- Transformers;
- Emergency Generator;
- Water Tank and distribution system;
- Fire Fighting Tank and System;

- HVAC System; and
- Oil System;

Facilities:

- Brine Ponds;
- Electrical Building which will include separate areas for offices, kitchen and meeting rooms, workshop and storage, a control room, and a machinery room; and
- Septic Tank and Leach Field.

The Figure below shows a preliminary plant layout based on site topography and existing components locations for the binary plant.

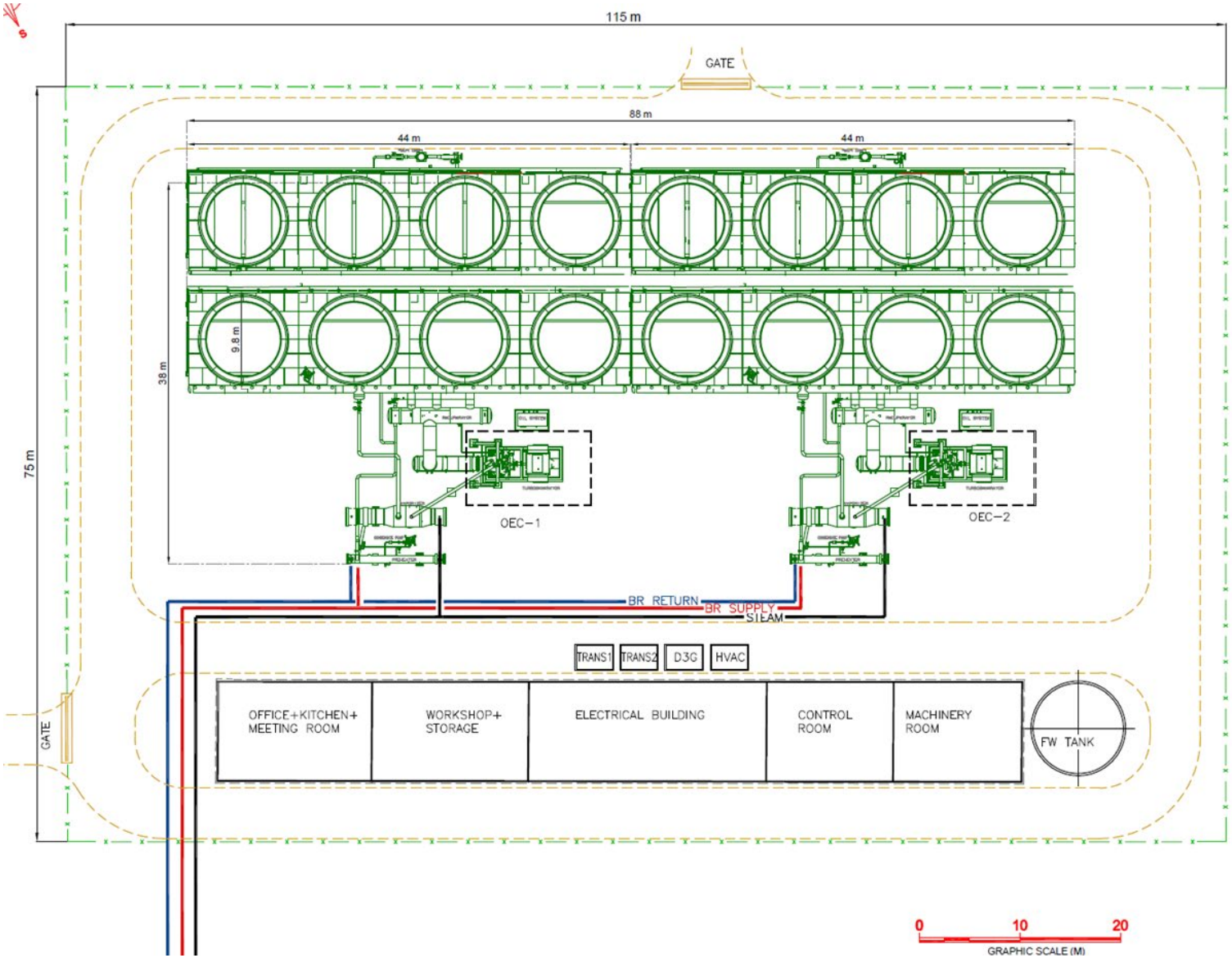


Figure 1-3: Proposed Preliminary Plant Layout

The Project comprises the development of a two-unit geothermal power plant with a gross capacity of 10 MW in the Roseau Valley, Dominica. This covers the following stages: construction, completion, testing, commissioning, ownership and operation including the steamfield, required electrical connections and integration with associated infrastructure. The power plant is proposed to be located close to the village of Laudat.

Land acquisition for the initial drilling phase (2010-2014 – exploratory wells 01-03, P1 and R1) of the Project is being finalized; with all but two properties having been acquired and paid for using the principles in this RAP. Negotiations for WW-01 and WW-02 are ongoing and will be completed in tandem with the acquisitions for the current phase (Q1 2022). The power plant lands (one PAP, one parcel) has been acquired and compensation paid in August 2021. Lands surrounding the power plant site have all been acquired, compensation paid for two, and negotiations for compensation are at an advanced stage for the remaining properties. All gaps identified in the initial analysis of land acquisition prior to the ARAP published in 2018 have been subsumed in the current process. Currently therefore, all land acquisition (and associated) compensation for the project is according to the principles in the is RAP and conform to OP4.12

Brief descriptions of the main locations of Project infrastructure are as follows:

- Power plant comprising 2 x 5 MW units (Organic Rankine Cycle units (binary turbine), which will be adjacent to wells WW-P1 and WW03;
- Production well WW-P1 – The existing geothermal production well at Laudat is indicated to have potential to generate 6 to 9 MW and will be used together with WW-03(situated on same well pad) for the steam gathering;
- Reinjection well RV-I2 (to be drilled) located in Laudat. The used geothermal fluid (brine and possibly some steam condensate) produced from production well WW-P1, WW03 and RV-P2 would be disposed of into reinjection wells RV-I2 via a 250 to 300 mm diameter reinjection pipeline approximately 1.2 Km in length; New access road to RV-I2 of 250 m length.
- New production well RV-P2 (to be drilled) in Laudat. With new access road to RV-P2 of 170 m length.
- Steamfield infrastructure including two phase piping, steam separator, atmospheric flash tank, brine collection and disposal system, condensate collection and disposal system, pressure relief system, storage sump and rock muffler;
- Supporting infrastructure including existing well pads, turbine building, primary and ancillary equipment, cooling system, workers camp, and water supply; and
- 11 kV interconnections to the DOMLEC electricity grid at the power plant site.

1.4 Efforts to Minimize Resettlement

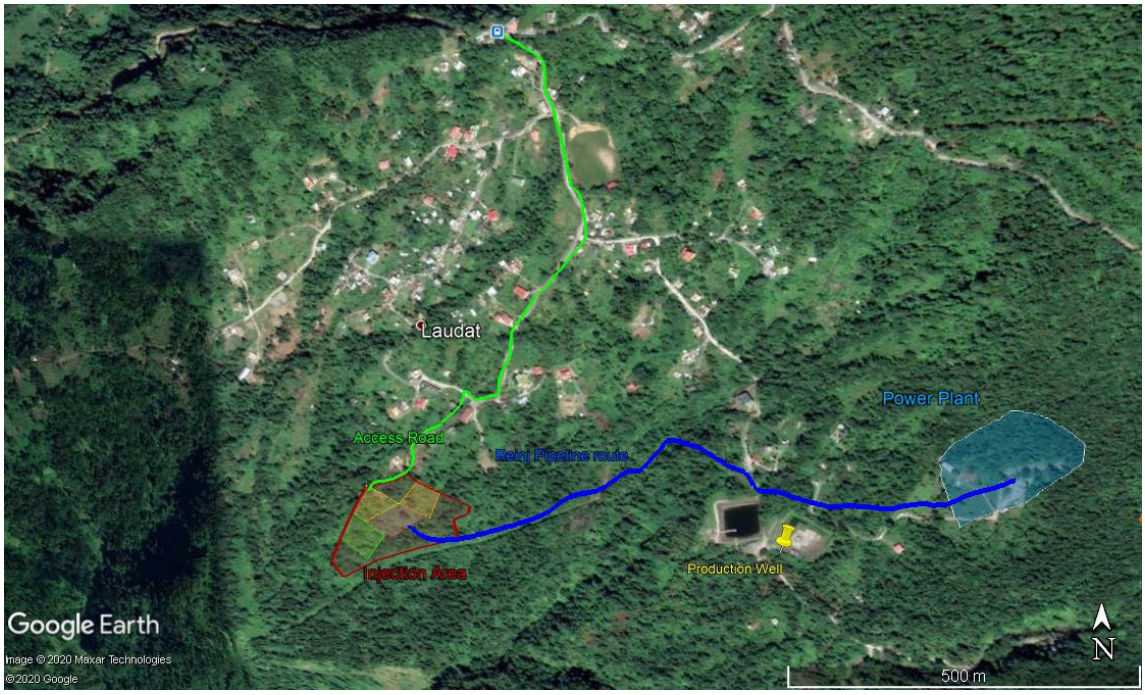
1.4.1 Power Plant

Several power plant sites and reinjection pipeline route options were considered as part of the Project (refer to 2018 ESIA Volume 1: Introduction). Multiple sites were considered for the power plant once the geothermal resource was identified. The site was gradually moved south-east to increase the separation distance from the concentrated local population, in order to reduce noise and visual impacts.

1.4.2 Reinjection Pipeline Route

In terms of the reinjection pipeline route, four options were considered. One proposed route through Laudat was ultimately rejected to avoid displacement/disruption and another route was rejected as it was scheduled to rely on DOMLEC infrastructure, which presented coordination challenges for the Project. The third option was rejected because it was considered technically too difficult due to topography e.g., steep ravines. Ultimately, the power plant site location and preferred reinjection

pipeline route were chosen to avoid disruption to the community and in consideration of economic and technical constraints. It is also important to note that at this stage, there is still some flexibility in the exact footprint of the reinjection route pipeline. As the pipeline corridor is anticipated to only be 10 m (to allow for access, maintenance, and flexibility around design), DGDC will still have some discretion to locate each portion of the pipeline within an individual property. In other words, there are still opportunities to avoid displacement of structures, crops, or other assets along the reinjection route line during this stage of design.. The proposed length of the re-injection pipeline from the power plant to the reinjection site, is approximately 1.2 kilometers. The exact diameter has not yet been determined. It is located on the south-western periphery of the village of Laudat. Access roads for pipeline construction and continuing maintenance will be located entirely within the acquired 10m corridor. The Figure below shows the updated reinjection pipeline route.



Source: Google Earth

Figure 1-4: Proposed Pipeline Route

1.4.3 11kV Transmission Line

There is only one short (~0.5 km) section of 11 kV line involved in this project. It connects the geothermal plant to the DOMLEC hydro station at Laudat. This line will utilize lands owned by (a) the Government of Dominica (East to West Section) and (b) DOMLEC or the public roadway (North to South). A final decision on overhead or underground design will be taken as part of the Transmission Line project component. The diagram below illustrates the route (yellow line)

Figure 1-5: 11kV transmission line

1.5 RAP Purpose, Scope and Approach

Development of the power plant site and reinjection route pipeline will result in the acquisition of 25 properties (mostly abandoned agricultural land) either partially or in their entirety, and as a result cause physical displacement of three residential structures and economic displacement of two farmers. The following table provides a view of actual acreages from each PAP. The other two properties included in this RAP are properties being acquired to close out land acquisition activities during the exploratory phase of the project. Only one property is occupied by a one-person household. The other two[7] structures are classified as residential, having been constructed for that purpose. One is a partly constructed abandoned house and the other one which could be converted into a home and served as a home immediately post-hurricane Maria in 2017.

Table 1.3 Status of 2021 PAPs

Component	PAP No.	Affected Plot Size (Sq.ft.)	Owner /Representative Informed of Interest by DGDC	Acquisition Status*	Negotiation Status	Payment Status	Need to be physically displaced (Y/N)	Derives income from property? (Y/N)
Power Plant & Surrounding lands	1	439520	YES	Acquired	Complete	PAID	Y	Y
	2	158994	YES	Acquired	Complete	payment Approved	Y	N
	3	34151	YES	Acquired	Complete	PAID	Y	Y

[7] Previous version of the RAP refer to four residential structures, the error due to a residential structure belonging to a PAP which is not part of the project footprint being inadvertently included.

	4	45128	YES	Acquired	Complete	Pending	N	N
	5	23217	YES	Acquired	Complete	PAID	N	N
	6	17688	YES	Acquired	Complete	pending	N	N
	7	4797	YES	Acquired	Complete	payment Approved	N	N
Reinjection Pad RVI2	17	21344	YES	Acquired	Complete	payment Approved	N	N
	16	71739	YES	Acquired	Complete	payment Approved	N	N
	11	36591	YES	Acquired	Complete	payment Approved	N	N
	21	62726	YES	Acquired	Complete	payment Approved	N	N
RVP2	10	329314	YES	Acquired	Complete	PAID	N	N
Reinjection Pipeline	12	149	YES	Acquired	Complete	payment Approved	N	N
	14	10733	YES	Acquired	In progress	Pending	N	N
	15	17326	YES	Acquired	In progress	Pending	N	N
	20b	12268	YES	Acquired	Complete	Pending	N	N
	18	5274	YES	RoW agreement	Complete	PAID	N	N
	19	2740	YES	Acquired	Complete	payment Approved	N	N
	20a	3894	YES	Acquired	Complete	payment Approved	N	N
	13	4390	YES	Acquired	Complete	payment Approved	N	N
Outstanding Legacy lands	8	37035	YES	Acquired	In progress	Pending	N	N
	9	242150	YES	Acquired	In Progress	Pending	N	N

Access Road to RVI2	22	1037	YES	Acquired	Complete	payment Approved	N	N
	23	1500	YES	Acquired	Complete	payment Approved	N	N
	24	2358	YES	Acquired	Complete	payment Approved	N	N

Note: 1. Plot sizes between the 2018 ARAP and 2021 RAP may differ based on final surveys. Sizes in this RAP reflect actual plot sizes as gazetted for acquisition.

*Note 2: *. According to local Dominican law, once lands have been gazzetted twice they are considered as acquired, negotiations may still be ongoing. The Government does not taken possession of the land until compensation has been fully paid. See Chapter 2 and Appendix D of this RAP for further explanation.*

According to OP 4.12, displaced persons may be classified as:

> "those who are affected by the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets access to assets; or (iii) loss of income sources or means of livelihood whether or not the affected person must move to a different location."

World Bank resettlement policies recognize the need to provide resettlement, compensation, and / or livelihood restoration assistance to persons that are currently utilizing project-affected land. Thus, the displacement of residents and farmers from the site and reinjection route are addressed in this RAP.

The scope of the RAP process included the following steps:

- Establishing the legal and guidance framework for managing displacement impacts, including national and international requirements;
- Identification, consultation and socio-economic surveys with all of the PAPs;
- Socio-economic analysis, including establishing the extent of vulnerability of the PAPs;
- Inventory and valuation of properties, structures, and crop assets to establish the basis for associated compensation;
- Consultation with relevant parties to identify any potential alternative land of comparable productive value for relocation;
- Consultation with PAPs on potential options for resettlement site options, livelihood restoration, compensation or improvement measures. These may include, for example, assistance to diversify income generating activities (such as training in new skills), financial management training and credit opportunities, business and enterprise training; and
- Establishing the necessary steps for implementation including:
  - Confirming final compensation / implementation budget, including all financial compensation, and costs for land acquisition, loss of structures,), loss of crops, transitional support, livelihood restoration measures and independent monitoring;
  - Establishing the grievance and redress mechanism;
  - Confirming the roles and responsibilities within the GoCD and DGDC team regarding the implementation process; and
  - Confirming requirements for monitoring and evaluation.

1.6 Structure of the RAP

The content of this document is as follows:

- Section 1: Introduction;
- Section 2: Legal and Institutional Framework;
- Section 3: Socio-Economic Background of Affected Community and PAP Census;
- Section 4: Identification of Project Impacts;
- Section 5: Eligibility and Entitlements;
- Section 6: Valuation and Compensation;
- Section 7: Vulnerability Assistance
- Section 8: Stakeholder Engagement;
- Section 9: Resettlement Sites;
- Section 10: Roles and Responsibilities;
- Section 11: Grievance Management;
- Section 12: Monitoring and Evaluation;
- Section 13: Budget and Schedule; and
- Section 14: References.

2. LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

The Project is required to meet nationally and internationally accepted environmental and social safeguard standards in order to ensure that community benefits from the Project are maximised, and that potential adverse environmental and social impacts are minimised. Relevant national and international requirements are summarised below. In the event that international standards and national standards differ, the higher standard shall apply to the Project.

All lands for the project will be acquired and paid for by the GoCD and then be granted to the DGDC for use. A cooperation agreement (November 2019) between the Ministry of Lands and DGDC outlines the roles and responsibilities of each party with respect to lands.

2.2 National Requirements

There are a number of national policies, laws, regulations and guidelines that guide relevant environmental, social and economic issues in Dominica. The laws and regulations also provide the relevant instruments for the effective management of land acquisition and proper institutional coordination. Of primary relevance is the Land Acquisition Act.

The Land Acquisition Act, Chapter 53:02 (Appendix D) deals with the acquisition of land by the state and clearly outlines procedures in acquiring private lands for state use. The Act covers the following areas:

i. Acquisition of land and abandonment of acquisition;

ii. Appointment and powers of Board of Assessment;

iii. Determination of Small Claims for Compensation;

iv. Provisions Governing Assessment of Compensation;

v. Miscellaneous:

   a) Absentee owners;

   b) Compensation to persons interested in adjacent land;

   c) Special provisions as to leases;

   d) Persons in possession to be deemed owners;

   e) Fees and expenses of Board;

   f) Conveyancing etc.;

   g) Payment of compensation;

   h) Exemption from stamp duty and fees;

   i) Limitation of time for making claims;

   j) Assaulting or obstructing officer; and

   k) Saving.

The Act includes a description of how compensation should be determined. The general process of compulsory land acquisition under the Land Acquisition Act, Chapter 53:02 is described below in Appendix D.

Compulsory land acquisition according to the Land Acquisition Act consists of an evaluation of the market value of the land conducted by the Department of Lands, a Cabinet paper establishing government acquisition of the land, follow by a negotiation or agreement to compensation with the relevant land owner. Compensation values are determined by the government Land Surveys

Department using the methodology outlined in Chapter 6. Section 3 (3) (See Appendix D) states 'Upon the second publication of the declaration in the Gazette the land shall vest absolutely in the State.'

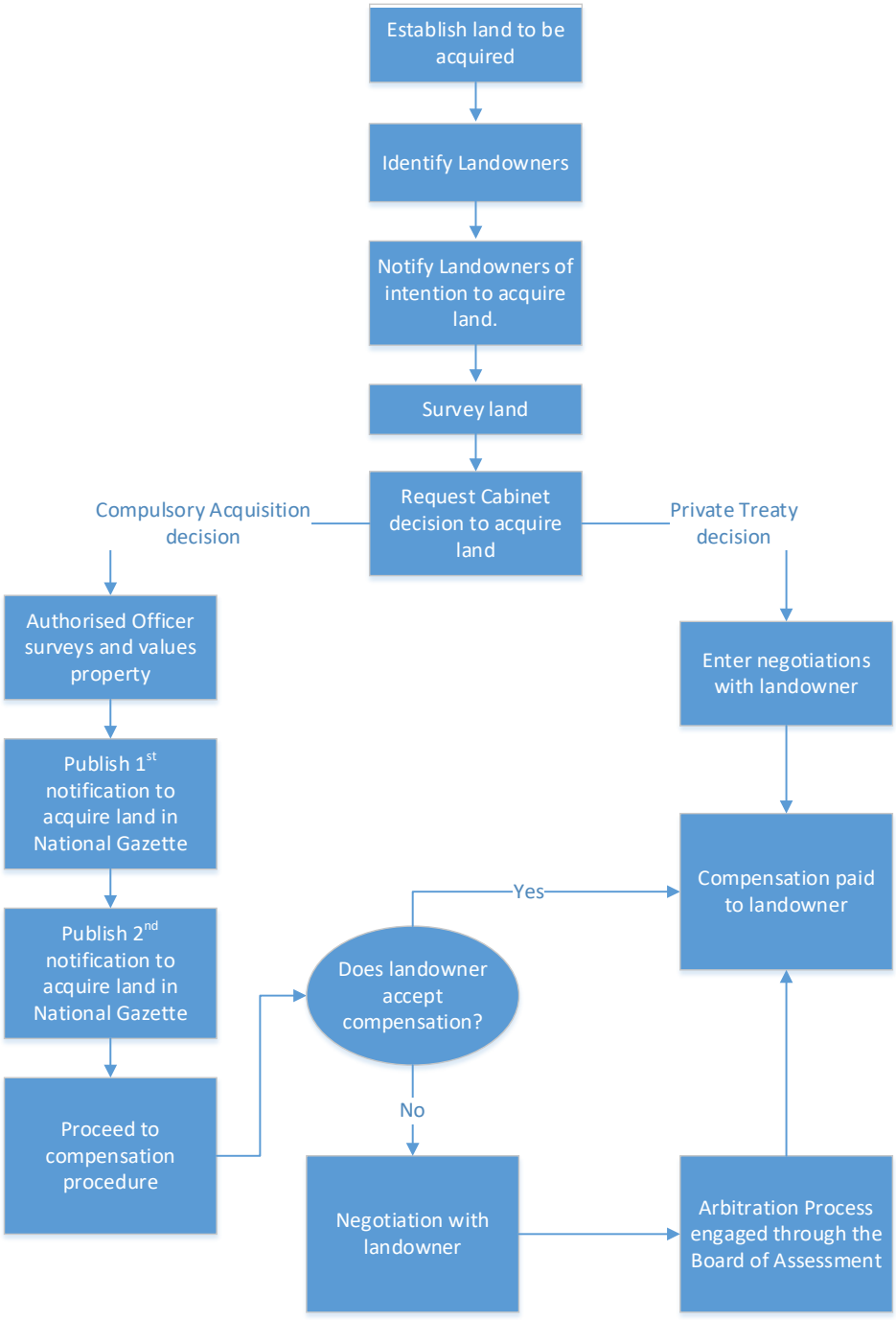


Figure 2-1: The General Process of Acquiring Land through Compulsory Acquisition in Dominica

This process differs from the World Bank land acquisition and resettlement requirements in that compensation under OP 4.12 requires the evaluation to cover full replacement cost for each party, rather than market value covered by national requirements. In addition, World Bank resettlement requirements consider compensation for land users without legal rights, support for vulnerable parties, and livelihood restoration measures that are not covered under national law. World Bank also requires

that compensation be completed prior to Project construction and that consultation associated with this process be well documented. A gap analysis between National Law / Practice and World Bank requirements is show in Table 2.1.

Table 2.1 Policy GAP Analysis[8]

Conflict/Gap	Local Legal Framework/Policy	World Bank Policy Requirements	Measures to Address Conflict/Gap
Compensation & Restoration of livelihoods and living standards	There is no existing legislation or official policy document that specifically supports resettlement initiatives in Dominica except for that created specifically in response to TS Erika and Hurricane Maria	OP 4.12 Involuntary Resettlement: Section 6 (c) – Where necessary……compensation should also include measures to ensure that displaced persons are offered support after displacement for a transition period, the time likely to be needed to restore their livelihood and standards of living. The displaced persons should also be provided with development assistance such as land preparation, credit facilities, training or job opportunities, in addition to the other compensation measures stipulated.	The Social and Environmental Safeguards of the World Bank take precedence. All PAPS should be eligible for compensation at full replacement cost for lost assets and assistance to support livelihood restoration per World Bank Policy OP 4.12 requirements
Support for displacement	World Bank type policy pertaining to the restoration of income sources and livelihoods, support after displacement for a transition period; do not apply except as has been developed in response to natural disasters	Section 2 (c) – Displaced persons should be assisted in their efforts to improve their livelihood and standards of living or at least to restore them in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.	The Social and Environmental Safeguards of the World Bank take precedence. All PAPS should be eligible for full compensation benefits per World Bank Policy requirements
Development assistance	The provision of elderly assistance, employment under the National Employment Programme; Free health services for Elderly and needs based social support are all available to qualifying PAPS	Section 2 (c) – Displaced persons should be assisted in their efforts to improve their livelihood and standards of living or at least to restore them in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.	The Social and Environmental Safeguards of the World Bank take precedence. All PAPS should be eligible for full compensation benefits per World Bank Policy requirements
Opportunity to derive development benefits from project	There is no existing legislation or official policy document that specifically supports resettlement initiatives in Dominica	Performance Standard 5, Section 9 – The client will also provide opportunities to displaced persons to derive appropriate development benefits from the project,	The project will create temporary job opportunities during the civil plant and pipeline construction While some of the jobs will require specialized skills that may not be available locally, for non-specialized jobs, the project is expected to create equal employment opportunity for both men and women. In that regard the DGDC will as far as possible ensure that service providers give priority to the employment of workers originating from the Roseau Valley Communities.
Timing for the Payment of Compensation	The Land acquisition Act Chpt. 53:02 is silent on the	OP 4.12 Possession of the land acquired and related assets only after	The Bank's policy will take precedence. Identification of land owners and tenants has

[8] This is limited to GoCD and WB as this is the only confirmed financing at time of writing (September 2021)

and Taking possession of Land Acquired	timing for compensation payments Sections 3 and 5 permits for access to lands any time after the publication	compensation has been previously paid in full.	already been done and notification to the authorized officer completed. MOUs between Ministries have been signed to facilitate monitoring and reporting by the DGDC

2.3 Institutional Framework for Addressing Land Acquisition and Leases

The Department of Lands already has a process in place for addressing land acquisition and leases including any grievances associated with this process. As such, DGDC will work closely with the Department of Lands during the resettlement process for this Project to ensure consistent coordination.

The following are procedures covered by the Act are applicable to the land acquisition process required for the geothermal project:

- Preliminary notification and power to enter the land:
  - If the Commissioner of Lands (the Authorized Officer) determines that any land is required for public purpose and it is necessary to make a preliminary survey or other investigation of the land, he/she may cause the publication of notification to that effect; and thereafter it shall be lawful for the Authorized Officer or his/her agents to enter on to the land to undertake the investigative works required.
- Power to apply land to purposes of acquisition without waiting for formal vesting:
  - At any time after the publication of a notification of the intention to acquire land for public purpose, it appears to the Authorised Officer that this land should be acquired, he/she may make an immediate declaration to that effect; and it is lawful for him/her to direct the Authorized Officer to do any work on the land connected with the use for which the land is being acquired.
- Appointment of Board of Assessment:
  - In the event that the parties cannot reach agreement on compensation to be paid, a Board of Assessment may be appointed and granted full power to assess, award and apportion compensation in such cases, in accordance with the provisions of the Act.[9]

Sections 3 of the Act permits access to the land for investigative purposes before compensation is paid; Section 5 allows the government to take possession of land acquired and to commence development before compensation is paid. These provisions are not consistent with the World Bank's policy on involuntary resettlement, which states that the client will take possession of land acquired and related assets only after compensation has been made available and, where applicable, resettlement sites and moving allowances have been provided to the displaced persons in addition to compensation.

Given the commitment of the Government to comply with the Bank's policy, the DGDC has been delegated with the authority to act on behalf of the Ministry of Energy to provide support to the department. A Co-operation agreement to effect this was signed in November 2019 between Ministry of Lands and DGDC.

In relation to payments, though estimates have been provided to enable realistic budgetary allocation to be made for land acquisition in the national budget, if this is deficient, it will likely hinder the ability of the government to comply with the provision. Further, in cases where agreement over the payment of compensation cannot be reached between the Authorized Officer and the land owner, the appointment of a Board of Assessment would further delay payment. Experience has shown that negotiations for compensation (using either medium) can sometimes take several years to be concluded.

[9] For further details on how this process works, please refer to the Appendix D

2.4 International Requirements

2.4.1 WB OP 4.12- Involuntary Resettlement

Relevant World Bank (WB) requirements for this Project are contained in OP 4.12. According to the standard, resettlement is considered involuntary when affected individuals or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement which can occur when the buyer can resort to lawful expropriation when negotiated settlement fails. As stated earlier, as this Project can resort to expropriation or impose legal restrictions on land use through the Government of Dominica if negotiations fail, this Project triggers OP 4.12. OP 4.12 addresses land acquisition and involuntary resettlement. It recognises that land acquisition for projects and restrictions on land use can have adverse impacts on communities and people that presently use the land intended for a project.

According to OP 4.12, involuntary resettlement may cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out. For these reasons, the overall objectives of the Bank's policy on involuntary resettlement are the following:

- Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.
- Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
- Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

OP 4.12 covers direct economic and social impacts that both result from Bank-assisted investment projects and are caused by:

- the involuntary taking of land resulting in relocation or loss of shelter;
    - loss of assets or access to assets; or
    - loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or
    - the involuntary restriction of access to legally designated parks and protected areas resulting in adverse; and
- impacts on the livelihoods of the displaced persons.

2.4.2 IFC PS5

The International Finance Corporation's Performance Standard 5 covers Land Acquisition and Involuntary Resettlement. Its requirements include:

- **Project Design**: consider feasible alternative designs to avoid or minimize displacement;
- **Compensation and Benefits for Displaced Persons**: when displacement cannot be avoided, offer displaced communities and persons compensation for loss of assets at full replacement cost and other assistance to help them improve or restore their standards of living or livelihoods;
- **Community Engagement:** engage with affected communities through stakeholder engagement;
- **Grievance Mechanism**: establish a grievance mechanism to receive and address specific concerns about compensation and relocation;

- **Resettlement and Livelihood Restoration Planning and Implementation**: where involuntary resettlement is unavoidable, a census will be carried out to collect appropriate socio-economic baseline data to identify the persons who will be displaced by the project, determine who will be eligible for compensation and assistance, and discourage ineligible persons from claiming benefits;
- In the case of physical displacement, the client will develop a **Resettlement Action Plan**; and
- In the case of economic displacement, the client will develop a **Livelihood Restoration Plan**.

PS5 also includes provisions for "Private Sector Responsibilities Under Government Managed Resettlement". It specifies that, where land acquisition and resettlement are the responsibility of the government, the client will collaborate with the responsible government agency, to the extent permitted by the agency, to achieve outcomes that are consistent with this Performance Standard. In addition, where government capacity is limited, the client will play an active role during resettlement planning, implementation, and monitoring.

2.4.3 IDB OP-710

The IDB's Operational Policy OP-710 covers Involuntary Resettlement. Please note that the Caribbean Development Bank (CBD) has the same requirements as the IDB Operational Policy OP-710 described in their Environmental and Social Review procedures of 2014. The two policies are aligned and have requested the same documents to meet those requirements. IDB OP-710 therefore sets out two fundamental principles:

1. Every effort will be made to avoid or minimize the need for involuntary resettlement.
2. When displacement is unavoidable, a resettlement plan must be prepared to ensure that the affected people receive fair and adequate compensation and rehabilitation.

The resettlement plans have to include compensation and rehabilitation that are deemed fair and adequate by ensuring that the resettled and host populations will: (i) achieve a minimum standard of living and access to land, natural resources, and services (such as potable water, sanitation, community infrastructure, land titling) at least equivalent to pre-resettlement levels; (ii) recover all losses caused by transitional hardships; (iii) experience as little disruption as possible to their social networks, opportunities for employment or production, and access to natural resources and public facilities; and (iv) have access to opportunities for social and economic development.

The following criteria applies to the design and appraisal of the Resettlement Plan:

- **Baseline Information.** Accurate baseline information must be compiled as early as possible. It will include information on the number of people to be resettled, and on their socio-economic and cultural characteristics, including disaggregation by gender. In addition, the data will provide an important basis for the definition of eligibility criteria, and compensation and rehabilitation requirements.
- **Community Participation.** The resettlement plan will include the results of consultations carried out in a timely and socio-culturally appropriate manner with a representative cross-section of the displaced and host communities. Consultations will take place during the design phase and will continue throughout the execution and monitoring of the plan, directly or through representative institutions and community organizations. Care will be taken to identify the most vulnerable subgroups and to ensure that their interests are adequately represented in this process.
- **Compensation and Rehabilitation Package.** Compensation and rehabilitation options must provide a fair replacement value for assets lost, and the necessary means to restore subsistence and income, to reconstruct the social networks that support production, services and mutual assistance, and to compensate for transitional hardships (such as crop losses, moving costs, interruption or loss of employment, lost income, among others). These measures must be taken in a timely manner to ensure that transitional hardships are not unnecessarily prolonged and do not result in irreparable harm. The options that are offered should be appropriate for the people affected

and should reflect their capabilities and realistic aspirations. The compensation and rehabilitation package must take adequate account of intangible assets, especially non-monetary social and cultural assets and, particularly in the case of rural populations, of customary rights to land and natural resources. Housing and service options, when included, will be appropriate for the social and cultural context and will, at the very least, meet minimum standards of shelter and access to basic services, regardless of conditions prior to resettlement. The design of compensation packages, as well as the community consultation and decision making mechanisms included in the resettlement program, will take into account the characteristics of the resettled population as identified in the disaggregated baseline data with respect to gender, ethnicity, age, and any other factors pointing to special needs and/or vulnerability.

- **Legal and Institutional Framework.** The resettlement plan must identify the legal and institutional context within which the compensation and rehabilitation measures have to be implemented. The first step in designing the compensation and rehabilitation package is to determine the entitlements of affected persons under applicable laws and regulations, to identify any services or social benefits to which they might have access, and to ensure that sufficient resources are available. The next step is to assess what additional measures are needed, if any, to restore the livelihoods of the affected population to the pre-resettlement standard, and to design mechanisms capable of delivering the goods or services that are needed, including effective and expeditious procedures for the resolution of disputes. This allows the compensation and rehabilitation package to work within the constraints of local laws and institutions, complementing them only as required, with project specific measures. This may lead to the identification of gaps in the local institutional and regulatory frameworks, that need not be incorporated into the resettlement plan, but which can eventually be addressed through institutional strengthening or other components if the borrower and the Bank so agree.
- **Environment**. Resettlement plans must take environmental considerations into account in order to prevent or mitigate any impacts that result from the development of infrastructure, densification of the host area, or pressure on natural resources and ecologically sensitive areas. An environmental impact assessment, including carrying capacity and socio-economic induced impacts on the host community, will be carried out for each proposed relocation site, wherever the magnitude of the resettlement component or the nature of the affected areas so requires, and the environmental management plan will be included in the resettlement plan.
- **Timeliness**. A preliminary resettlement plan must be prepared as part of the Environmental and Social Impact Assessment (EIA). It must undergo a process of meaningful consultation with the affected population, and must be available as part of the EIA, prior to the analysis mission. It must include sufficient information to be evaluated along with other project components. At a minimum, it must include: (i) evidence that appropriate measures have been taken to prevent new settlements in the area subject to resettlement; (ii) a tentative cut-off date for compensation eligibility; (iii) an estimate of the number of people to be resettled based on sufficiently reliable data; (iv) a definition of the various options to be made available under the compensation and rehabilitation package; (v) an estimate of the number of people that will be eligible for each option; (vi) a preliminary budget and schedule of execution; (vii) a diagnosis of the viability of the regulatory and institutional framework, identifying issues to be resolved; and (viii) evidence of consultation with the affected populations. The plan will be summarized in the Environmental and Social Impact Report (ESIR).
- The final plan must contain: (i) the definition of the final package of compensation and rehabilitation options; (ii) the eligibility criteria for each option; (iii) a reasonably accurate estimate of the number of people that will receive each option or combination; (iv) institutional arrangements and/or an execution mechanism that provides for the implementation of applicable local laws and regulations dealing with expropriation, rights to property, and the management of resettlement activities in a timely manner, assigns clear responsibilities for the execution of all elements of the resettlement plan, and provides for proper coordination with other project components; (v) the final budget funded within the overall project budget; (vi) a calendar for execution of activities required to provide

the goods and services that comprise the compensation and rehabilitation package, linked to landmarks of the overall project so that relocation sites (or other services) are made available in a timely manner; (vii) provisions for consultation and involvement of local entities (public or private) that can contribute to execution and assume responsibility for the operation and maintenance of programs and infrastructure; (viii) provisions for monitoring and evaluation, including funding, from the beginning of the execution period through the target date for achievement of full rehabilitation of the resettled communities; (ix) provision for participatory supervisory arrangements, which combined with monitoring, can be used as a warning system to identify and correct problems during execution; and (x) a mechanism for the settlement of disputes regarding land, compensation and any other aspects of the plan.

- **Monitoring and Evaluation**. The resettlement component of an operation must be fully and specifically covered in the reports on the progress of the overall project and included in the logical framework of the operation. The monitoring activities will focus on compliance with the resettlement plan in terms of the social and economic conditions achieved or maintained in the resettled and host communities. The plan and the loan agreement will specify the monitoring and evaluation requirements and their timing. Whenever possible, qualitative, and quantitative indicators will be included as benchmarks to evaluate those conditions at critical time intervals related to the progress of overall project execution. The final evaluation will be scheduled at a target date estimated for completion of the plan, defined as the date on which it is expected that the living standards the plan was designed to provide are achieved. In the case of global loans, the operational regulations will require Bank approval of the resettlement plan before a commitment is made to finance any subproject requiring resettlement. In all cases, independent supervision and multidisciplinary evaluation will be provided to the extent required by the complexity of the respective resettlement plan.

The CDB requirements are the same as those of the IDB.

2.5 Supporting Guidance Documents

The following summarizes some key reference and supporting documents that have been referenced in development of this RAP:

World Bank Group:

- OP 4.12 - Involuntary Resettlement Policy;
- International Finance Corporation Environmental and Social Development Department – Handbook for Preparing a Resettlement Action Plan (2002);
- World Bank - Involuntary Resettlement Source Book (2004);
- IFC’s PS5; and

Other:

- IDB’s OP-710.

3. SOCIO-ECONOMIC BACKGROUND OF AFFECTED COMMUNITY AND PAP CENSUS

3.1 Regional and Local Socio-Economic Context

A socio-economic baseline study was carried out in 2017 as part of the ESIA for the Project. Further detailed surveys were completed as part of the RAP process in March-August 2018 to inform resettlement and livelihood restoration planning post Hurricane Maria. An additional socio-economic baseline study for the updated reinjection pipeline and back-up production well sites was carried out in 2020 and early 2021. A summary of the PAP socio-economic census surveys conducted are presented below in Section 3.10.

3.2 Regional Overview

Dominica is a mountainous Caribbean Island nation with natural hot springs and tropical rainforests. According to the Population and Housing Census of 2011, Dominica's population was 71,293 (Commonwealth of Dominica Central Statistical Office, 2011). Between 1991 and 2001, the population of the main townships of Dominica declined, including within the capital Roseau. The population of Dominica shows little increase in general, due to the exodus of people to other countries such as the more prosperous the United States, the United Kingdom and Canada.

In the Project vicinity, approximately 1,800 people live in the Roseau Valley, of which nearly 1,000 live in Trafalgar and Shawford, and the remaining in the hamlets of Wotten Waven/Casseau, Copthall, and Laudat. According to the 2011 census, the Roseau Valley gained 500 inhabitants between 2001 and 2011, i.e. a substantial increase of 32% (Commonwealth of Dominica Central Statistical Office, 2011). According to the Central Statistical Office, average household size in the Roseau Valley is 2.7. The breakdown of population by gender shows that Dominica consists of slightly higher men than women, national averages 49% females and 51% males.

3.3 Hurricane Maria 2017

In September 2017, Hurricane Maria hit Dominica with catastrophic effect. The economy came to a halt. Roads, bridges, and public utility systems were destroyed. The agriculture sector was devastated, with 100 percent loss of crops and substantial destruction to trees and livestock, which disproportionally affected the most vulnerable segments of Dominica's population. Other key sectors, including tourism, sustained substantial losses, with all hotels reporting serious damages and room availability down to near half of pre-storm levels. The rainforests, the main tourist attraction, were destroyed. Public services and transport activities were severely hampered. Most secondary roads, critical to access arable land and transport labour and agricultural products to markets and ports, were left inaccessible. Surveys in the Project affected communities suggest that 90% of the respondents have lost the roofs of their houses, and 95% of the respondents have lost their livelihoods.[10]

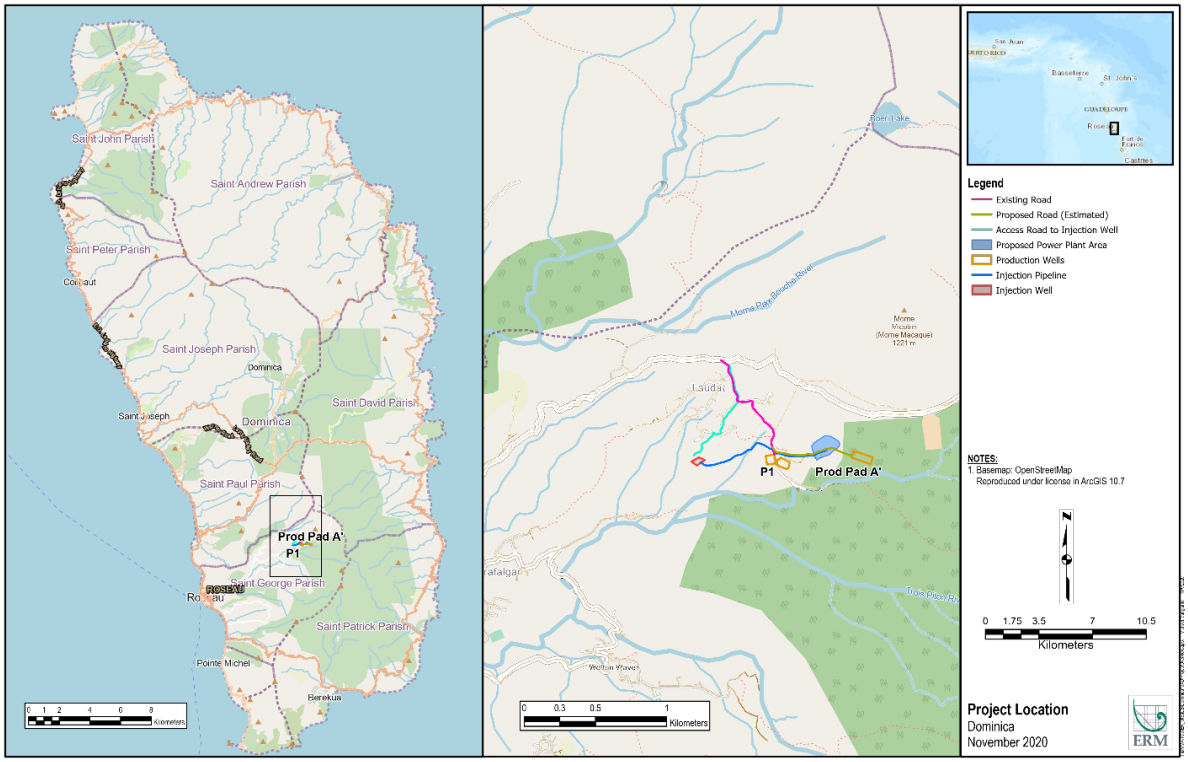
Based upon an initial assessment of impacts to each affected sector by the World Bank, Hurricane Maria resulted in total damages of EC$2.51 billion (US$930.9 million) and losses of EC$1.03 billion (US$380.2 million), which amounts to 224 percent of 2016 gross domestic product (GDP). Most damages were sustained in the housing sector (38 percent), followed by the transport (20 percent) and education sectors (8 percent). The greatest economic losses were sustained in the agriculture sector (32 percent), followed by the tourism (19 percent) and transport sector (14 percent).[11]

[10] WBG Post-Disaster Needs Assessment, Hurricane Maria, September 18, 2017 completed November 7, 2017.

[11] WBG Post-Disaster Needs Assessment, Hurricane Maria, September 18, 2017 completed November 7, 2017.

3.4 Socio-Economic Area of Influence

Within the Roseau Valley, three main communities of Trafalgar, Wotten Waven and Laudat were considered as the primary socio-economic area of influence (AoI) because they were in closest proximity to the proposed Project and represent the main communities that would be likely to be impacted by any employment, resettlement, community health and safety issues. All of these fall within the Roseau Valley and data from the Roseau Valley itself is utilised where appropriate and when more detailed data for each community is not available. The map below shows the location of Trafalgar, Wotten Waven and Laudat.



Notwithstanding the changes to the project in 2019/2020 requiring the drilling of a new reinjection well in Laudat, the three communities remain the most likely to be affected, with more direct impact in Laudat.

3.4.1 Trafalgar

Trafalgar is located in the eastern portion of the Roseau Valley. The bulk of the population (959) in the valley reside in this area and it includes the most residentially developed of the three affected areas in the AoI. The area is characterised by brightly coloured concrete houses and includes a health centre and a primary school. At the bottom of the valley, the Trafalgar area is used for agriculture including vegetables, herbs and fruit orchards. Trafalgar Falls is also a tourist destination. The community is located almost directly below the project's reinjection area.

3.4.2 Wotten Waven

Wotten Waven is well known for its natural hot sulphur springs and is located in a steep, area. The wider area surrounding Wotten Waven area is characterised by agriculture including vegetables, herbs and fruit orchards. The area also includes some residences (population is 313), a health centre and a primary school. Since the 1990s there has been a considerable development in tourism services in the Roseau Valley. This is centred on hiking and the hot sulphur water spas in Wotten Waven.

3.4.3 Laudat

Laudat is a small village nestled between three mountains: Morne Watt, Morne Micotrine, and Morne Trois Pitons. Laudat contains a sector of rainforest where numerous trees are felled for economic development. Laudat also includes a small population of 321 and is served by a health centre. The Morne Trois Pitons National Park, Freshwater and Boeri Lakes and Segment 4 of the Waitukubuli National Trail are all in the greater Laudat area. All project infrastructure is located or will be located in Laudat.

3.5 Economic Profile

Gross Domestic Product (GDP) in Dominica estimated in 2016 was US$812 million according to the CIA World Factbook. The economy in Dominica used to be primarily driven by agriculture but has recently shifted towards tourism as the Government increasingly promotes Dominica as a tourist destination. The income of the residents of Trafalgar, Wotten Waven and Laudat was primarily derived from agriculture, which comprised family-based farming for both local consumption and commercial purposes, and tourism. Most of the Roseau Valley residents had several jobs, including employment in the town of Roseau. However, since Hurricane Maria the World Bank has estimated that economic damages and losses amount to approximately US$1.37 billion or 226 percent of 2016 GDP.[3] Agriculture, livestock, fisheries and tourism show the steepest declines. Tourism income has further declined in 2019/20 with a reduction in cruise calls, closure of borders during traditional summer months, cancellation of festivals and strict quarantine requirements for visitors due to the COVID-19 pandemic.

The government is the major employer for the community followed by construction as a result of the boom in this industry following Hurricane Maria. A larger percentage of women work in the public sector and vending than men, and a larger percentage of men worked in farming, construction, and tourism than women. The 2009 Dominica Poverty Assessment report indicates that, for the Rest of the parish of St. George inclusive of Laudat, the number of poor individuals were 892 or 16.3%. This represented an average of a little over one half percent above the national average. The baseline survey indicated that participation in poverty alleviation measures may not be as widespread in Laudat as in other communities. With respect to institutional or social development support to household, 16% of respondents benefitted from this support with 82% of respondents indicating no benefits.

3.5.1 Agriculture

Agriculture general accounts for about 20% of GDP in Dominica and employs about 40% of the labour force. As of late 2017 pre-Hurricane Maria, there were about 2,000 hectares (4,900 acres) of land being used as pasture land for animal husbandry, comprising 2.7% of the total land area. In addition to tourism, residents of the Roseau Valley were engaged in crop cultivation and agroforestry. Many properties in the study area included the growth of citrus, other fruits, vegetables, and some root crops for consumption and for sale.

Agriculture is the second highest income-earner for the Roseau Valley's residents after tourism. However, from 2017 farmers were increasingly turning towards tourism which was considered more profitable.

Some villages in the valley were involved in commercial farming:

- Morne Prosper: mainly vegetables (the land is relatively flat).
- Wotten Waven: more diverse production of flowers, subsistence farming, tubers.
- Trafalgar: smaller-scale production more geared to tourism as well as tubers and 2 small poultry farms.
- Laudat: tuber production, vegetables and subsistence farming and a poultry farm.

In 2016 it was reported that there was a reduction in agriculture in most villages, especially Laudat and Trafalgar due to growth in tourism. In 2016, in the Roseau Valley, those working in agriculture are mainly women (in vegetable farming in Morne Prosper and Wotten Waven). Most farms were small production units comprising short-term and small-scale operations (¼ - 1 acre, or 1,000 – 4,000 m2). Few farmers had larger lots of land, i.e. in excess of 5 acres, or just over 20,000 m2.

Hurricane Maria caused substantial damage to agriculture in Dominica, including loss and damages to animals, crops, buildings, infrastructure and equipment. Damage to forest resources was also reported, with further impacts to agriculture. The greatest economic sector losses were sustained in the agriculture sector (32 percent), followed by the tourism (19 percent) and transport sectors (14 percent).4 It is probable that income from agriculture in the Roseau Valley has been significantly impacted.

The trend has changed slightly in 2020 given the reduction on tourism activities and there is a return to farming. The Ministry of Blue & Green Economy, Agriculture and National Food Security has launched initiatives including a WB funded “backyard” farming initiative in a bid to increase food security.

Unpublished statistics from the Ministry indicate that forty households from Laudat with a mean backyard size of 5900 square foot have participated.

3.6 Educational Profile

National school enrolment rates are quite high in Dominica at 97.5% for 5-9 year olds and 98.3% for 10-14 year olds (The Caribbean Development Bank, 2010). According to the Ministry of Education, in 2014, 75 pupils from the Roseau Valley were attending primary school. In July 2017, the Laudat and Trafalgar Primary schools were merged given the low number of students at Laudat. Approximately 224 students from the Roseau Valley were in Secondary School in 2014. Most villages in the Roseau Valley has its own primary school, but pupils must travel to Roseau once they reach secondary school age. This can represent a significant cost for parents, especially for transport.

3.7 Health Profile

Life expectancy in Dominica is 77 years (81 for women and 74 for men). The death rate in Dominica is relatively low, 8.1-9.5 per 1000 live births between 2010 and 2015. The infant mortality rate was 20.8 per 1000 live births in 2015. According to 2017 data from the Ministry of Health, 5.5-6% of births in the country were born to residents of the Roseau Valley in 2015-2016. Chronic illnesses recorded in the Roseau Valley in 2015 included cancer, pneumonia, pregnancy related illness, hypertension, heart disease, motor neuron disease, birth defect, and diseases of the urinary system. Incidences of each were between 1-2 people. Malaria is not typically present in Dominica, but Chikungunya and Dengue fever are health concerns. At least 30 cases of Zika virus were confirmed in Dominica in 2016. According to the CIA Factbook, in 2014 5.5% of GDP was spent on health (Central Intelligence Agency World Factbook Website (2017).

There are three health centres in the Roseau Valley one in each of the potentially affected communities (Trafalgar, Wotten Waven and Laudat). The Valley is also close to the capital of Roseau and its health facilities including the Princess Margaret Hospital, which is the country’s top health care establishment. The hospital has 224 beds (including 56 in a psychiatric unit) and was recently expanded per the Caraïbes Environnement Développement & Coll, May 2015 Report on the initial environmental status of the Roseau Valley in Dominica.

Damage and losses to healthcare facilities post Maria were estimated at EC$ 48.3M (US$ 17.85M). The Princess Margaret Hospital (PMH), Roseau, the only referral hospital in the health care system, sustained severe damage with 15 percent of its buildings totally destroyed leaving only 53 percent functional. Central medical stores lost the majority of medical supplies due to water damage but most medications were spared. Bed capacity was decreased by 95 beds.

In September 2019, the first phase of the Dominica China Friendship hospital (which is to replace the PMH), encompassing A&E, surgical and dialysis care was commissioned. The facility is scheduled to

be completed in Q3 2021. An additional 40,000 square feet two-floor hospital with a 75-bed capacity, as well as a wide range of essential services and modern state-of-the-art facilities is under construction in Marigot to serve the North-East of the island. Services to be provided by the New Marigot Hospital will include Ambulatory Services, Emergency Care, Intensive Care (ICU), Maternity and Paediatric Care, Laboratory and Radiology Services and Trauma Centre.

With regard to the COVID-19 pandemic, Dominica has lifted stay at home orders, and resumed some transportation options and business operations (US Department of State). In June 2020, the government stated that it would not be extending the state of emergency and the curfew that had been in place to curb the spread of COVID-19.[12] The Center for Disease Control and Prevention states that Dominica's COVID-19 risk is very high (August 2021), and one should avoid travel to Dominica. If one must travel to Dominica, they should make sure they are fully vaccinated before travel.

Because of the current situation in Dominica, even fully vaccinated travelers may be at risk for getting and spreading COVID-19 variants. As of 24 September , 2021, Dominica had reported a total 3293 cases of COVID-19 since the beginning of the pandemic, with 2680 recovered cases, 598 active cases and 15 deaths (Dominica Ministry of Health, Wellness and New Health Investment Response to COVID-19).

3.8 Gender

The Dominica Country Gender Assessment (CGA), commissioned by the Caribbean Development Bank (CDB) in 2014, provides a gender analysis of the economic, social and governance sectors in Dominica. The CGA indicates that Dominica's gender inequality index, which measures three aspects of gender inequality – reproductive health, empowerment, and economic activity – has not been calculated by the United Nations Development Programme (UNDP), because of the unavailability of relevant country data.

In terms of legislation, Dominica has neither signed nor ratified the Protocol to the Convention on the Elimination of All Forms of Discrimination against Women (Gender Equality Observatory for Latin America and the Caribbean). The most recent legislation with regard to gender equality has been the Protection against Domestic Violence Act, in 2001 and amendments to the Sexual Offences Act in 1998 and 1992. The law does not prohibit sexual harassment. Civil society groups reported it was a pervasive problem (US State Department Human Rights Report for Dominica, 2019). With regard to domestic violence, the most recent data reports that two women died from domestic violence at the hands of their partners in 2015, one died in 2014 and one died in 2009 (Gender Equality Observatory for Latin America and the Caribbean). In 2010, there were 177 cases of reported child abuse against girls, vs 39 against boys (CGA). The Bureau of Gender Affairs did not disaggregate reported cases of gender-based violence, but there were 391 reports between 2011 and 2013 (CGA).

The US State Department Human Rights Report for Dominica, 2019 states that: "The law criminalizes rape of men and women, including spousal rape. Although the maximum sentence for sexual molestation (rape or incest) is 25 years' imprisonment, the usual sentence in 2019 was five to seven years. Whenever possible, female police officers handled rape cases involving female victims. Women were reluctant to report domestic violence to police. The only shelter for victims of gender-based violence remained closed after suffering damage during Hurricane Maria in 2017. Civil society reported that sexual and domestic violence was common. The government recognized it as a problem, but according to civil society groups, recognition of gender-based violence, particularly domestic violence, as a problem was low among the general population. Although no specific laws criminalize spousal abuse, spouses can bring battery charges against their partner."

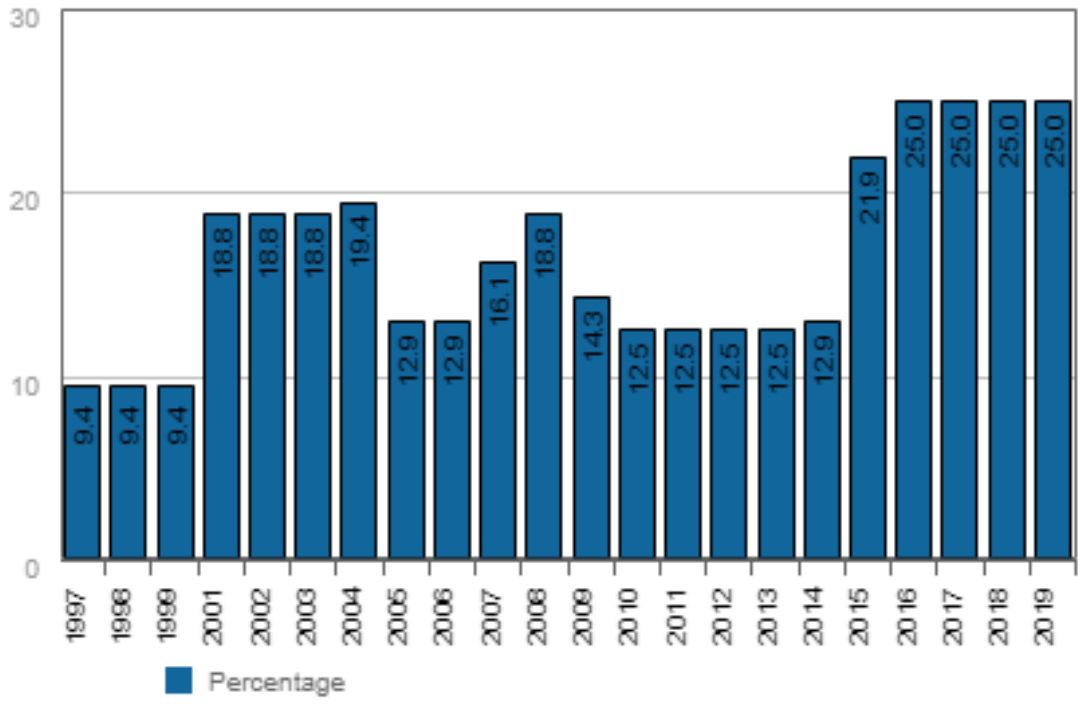
With regard to teen pregnancies, it has increased in recent years, going from 17.5% in 1981 to 40.3% in 2009 (Gender Equality Observatory for Latin America and the Caribbean and CGA). This represents

[12] CARICOM, Dominica Lifts Curfew, State of Emergency (June 2020) accessed at: https://today.caricom.org/2020/06/30/dominica-lifts-curfew-state-of-emergency/

a significantly high incidence of teenage pregnancy. Data from the Gender Equality Observatory for Latin America and the Caribbean shows that 100% of births in Dominica are attended by skilled health personnel. The country's maternal mortality rate of 222.3 per 100,000 women (2010) represents a high rate, placing Dominica at 53rd in the global ranking (CGA).

In terms of education, secondary school enrolment for 2011/2012 was slightly higher for males (50.7% for males vs 49.3% for females) but the number of women in tertiary level education is significantly higher than the number of males (62.5% vs 37.5%) (CGA). For labor participation, 58.4% of the labor force in 2011 was composed of males and 41.6% of females; however, the unemployment rate in 2011 was slightly higher for males than females, standing at 12.3% vs 9.9% (CGA).

When it comes to autonomy in decision-making and women's participation in government, Dominica exhibits male dominance in Parliament, with a male: female ratio of 87.5%: 12.5% in 2014 (CGA). For 2013, the number of male vs female village councilors was 59% vs 41%, and the number of male vs female chairpersons of village councils was 71% vs 29% (CGA). The number of women legislators are illustrated in the Figure below for the years 1997-2019 (Gender Equality Observatory for Latin America and the Caribbean).



Source: Gender Equality Observatory for Latin America and the Caribbean

Figure 3-1: Number of Women Legislators (Percentage)

3.9 Vulnerability

In 2018 the social survey respondents, focus groups and wider community expressed that there were no specific vulnerable groups in the Roseau Valley. However, during project consultation, disabled members of the community were identified, including a blind member of household and elderly PAP who were without support services. Disabled members of the community would be considered vulnerable. Elderly members of the community that could be isolated and widows would also be considered vulnerable. In addition, residents of the Roseau Valley that have been unemployed for a significant length of time (2 years or more) could also be considered vulnerable.

Post Hurricane Maria and due to loss of income due to COVID-19, new vulnerable groups emerged. Surveys in the project affected communities suggest that 90% of the respondents had lost the roofs of their houses, and 95% of the respondents lost their livelihoods[13] . Rebuilding and government housing assistance programmes have alleviated this hardship in most communities including Laudat. Among the non- salaried economically active population, 3.1 million workdays were lost post-Maria. The respective loss in work days and income resulting from Hurricane Maria, is likely to have resulted in a 25 percent decline in consumption, which could translate into an increased poverty rate of 36.2 percent (from 28.9% as reported in 2009).

No PAPs indicated loss of income from COVID-19 but indicated psychological impact due to social protocols.

3.10 Detailed Socio-Economic Surveys

Initial face-to-face interviews and phone discussions were held in March 2018 with the PAPs to collect census level information and verify physical assets. Face-to-face interviews included completion of a census survey questionnaire and phone interviews, which were conducted to collect more limited data, consisted of approximately ten basic questions. Given the change in project scope and reinjection line PAPs, additional surveys were conducted during August-November 2020 and in 2021. Only two of the parties chose not to complete the full census survey due to personal circumstances but they are participative in the process.. There have been multiple attempts to include two PAPs in the survey and the CLO continues to engage them and census information will be added in updates to the RAP if PAPs agree to participate. Remaining PAPs completed the full census survey. Additional census data was collected during June and July of 2018, during August -November 2020 and in July 2021 to get a complete picture of PAP socio-economic conditions. There is no change in the overall characteristic of the community over the period between the surveys.

Given the relatively low incidence of COVID-19 in Dominica until July 2021, and the removal of curfews and restrictions on intra-island movement, interviews were conducted as done previously with the addition of the wearing of masks and physical distancing during the interactions. Findings relating to the PAPs are summarized below. Photographs of the PAPs properties and some additional data is provided in Appendix B.

It is important to note that certain circumstances, particularly cultural reticence to share income and livelihood information, may have influenced the responses to the socio-economic surveys.

Survey responses directly relevant to the RAP process are summarized as follows:

- A total of 59 individuals (24 landowners and their households) were identified when all members of the affected PAP households were tallied.
- Only one of the PAPs currently resides in one of the three identified structures.
- The surveyed PAPs were generally aged 50 to 60+. One[14] of the PAPs is elderly. Approximately half are single and a half married. Half are women and half men. Households generally consist of 3-4 people.
- Two of the PAPs are supporting elderly parents and approximately half of the PAPs are also supporting teenage or older children and siblings.
- Six of the PAPs presently live overseas, some did not fill in the survey in full and provided limited information. Some own other land or property in the area. Some were farmers, vendors or small business traders, a [redacted] stay at home parents, unemployed or construction workers.
- Most of the PAPs experienced some adverse effects from Hurricane Maria including structural damage, income loss, or had the need for government food rations.

[13] WBG Post-Disaster Needs Assessment, Hurricane Maria, September 18, 2017 completed November 7, 2017.

- None of the PAPs became unemployed or suffered loss of livelihood due to COVID-19
- Most of the PAPs are elementary school graduates, some have high school degrees and four have college degrees. All own their respective properties or are representatives of persons owning their properties
- Average household monthly income of approximately $EC 3,000 (approximately USD 1100-). Data was included from the 2018 ARAP as many of the PAPs refuse to give updated information as to their monthly income. There are only two PAPs that derive any income from the land itself and they do not keep good records nor financial statements. As such, the project decided to use average monthly incomes and data from the 2018 ARAP to provide rough estimation of income. The firm which was hired to develop the 2018 RAP conducted face to face and phone surveys to determine the average monthly income. Many of the PAPs indicated that they are supporting other family members. Most of the PAPs have other working members in their households, which may reduce their vulnerability. Most of the PAPs indicated that they are responsible for spending of household finances.
- Two PAPs indicated that they derive income from the affected property the remainder indicated on the census forms that their household income was not tied to the lands to be acquired; and therefore refuse to provide information.
- All of the PAPs are aware of the proposed Project and none have expressed opposition to it or acquisition of their property if compensation is fair.

The following Table 3.1 presents additional data on the PAPs and is complemented by the entitlement matrix in Table 5.1.

Table 3.1 2021 PAP Socioeconomic Census Data

Number	Type of Business	Gender	Age	Primary Occupation	Marital Status	Duration of Business	Household Members	Highest level of education	[redacted]
PAP1	Farming (Structure which could be used as a residence on land)	Male	54	Self-employed farmer	Married	5 years	4	Secondary School	
PAP2	Construction (abandoned partly constructed residential structure on land)	Male	74	Construction (living and working in the U.S.)	Married	7 years	5	College	
PAP3	Farming and Construction (residential structure, crops)	Male	62	Agriculture/Construction	Single	31 years	1	Primary School	
PAP4	Homemaker	Female	49	Homemaker (Living in Germany)	Single	20	5	College	
PAP5	[redacted]	Female	56	[redacted]	Single	19	4	Post-graduate, Masters Level	
PAP6	N/A	Male	48	Living & Working in French Territories	Married	Unknown	4	Vocational Certificate	
PAP7	Contractor	Male	50	Contractor	Married	N/A	7	Elementary	
PAP8	Tourism – out of business- In Liquidation (Legacy Property -drill pad WW-02)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PAP9	Businessperson (Legacy Property -drill pad WW-01)	Female	N/A	Businessperson	Married	N/A	N/A	Post-Secondary	
PAP10	Retired Vendor/Subsistence Farmer	Male	61	Subsistence farmer	Single	45	4	Primary	
PAP11	Businessperson	Male	42	Businessperson	Single	N/A	3	Secondary	
PAP12	Businessperson	Female	65	Businessperson	Divorced	10	3	Tertiary	
PAP13	[redacted]	Female	62	[redacted]	married	44	3	Tertiary	
PAP14	No response	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PAP15	No response	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PAP16	Retired	Female	64	Retired	Married	10	4	Primary	
PAP17	Retired	Male	87	Retired	Widowed	10+	2	Primary	
PAP18	N/A Company	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
PAP19	Lawyer	Female	49	Property Manager	Single	12	1	Tertiary	

PAP20	Unemployed	Female	60+	Unemployed	Single	N/A	3	N/A
PAP21	Retired (subsistence farming)	Female	60+	Retired	Married	N/A	3	N/A
PAP22	N/A Company	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PAP23	Entrepreneur	Female	N/A	Self-Employed	Single	N/A	N/A	N/A
PAP24	Hospitality Worker	Male	No response	Hospitality - Overseas	Partnered	40	2	No response

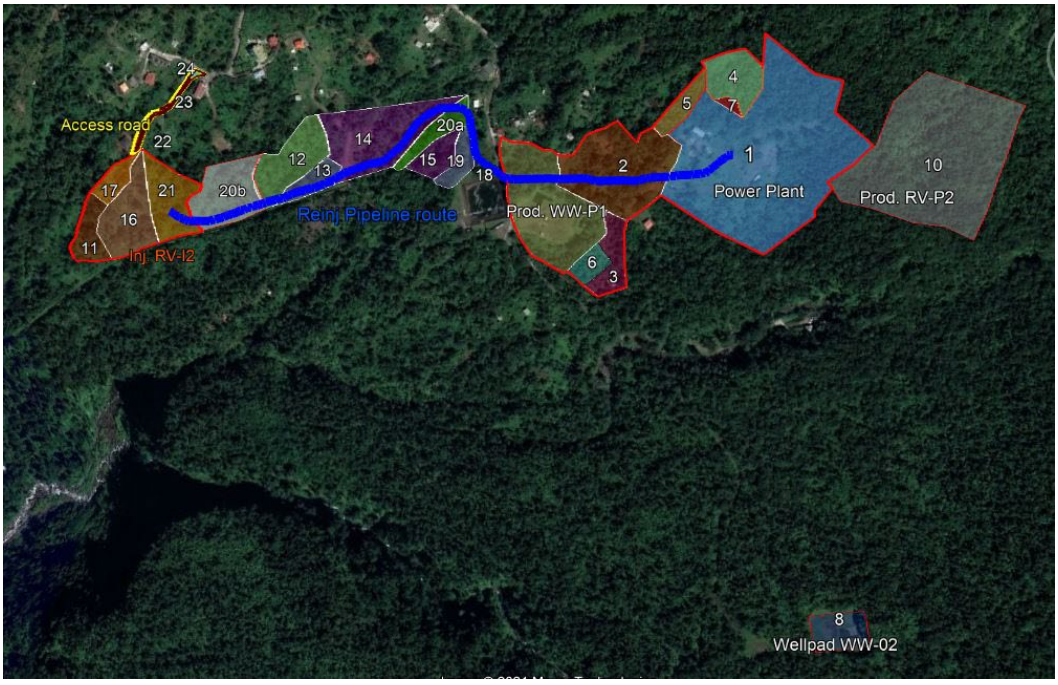
4. IDENTIFICATION OF PROJECT IMPACTS

4.1 Land Acquisition, Physical Displacement and Resettlement Impacts

For construction of the power plant, reinjection route and associated infrastructure, seven full properties at the power plant, four full properties for the reinjection pad (RVI2), a portion of eight other properties along the reinjection line, a portion of three properties for widening access to RVI2 and a portion of one property for production pad A (RVP2) would need to be acquired. This would include three structures, one of which is classified as residential, one intended for residential use, and one used for livestock (refer to Section 6 for further details). Only one structure is currently housing a PAP. These properties would be directly displaced by the Project footprint. This RAP therefore considers 25 properties in total since it includes two legacy properties (well pads WW-01 & WW-02), whose acquisition and compensation will be done according to the principles of this RAP.

Of the twelve properties impacted by the construction of the reinjection route and drilling of the reinjection well, eight would only require acquisition of a portion of the property to accommodate a 10 m wide corridor. Table 6 below illustrates the acreage and percentage of each property required for acquisition for the reinjection line route, where the average plot size is approximately one acre. As the percentages required for each property are generally small, there is an opportunity to minimize resettlement/livelihood impacts during the design phase by placing the reinjection line route in the areas of least impact within each property, or to avoid dividing a piece of land in two. The table below presents the estimated amount of land to be acquired for the reinjection line, per PAP. Where the land is untitled, the acreage required is given.

All temporary/construction impacts for example power lines and areas for widening of roads for movement of equipment take place on infrastructure already in place by the utilities or on lands owned or to be owned by the State(Project). All lands by PAP# except for legacy property WW-01 are shown in the Figure 2 below (not drawn to scale). Details of properties are provided in Table 6.1.



. Figure 2: Plots

Notes:

- PAP #20 has two parcels of land; therefore, it is divided as 20.a and 20.b.
- At time of preparation of this RAP surveys of entire parcels are still being conducted for some parcels by the Lands and Surveys department.
  Relocation to other sites was considered as part of the RAP 2021 process, particularly by two affected parties (PAP #1 and PAP #3), but all of the affected parties opted for cash compensation[15] (at full replacement cost including any transaction cost). The costs and benefits of replacement land versus compensation were explained to the relevant parties. .

4.2 Economic Displacement and Livelihood Impacts

Along with experiencing physical displacement, some of the parties affected by resettlement for the proposed power plant site and the reinjection pipeline route will experience economic displacement effects as the affected properties include agricultural crops, livestock, and trees. In particular, surveys show that five of the directly affected parties for the power plant site and one tenant on the pipeline route are presently engaged in agricultural activities, growing citrus and other fruits and vegetables, raising rabbits and sheep on their property. Additionally, one of the parties have agricultural structures that would be affected by the project.

4.3 Gender Impacts

From the responses received, ten of the PAPs are female and nine male which is aligned to the wider Laudat community where 52.6% is male and 47.4% female. Of the female PAPs, one is retired and one is a homemaker, one male PAP is retired and elderly.

4.4 Ecosystem Services

The Project would also potentially impact ecosystem services in the Project area. The key ecosystem services which have the potential to be significantly affected by the Project are the ecotourism resources including medicinal plants, handicrafts, and water related resources. However, many of these resources were severely damaged in the hurricane. Additional on-site surveys would be required to determine with certainty the extent of the ecosystem services impacts, but given the hurricane damage, the likelihood of unique ecosystem services being affected is considered low.

5. ELIGIBILITY AND ENTITLEMENT

5.1 Overview

In the context of this RAP, ‘entitlement’ is a concept through which we determine the amount and type of compensation (or other support) to be provided to a PAP for a particular impact or loss category. The process begins by linking an array of affected assets and economic activities to an affected interest or legal right, then to a potentially affected party who is deemed ‘eligible’ or not according to specific conditions. If qualified, the affected party is then a candidate and considered ‘entitled’ to an appropriate compensation package. An entitlement matrix then identifies the category of affected PAPs along with their entitlement to the various forms of support. In this instance, the affected assets are considered to be crops, structures, properties and economic activity (farming).

[15] The PAP who had chosen relocation in the previous version of the RAP opted for cash compensation and has subsequently been paid.

5.2 Eligibility and Cut-Off Date

In order to identify persons who will genuinely be displaced by the Project and who are eligible for compensation and assistance and differentiate from ineligible persons (such as opportunistic parties hoping to claim benefits), a cut-off date has been established. After the cut-off date, it is considered that the affected parties and wider public have been appropriately informed not to make improvements to, or settle on, the identified project land. Under the requirements of OP 4.12, the Project is not required to compensate encroachers after this date. The cut-off date for this Project has been established as 15 November 2020. This is the date that the detailed socio-economic survey in the community was completed for most of the affected parties, (others had been done prior and were updated) and whereby the final number of farmers on the site was confirmed. Any additional persons establishing farming plots or other activities on the site after the cut-off date will not be considered as PAPs and will not be eligible for compensation. Because the potentially affected community is small (24 total property owners), the cut-off date was communicated directly to the community during meetings and one-on-one interviews, during August to October 2020.

5.3 Entitlement Matrix for Compensation

The entitlement matrix presented below in Table 5.1 captures all PAPs, the characteristics of the impact, and the types of compensation/measures to be applied. PAPs will be entitled to a combination of compensation measures, relocation and livelihood assistance, depending on the nature and extent of the impact and lost assets, as detailed in Tables 6-1 to 6-3, and their preferences. Social and economic vulnerability will be considered in determining the level of assistance provided (as discussed in Section 5.4).

Compensation and assistance will broadly consist of one or more of the following types:

1. Compensation for loss of land;
2. Compensation for the loss of trees or crops;
3. Compensation for the loss of structures;
4. Transitional financial assistance to support any movement of structures or crops;
5. Income restoration for the loss of a business or significant agricultural loss;
6. Livelihood restoration assistance; and
7. Additional support for identified vulnerability.

A principle of this RAP is that affected party livelihoods will be restored to pre-project standards and, if possible, improved. PAPs were presented with the options of cash compensation, replacement land or a combination. PAPs determined to be entitled to replacement land were offered the option (of replacement land). Details of the PAPs that are entitled to some form of compensation are described in Section 6. The nature of the compensation proposed following assessment of entitlement and eligibility is provided in Section 6, Valuation and Compensation.

Table 5.1 Entitlement Matrix

PAP Category	Type of Loss	Eligibility Criteria	Entitlement	# PAPs Affected	Details of Support/Compensation
Power Plant, Production Well, Reinjection Well and Reinjection Route including access roads Landowners (where more than 20 percent of a parcel of land needs to be acquired for the Project)[16]	Permanent loss of land	Land title or other document establishing ownership in case of unregistered land to affected property, those without legal rights to the land at time census begins but with a recognizable claim to the land, those with no recognizable claim to the land they are occupying.	Compensation at replacement cost[17] Valuations done using market value including improvements to the land (considerations detailed in text following matrix) plus all transaction costs and statutory fees.	13 – PAP #1,2,3,4,5,6,7,9,10, 11,16,17, 21,22,23,24 Note: PAP 9 is a legacy property for WW01	Appropriate price/compensation as mutually agreed with the landowners. The value agreed will be based upon the individual valuations completed by the Dominica Lands and Surveys Division, consistent with the methodology outlined in the basis of compensation letter completed by DGDC for the RAP included in Appendix B This meets replacement costs per OP 4.12
Power Plant, Production Well, Reinjection Well and Reinjection Route including access roads owners or land users[18]	Permanent loss of trees and crops	Crops or trees on affected property at time of property acquisition.	Financial compensation for crops/trees. Valuations done using combination of cost of production, selling price at time of valuation and future bearing capacity.	6 – PAP #1,2,3,6,7,10	Cash compensation for the loss of trees, crops, perennials based on 2021 estimates.
Power Plant, Production Well, Reinjection Well and Reinjection Route including access roads owners or occupants	Permanent loss of a residential structure	Permanently residing on the affected property prior to property acquisition	Compensation for lost assets. Structure will be valued by the PVU and compensation paid to the owner of the structure. Moving/transitional assistance	1– PAP # 3	Appropriate price/compensation as mutually agreed with the landowners based upon Government valuation asset values adjusted to replacement value. Moving assistance in lump sum payment.

[16] Where it is less than 20 percent of the parcel, there is cash compensation.

[17] Replacement cost means that the affected person can replace the affected asset to the same condition. Replacement cost typically reflects market value plus transaction costs, transfer or retitling fees, and salvageable materials.
Note: 1.Two of the four structures referenced in the text have been abandoned for 5 plus years. Only one PAP resides on his property. 2. All compensation is at replacement cost

[18] Owners refers to the owners of the land; users refers to owners of crops/structures not belonging to the land owner e.g. agricultural tenants.

PAP Category	Type of Loss	Eligibility Criteria	Entitlement	# PAPs Affected	Details of Support/Compensation
Power Plant, Production Well, Reinjection Well and Reinjection Route including access road owners or land users[19]	Permanent loss of an agricultural structure	Commercial structure present on the affected property prior to property acquisition.	Compensation for lost assets. Structure will be valued by the PVU and compensation paid to the owner of the structure. Moving assistance.	2 – PAP #1, 3	Appropriate price/compensation as mutually agreed with the landowners based upon Government valuation asset values adjusted to replacement value. Moving assistance in lump sum payment.
Land owners with loss of income due to loss of land use	Loss of income	Farmers or business owners operating on affected property at the time of the cut off date or census if carried out after	Assistance for livelihood restoration by Providing access to existing social programmes: 1.Elderly pension and health care services 2.Skills training programmes	6- PAP #1,2,3,6,7,10	Loss of income compensation will be provided based upon a percentage of income loss experienced by the affected party. If this is being provided to people who do not necessarily own land, DGDC might include support to find replacement land.
Vulnerable households, potentially including households headed by women, elderly, very poor, disabled, or those affected or displaced by the effects of Hurricane Maria	Loss experienced by vulnerable parties	Qualifies under one of the eligible criteria and is considered 'vulnerable' including widows, sole income source in the household, elderly.	Additional assistance to households for 3% of their annual income according to vulnerability levels.	4 – PAP #1, 2, 17, 20	Supplemental compensation for loss of annual income. Priority for community enhancements including health and education components. Priority for livelihood and agriculture restoration components. Priority for suitable employment and transport to nearby shopping if needed. Special arrangements in the form of transportation to negotiations, meetings and access to independent advice on the process.
Landowners, property owners who are impacted by temporary construction activities[20]	Loss of income/property	Anyone that can demonstrate loss of income related to lost use of land; this may include (but is not limited to) land occupied temporarily,	Compensation for loss and restoration where necessary	None identified	Loss of income / property compensation and restoration at replacement value

[19] Agricultural tenants are usually allowed to erect structures on lands being used on farms in Dominica. The structures belong to them, and not the land owner.

[20] Additional to impacts listed in Jacobs 2018 ARAP

PAP Category	Type of Loss	Eligibility Criteria	Entitlement	# PAPs Affected	Details of Support/Compensation
		or land damaged due to construction activities			

5.4 Vulnerable Parties and Gender Considerations

Vulnerable parties are often at a disadvantage to participate and benefit from social and economic opportunities in their communities or need special assistance to do so. Women have important economic roles and engage in a very wide range of income making activities in the agricultural and marketing sector. The RAP pays particular attention to ensuring that vulnerable people and women are the recipients of compensation pertaining to and reflecting their full activities. As a result, women, the elderly, the unemployed have been encouraged to actively participate in all project-related resettlement consultations and negotiations and certain meetings have been conducted with women's groups. Special mitigation actions / measures for vulnerable people / women have been prepared and included in the RAP (Section 7). All compensation due to woman-headed families will be given directly to the woman family head. RAP monitoring and evaluation will pay special attention on the impact of resettlement on women and other vulnerable people. Assistance to vulnerable parties is discussed further in Section 7.2.

6. VALUATION AND COMPENSATION

6.1 Assessment of Land Value

The valuation methodology for the land compensation presented below was based on initial valuations provided by the Department of Lands and Surveys in July 2018 for some of the properties and estimates by DGDC based upon reference to other land valuations completed by the Department of Lands for the properties in the same area in 2017. The values were revisited in September 2020, and have remained the same with no major changes from the July 2018 valuations. The landowners were notified that their properties could be required for the project. Owners, or their representatives, of five of the seven properties under consideration for the power plant were present when the land surveys were carried out. The compensation rates to be proposed to the landowners were developed considering compensation based upon replacement value, as required by OP4.12, which includes: the market value of the land, transactional costs (legal fees associated with the process of selling and buying of land on average 10.5 % of market value), and any other fees associated with time delays as enshrined in the laws of Dominica. In ascertaining the market value of land, the property valuation unit of the Ministry of Housing and Lands relies on the individuality of each property. Physical inspection of the sites is carried out and factors such as services, access, topography, land use, size and market demand are taken into consideration. As noted below, PAPs 4, 5 and 7 are included in the RAP because of the proximity of their lands to the project. The lands associated with PAPs 4, 5, and 7 are illustrated in the figure 10 below. These lands are located along the boundary of the power plant site (PAP 1), and are 45,128 sq ft, 23,217 sq ft and 4,797 sq ft respectively.

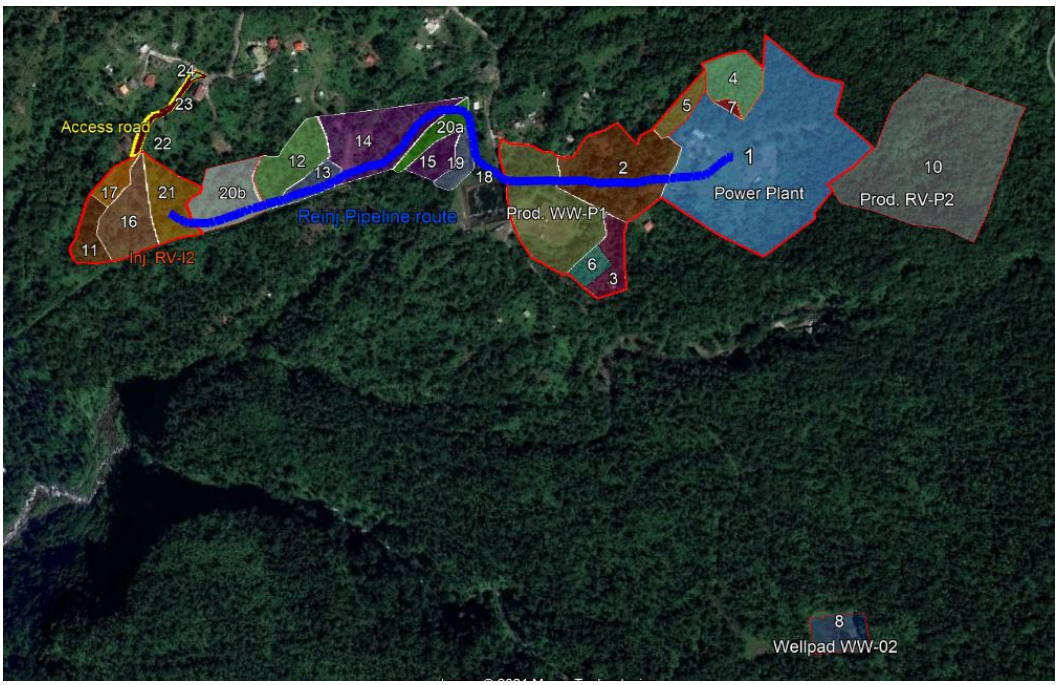


Figure 3: PAPs plots 4,5, and 7

PAPs 4 and 5 requested acquisition of their properties in 2018, due to community perception of noise, limited access to roads and concerns about proximity of the proposed power plant. Thereafter PAP 7 also agreed to the acquisition of his property for the project, since that property is fully surrounded by the lands owned by PAPs 4 and 5. It is worth noting that there were no residential structures in these plots and no road access to these plots prior to the project and access to these lands which was already difficult due to the topography on the northern sides of the properties would be even more limited due to the project. The Government of Dominica wished to accommodate the concerns of these PAPs and includes them to the

list of PAPs. It should be noted that no complaints or grievances have been received from these PAPs in relation to the properties of interest. Based on the current plan, these properties will be utilized by the project to enhance acoustic and visual screening of the power plant. No other PAPs' land area is affected by restricted access and noise impacts. The ESIA recommends that the project provide noise receptors within a 1000 feet of project parcels.

Formal property evaluations and negotiations and compensation have been and continue to be completed by the GoCD, Department of Lands and Surveys. No lands are accessed before payments are complete. Affected parties shall be properly consulted in line with OP 4.12, IFC PS5 and OP-710 prior to any land acquisition. An estimate of relevant property values is provided in the Table below. All compensation paid under this project has been done under the umbrella of the Jacobs 2018 ARAP and is aligned with OP 4.12.

Table 6.1 below depicts the land compensation estimates for all PAPs as based on actual government valuations. PAPs are encouraged to (and for the most part have) obtain private valuations for negotiations. Appendix B – Basis of Valuation details how values are ascertained. Given that the valuations are unique to each property; the unit price per square foot is presented for each property.

Table 6.1. Assessment of Property Values

PAP#		Affected Area Project Component		Land area square foot Replacement Value	% of Plot size	
1	Power plant site	439,520	100	EC$ 378,150 USD 139,916	$0.86	378150
2	Power plant site	158,994	100	EC$ 255,500 USD 94,535	$ 1.61	255500
3	Power plant	32,670	100	EC$ 163,350 USD 60,440	$5.00	163350
4]	Power plant	45,128	100	EC$ 135,384 USD 50,092	$3.00	135384
5	Power plant	23,216	100	EC$ 69,652 USD 25,771	$3.00	69652
6	Power Plant	17,688	100	EC$ 88,440 USD 32,723	$5.00	88440
7	Power Plant	4,797	100	EC$ 9,594 USD 3,550	$2.00	9594
8	Legacy Property	37,035	2.29	EC$ 19,550	$0.53	19550

	Drill Pad WW-02			USD 7,234		
9	Legacy Property Drill Pad www-01	242150	100	EC$ 361,335 USD 133,694	$1.49	361335
10	Production Pad(RVP2)	329,314	100	EC$ 300,000 USD 110,420	$0.91	300000
11	Reinjection Pad	36,591	100	EC$ 25260 USD 9,346	$0.69	25260
12	Pipeline route	149	0.2	(based on 10m wide corridor): EC$ 522 USD 193	$3.50	522
13	Pipeline route	4390	13	(based on 10m wide corridor): EC$ 15365 USD 5,685	$3.50	15365
14	Pipeline route	10733	TBD	(based on 10m wide corridor): EC$ 37,565.50 USD13,899	$3.50	37565.5
15	Pipeline route	17326	TBD	(based on 10m wide corridor): EC$51,978 USD19,232	$3.00	51978
16	Reinjection Pad	71739	100	EC$49407 USD18,281	$0.69	49407
17	Reinjection Pad	21344.4	100	EC$17150 USD6,346	$0.80	17150

18	Pipeline route	-	TBD	(based on 10m wide corridor):easement agreement in progress and final pipeline design		
19	Pipeline route	2740	7.35	(based on 10m wide corridor): EC$13,700 USD5,069	 $5.00 	 13700
20**	Pipeline route	12268 3894	10.2 TDB	(based on 10m wide corridor): 1.EC$ 36,804 USD13,617 2.EC$19470 USD7,204	 $3.00 $5.00 	 36804 19470
21	Reinjection Pad	62726	100	EC$43,200 USD15,984	$0.69 	43200
22	Access Road to RVI2	1037	17.2	EC$7259	$7.00	7259
23	Access Road to RVI2	727	9.5	EC$5089	$7.00	5089
24	Access Road to RVI2	2358	14.6	EC$16506	$7.00	16506

*Source: Government Valuations completed in November 2020 and DGDC Estimates. *USD Conversion Rates based upon exchange rate of 1 ECD =0.37 USD as of Sept 2021 **- owns two parcels of land*

6.2 Assessment of Crops/Trees/Livestock Compensation Values

Six identified PAPs will lose assets in the form of their crops. The values presented in the table below are an estimate of current market value for the crops based on Division of Agriculture "Guide to Crop Evaluation in Dominica" in $EC (East Caribbean dollars) and United States Dollars (USD) equivalent. . The Ministry of Agriculture & Fisheries will carry out valuations of affected crops and determine the actual compensation payment. Valuations are completed by extension officers of the Ministry of Agriculture & Fisheries who have intimate knowledge and understanding of the holdings. Crops are valued using the following bases:

- Cost of Production if farm records exist;

- Market value (selling prices) at time of valuation if no records exist; and
- Bearing capacity for well-established farms.

Crop valuation falls under the purview of the Ministry of Agriculture & Fisheries. The values assigned to crops are specified as a range and are set by a committee of technical experts who take into consideration factors such as the species, location, production cost, market value, climate and environmental influences. The applicable range for each crop is documented in the Ministry's "Crop Valuation Guide", and a comprehensive list of crops and economic trees under the following broad categories:

- Fruit and tree crops;
- Vegetables and herbs;
- Cut flower and ornamental plants; and
- Food and root crops.

Where crops are being valued for displacement from the land or removal of the crop, the economic life of the crop is considered (particularly for tree crops). When a valuation is required for an assessment of damage to the crop, where the crop continues to grow but growth is retarded, the age at the time of damage is considered. The aforementioned provisions are generally in keeping with World Bank policy.

Contrary to local practice, however, OP 4.12 notes that in some countries, the value of the harvest is determined by the average market value of crops for the previous three years. It states further that whatever the multiplier, if food supplies are sold in the area enough cash compensation is paid to purchase equivalent supplies, taking into account the possibility of price increases caused by heightened demand from displaced persons. Unit costs for crops are included in Appendix B and crop assessments for all affected PAPs in Appendix H. Payments are processed as lands and acquired and paid for.

Figure 6-4: Photograph of Affected Rabbit Hutch

6.3 Assessment of Assets, Residential and other Structures

Three identified PAPs will lose assets in the form of established structures. Determination of the compensation value for the structures was established based upon valuations provided by the Department of Lands and Surveys in July 2018 and revised in November 2020. Compensation for residential and other structures is based on this calculation by the Department of Lands and Surveys. Formal negotiations are ongoing. Photographs of Affected Structures are included in Appendix A.

Table 6.3 Structural Valuations

Affected Party No.	Sq footage of Affected structure	Total Valuation*
1	a.Potential Residential House/Currently livestock dwelling – 1,017 ft^2 b.Rabbit Hutch - 308 ft^2	a.EC$ 35,000 USD 12,950 b. EC $5,000 US 1,850
2	Incomplete, Abandoned Residential House - 418 ft^2	EC$ 62,700 USD 23,222
3	a.Residential House - 144 ft^2 b.Shed -160 ft^2	a.EC$ 24,000 USD 9065 b. 1000 USD 370

*Source: Government Valuations completed July 2018, revised Nov 2020 *USD Conversion Rates based upon exchange rate of 1 ECD =0.37USD as of Dec, 2020.*

All compensation will be based on *replacement value.*

6.4 Compensation Payment Procedure

Formal property evaluations for all of the affected properties will be completed by the GoCD Department of Lands and Surveys prior to construction followed by negotiations with the affected parties. On the basis of these negotiations, and completion of internal processes, the Ministry of Housing & Lands will disburse compensation to the affected parties for lands and structures. The Project will compensate for assets. Prior to disbursement of compensation, each eligible PAP will sign a compensation certificate which sets out the mutual commitments for each party. The format of the certificates will be easily understandable to affected people. This will be countersigned by the Ministry of Housing & Lands and representatives of DGDC will be present for this process.

Following agreement and signing of the certificates, compensation will be disbursed as indicated, livelihood restoration activities will commence, and the PAPs will be requested to vacate the site. DGDC will, in collaboration with the Division of Lands and Survey, be responsible for reporting on the receipt of the financial compensation of the PAPs and will arrange in kind compensation for any follow-up training.

In certain cases, it may not be feasible to pay compensation to all parties before taking possession of the land, for example when the ownership of the land in question is in dispute. There may also be cases where the landowner is out of the country. Under such circumstances, compensation funds shall be made available for each party through deposit into an individual escrow account for that PAP. This is not the case for any of the PAPs covered in this RAP.

7. LIVELIHOOD RESTORATION AND ENHANCEMENT MEASURES

7.1 Objectives

OP 4.12 and PS 5 state that compensation alone does not guarantee the restoration or improvement of the economic conditions of displaced persons and communities. Indeed, a major challenge associated with rural resettlement is the restoration of incomes based on land or natural resources. OP 4.12 and PS 5 require that projects manage resettlement as a development initiative and in doing so, focus on the need to at least restore and preferably improve the means of income earning capacity, productivity levels and associated livelihoods of displaced people and communities in their new locations. In light of this requirement, the Project will provide a range of livelihood restoration and development support options to PAPs.

7.2 Definitions

A livelihood is sustainable when it enables people to cope with and recover from shocks and stresses (such as natural disasters and economic or social upheavals) and enhance their well-being and that of future generations without undermining the natural environment or resource base.

In this context, DGDC acknowledges the responsibility not just to pay compensation for losses but also to assist PAPs to restore their livelihoods and improve their standard of living. The livelihood restoration measures detailed in this plan are designed to meet these responsibilities, in compliance with international best practice.

Livelihood restoration programmes that aim to prevent impoverishment, sustain incomes and build viable and sustainable livelihoods can be divided into two main categories:

- Land based livelihood restoration programmes: provide affected people with a sufficient size and quality of land to enable them to develop farms and sustain their incomes through land-based agricultural activities.
- Non-land based livelihood restoration programmes: provide affected people with wage and enterprise based means through which to sustain / improve their livelihoods, including occupational training, targeted credit, business development support etc.

7.3 Background

The benefits of livelihood restoration measures were highlighted to the PAPs during consultation, such as the potential for long-term income generation, and diversification of options for themselves and their families. Only two PAPs derive income from the lands acquired (PAPs 1&3), one has expressed that he may relocate his farm. Neither PAP has expressed any interest in Livelihood restoration activities at this time and so DGDC has made a budgetary allocation to facilitate these activities in the future.

Two PAPs will lose farmland PAPS #1 and 3 in the 2020 RAP. Only one is an active farmer on a portion of land and one other earns income from produce on the land. The approach to restoration for the PAP who may be pursuing relocation of his farm will include:

- Facilitation to identify alternative farming areas
- Vocational programming for alternative livelihoods determined by consultations with the PAP.

The Project will facilitate coordination among the PAPs, village and government authorities to ensure that all families affected by loss of farm are allocated other lands of similar area and productive capacity. A choice will be provided between a modest cash compensation, or in-kind assistance to improve other farmland (for example, by planting of valuable trees), in recognition of the inconvenience of changing

locations. Any valuable trees on the affected land that are considered as family property will also be compensated in this way. The replacement land will be formally titled. In the cases where the affected land includes some active farmland, the affected families will receive in-kind assistance to prepare new land in the same or a different area. This will include clearing and ploughing and may include fertilisation of the land to the point that it is ready for planting by the owner. Recognizing the inconvenience and some degree of risk in changing location, the land preparation services will be provided. Where the affected, active farmland is less than 0.1 acre, an alternative form of in-kind or cash compensation may be substituted.

DGDC has signed MOUs (November 2019) with the Ministry of Agriculture, the Ministry of Energy and the Ministry of Social Services to formalize facilitation of measures included in this RAP.

As stated earlier, the Project is ensuring that all those economic assets that are being lost because of the resettlement operation will be replaced on the basis of their full replacement value. The farms will be considered restored when the production of crops and livestock are at pre-resettlement levels. Both PAPs have no formal farm records and have provided anecdotal evidence. The Project will pay particular attention to the needs of women and other vulnerable groups in the planning of its livelihood restoration measures.

7.4 Roles and Responsibilities

Implementation of the livelihood restoration measures will be led by DGDC's Community Liaison Officer, with support from a third-party consultant experienced in livelihood restoration. DGDC has engaged an experienced crop and livestock assessor, retired from the government service, with no interest in the activities, both for the assessments included in this RAP and to provide guidance on restoration of farms to the PAPs. Any agricultural improvement and training programs would be led by local NGOs and/or the agencies of the Ministry of Agriculture with the appropriate expertise and resources. These agencies should also be primarily responsible for monitoring and evaluation of program outcomes, with support from the Project's Community Liaison Officer. Based on preliminary discussions, neither affected party has expressed any interest in pursuing any livelihood restoration measures after compensation for the lands and affected crops. The CLO continues to liaise with both PAPs and both are on schedule to vacate the properties. DGDC has made budgetary provision to support the PAPs in livelihood restoration activities should they chose at a future date.
Reporting will provide at quarterly intervals as part of the CLO's stakeholder engagement reports.

7.5 Implementation

Livelihood restoration measures will begin immediately.

7.6 Estimated Budget

The table below provides high-level costs for implementation of the livelihood restoration measures. These will be further refined as program partner involvement and capacities are better understood, and as restoration activities become further tailored to specific PAP needs.

Table 7.1 Livelihood Restoration Budget

	Component	Estimated Cost (US$)
1.	Livelihood Restoration Measures	$100,000
2.	Monitoring and evaluation	$5,000
	TOTAL	$105,000

7.7 Monitoring and Evaluation

According to best practice, projects that induce economic displacement should monitor and report on the effectiveness of livelihood restoration activities. More specifically, the objectives of Monitoring and Evaluation are to evaluate whether:

- Actions and commitments described for livelihood restoration are implemented fully and on time;
- PAPs understand their rights;
- Compensation and livelihood restoration measures are effective in enabling PAPs to at least restore their livelihood;
- Grievances submitted by stakeholders are addressed and the majority are resolved.
- Changes to livelihood restoration procedures are made in response to emerging concerns or lessons learned.

DGDC will conduct both performance monitoring and impact monitoring as part of the livelihood restoration measures.

Performance monitoring is an internal management function which will allow the Project to measure progress of the livelihood restoration components and programs. Among others, the following indicators will be included as part of the detailed performance monitoring plan:

- Overall spending against budget
- Number of households benefiting
- Number of female participants
- Number of grievances received
- Number of open grievances
- Average time for grievance processing

Impact monitoring is an internal process that will be used to determine the effectiveness of the measures in supporting affected persons in the restoration of their livelihoods. It will also be used to identify adjustments in the implementation of the livelihood restoration measures, as required. The effects of the measures will be tracked against the baseline conditions of the PAPs. Impact monitoring will monitor changes in agricultural yields, household livelihood patterns, wellbeing, food security and gender equality based on self-reported information by the PAPs.

8. VULNERABILITY ASSISTANCE

Vulnerable people can be defined as, those below the poverty line, the landless, the elderly, disabled, women and children, indigenous peoples, ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation (World Bank, OP 4.12).

Key factors which could be considered indicators of vulnerability for the identified PAPs include:

- Many in the communities impacted reported that they lost the roofs of their homes due to Hurricane Maria;
- Many in the affected communities reported that they have lost their livelihoods as a result of Hurricane Maria;
- Any loss of income related to COVID-19;
- Some of the PAPs are unemployed, low-income or single party headed households; and
- Some PAPs are elderly community members.

The RAP process has considered the potential for impacts on vulnerable PAPs and findings indicate that additional support should be applied to the PAPs as several would be considered vulnerable. Table 8.1 presents a vulnerability matrix for the PAPs.

Table 8.1: Vulnerability Matrix

PAP No.	Sole earner in household	Elderly or Disabled	Unemployed, low income	Receipt of Government Support Programs	Home or livelihood damaged by hurricane	Considered vulnerable
1	No	No	Yes- low income	Yes	Yes	Yes
2	Yes	Yes	Members of household unemployed post-Maria	No	No	Yes
3	Yes	No	No	No	Yes	No
4	Unknown	No	Unknown	No	Yes	Unknown
5	No	No	No	Yes	No	No
6	No	No	Living Overseas	No	No	No
7	No	No	No	No	Yes	No
8	Business	N/A	N/A	N/A	N/A	No
9	No	No	No	No	No	No
10	No	No	No	No	No	No
11	No	No	No	No	Yes	No
12	No	No	No	No	Yes	No
13	No	No	No	No	No	No

PAP No.	Sole earner in household	Elderly or Disabled	Unemployed, low income	Receipt of Government Support Programs	Home or livelihood damaged by hurricane	Considered vulnerable
14	Unknown	No	Living overseas – no contact	No	No	No
15	Unknown (Heirs of newly deceased – no response)	No	No	Unknown	Unknown	Unknown
16	No	No	No	No	Yes	No
17	No	Yes-elderly	No	No	Yes	Yes
18	Business	N/A	N/A	N/A	N/A	No
19	Yes	No	No	No	No	No
20**	Yes	No	Yes	No	Yes	Yes
21	No	No	No	No	Yes	No
22	N/A	N/A	N/A	N/A	N/A	N/A
23	No response	No response	No response	No response	No response	No response
24	No	No	No	No	unknown	No

*Notes: N/A as this is a commercial business. **- owns two parcels of land*

8.1 Forms of Assistance

Three of the PAPs are unemployed or low-income, four are sole earners in their households and two are elderly or are supporting elderly family members and ten experienced loss after Hurricane Maria. In total, four of the PAPs would be considered vulnerable. As such, the RAP provides an additional safety net for vulnerable households. Project-affected households and landowners that are vulnerable could potentially experience severe hardship during the livelihood restoration process and as such monitoring of these parties will be particularly important. Regular visits to each PAP will be conducted to ensure that the PAPs retain their place to live, means of income, access to medical care, and access to food and welfare of vulnerable persons, in this case all of the PAPs will be specifically tracked and reported upon by the DGDC. Further detail on Project roles and responsibilities in included in Section 10.

8.2 Compensation for Vulnerable PAPs

Compensation due to vulnerable PAPs will comprise:

- Cash payment for the supplemental compensation consisting of 3% of the PAPs typical annual income for a year by the DGDC payable in monthly instalment where income is impacted by project;
- Additional assistance may take the following forms, depending upon vulnerable persons' requests and needs;
- Assistance in employment training, access to and provision of healthcare, and educational support;
- Assistance in the compensation payment procedure (e.g. specifically explain the process and procedures, make sure that documents are well understood);

- Assistance in the post-payment period to secure the compensation money and reduce risks of misuse/robbery; and
- Counselling in domestic matters such as family, health, or finances.

9. STAKEHOLDER ENGAGEMENT

9.1 Introduction

In the context of resettlement and economic displacement, stakeholder engagement serves as both an opportunity for information exchange for consultation purposes and as a collaborative form of decision-making and participation. Full details of the stakeholders consulted during each stage of the ESIA process, and the detailed outcomes and observations are provided within the ESIA, the Addendum to the ESIA and Project Stakeholder Engagement Plan (SEP) and are included below.

The main objectives of consultation undertaken to date for the Project include:

- To provide information about the Project and its potential impacts to those interested in or affected by the Project, and solicit their opinion to that regard;
- To understand and address stakeholder concerns and expectations of the Project;
- To manage any unrealistic expectations and address misconceptions regarding the Project;
- To ensure participation and acceptance of the Project throughout the lifetime of the project by the key stakeholders including the community;
- To provide avenues to address any stakeholder grievances regarding the Project; and
- To agree on the asset valuation / compensation and livelihood restoration measures associated with this RAP process and discuss potential concerns.

9.2 Consultation with the Affected Community

During the geothermal drilling phase, eleven general public meetings were held in the potentially affected communities in November and December 2013 and January 2014. Five were held in Laudat, three in Trafalgar and three in Wotten Waven. A visit to the current geothermal power plant in Guadeloupe was also conducted in 2012 with members of the community to experience first -hand the workings of an operational plant. Additionally, school visits were conducted in February and March 2012 from the Wotten Waven Primary School, Trafalgar Primary School, Morne Prosper Primary School, Laudat Primary School, and Laudat Primary School where students and staff toured the drilling sites. In addition to the recent public engagement, the Grievance Mechanism was socialised within the community during the 2017 social baseline survey process.

Additionally, a town hall meeting was held in Trafalgar in December 2016 with approximately 40 in attendance to discuss the current project and ESIA. Another town hall meeting was held in Laudat in July 2017 with 43 in attendance. A third town hall meeting was held in Wotten Waven in August 2017. A final town hall meeting will be held to present the findings of the ESIA in May or June 2018. In order to facilitate further understanding of community needs and conditions, focus group meetings were held in 2016, 2017 and 2018 in Wotten Waven, Trafalgar and Laudat, described in further detail below. Because the total population of the Project AOI is relatively small (approximately 1,600), and given that the general public and many of the focus groups and landowners that would be affected by the Project are the same parties, the four formal public meetings and 15 informal forums held on the Project were considered representative of the community.

A total of 15 focus group meetings were held as part of the ESIA baseline data collection. A meeting with six representative community leaders from all of the potentially affected communities was held in Trafalgar in November 2016 to discuss the Project and the most effective means of stakeholder engagement. Focus groups meetings were also held in June, July and August of 2017 including meetings with representatives of local hotels and resorts, handicraft vendors, hot springs businesses, and unemployed parties in the area. Groups consisted of 5-15 people and targeted questions were asked and recorded. In addition, five focus group meetings were held in the communities in March 2018 following Hurricane Maria. These included meetings with community women in Laudat, Wotton Waven and Trafalgar, and vendor meetings in Wotton Waven and Trafalgar, to identify the impacts on the community of Hurricane Maria which hit Dominica in September 2017 and to understand how conditions in the Project area have changed since the ESIA baseline data was collected pre-Hurricane Maria.

Two national consultations on the Jacobs ESIA were conducted in February 2019 one in the south and one in the north (Portsmouth). A series of public meetings to update the community on the changes in the project were held in June 2020. Given the COVIS-19 public gathering protocols, the DGDC conducted 3 sessions per day for three days to allow for maximum community participation. As part of the ESIA process for the Eclipse Inc conducted 3 focus group (women, landowners and youth) meetings in August 2020 and another meeting to present the findings of the ESIA to the community in November 2020.

Consultation on the RAP

In accordance with the WBG policies (“Involuntary Resettlement Policy” and “Land Acquisition and Involuntary Resettlement” respectively), consultation on the RAP included conducting a socio-economic census survey in 2017-2018; consultation with the project affected parties on the RAP with relevant government institutions such as the Department of Lands & Surveys; and presentation of the findings of the RAP to the affected communities in 2018. Further consultations were held with new PAPs in 2020 and updated census information for those previously interviewed. The recurring concern of PAPs was that they would be fairly compensated for their lands in a timely manner. DGDC continues to present the issue of timely acquisitions and compensation to the Ministry of Lands. The relevant department consists of a small staff and various government re-housing projects are in progress making.

This RAP was presented the Laudat Improvement Committee in January 2021, to the community at consultations in March and April 2021 and as part of the national consultation on the ESIA Addendum on April 29, 2021, after having been posted on the Project’s website from January 2021. Any comments on this RAP from the community or relevant institutions will be incorporated into a final RAP. As of September 2021, no comments have been received. The RAP will be updated as necessary with any new information from consultations with community or relevant institutions. The final version of the RAP will be disclosed on the website.

10. RESETTLEMENT SITES

In accordance with World Bank resettlement policies, resettlement sites were considered for two of the PAPs identified. One preferred site was identified on the basis of location, community continuity, access to productive resources, employment, and livelihood restoration consideration. The affected PAP wanted to remain local, on a site with land that would be productive for agriculture, and with easy access from local roads, on plots of a similar size to their previous property. A photograph of the preferred site for resettlement site is included below in Figure 10-1. The costs and benefits of replacement land were explained to both PAPs. However, although the pros and cons of replacement land were explained in detail to this party, one of the two PAPs has now indicated a preference toward compensation as they felt that they would prefer the cash and would be in a better position to negotiate a lower price for the land.

Figure 10-1: Photograph of Resettlement Site 1

An additional PAP had expressed interest in a replacement property, but no specific site had been identified. This PAP has since indicated a preference for cash compensation. All the other PAPs with affected property opted for cash compensation.

Only one single person household will be physically displaced.

11. ROLES AND RESPONSIBILITIES

11.1 Overview

The land acquisition process including negotiations and final compensation will be completed by the GoCD Department of Lands and Surveys including addressing any grievances related to land acquisition. DGDC will manage livelihood restoration related and resettlement (not including land acquisition) grievances consultation, grievance redress, monitoring and evaluation of the affected parties for this RAP. DGDC has appointed a Community Liaison Officer (CLO) and Social Safeguards Specialist to support the ongoing community consultation and engagement process, both generally and specifically regarding this RAP, and who will support in this process. The CLO role will continue into the operational phase. A cooperation agreement between the DGDC and GoCD is in place (November 2019) to formalise this relationship.

11.2 Organizational Responsibilities

This section presents the organizational framework for implementing resettlement, including:

- identification of agencies responsible for delivery of resettlement measures and provision of services;
- arrangements to ensure appropriate coordination between agencies and jurisdictions involved in implementation; and
- and any measures (including technical assistance) needed to strengthen the implementing agencies' capacity to design and carry out resettlement activities; provisions for the transfer to local authorities or resettlers themselves of responsibility for managing facilities and services provided under the project and for transferring other such responsibilities from the resettlement implementing agencies, when appropriate.

Key roles and responsibilities with regards to the RAP are set out in Table 11.1.

Table 3 Roles and Responsibilities

Stakeholder	Interest	Roles/ Responsibilities	Timescale for Action
GoCD	Responsible for Land Acquisition Process	Complete formal land valuation for each property Complete compensation negotiations with each PAP Disburse compensation to each PAP. Manage acquisition of replacement properties as needed. Ensure the receipt of the financial compensation of the parties. For replacement property, ensure that once the property cost has been agreed, the property would then be transferred to them. Manage grievances related to land acquisition.	Prior to construction (2-3 months)
PAP	Affected properties, structures, and economic activity on site	Engage with socio-economic surveys Engage in consultation process Vacate project site as agreed on compensation certificate. Vacate project site upon complete implementation of this RAP	Present-vacation of site (next 4 months)
DGDC	Project developer	Engage appropriate organisations/individuals to implement the RAP. Facilitate good communications and relations with the PAPs	Present-ongoing

Stakeholder	Interest	Roles/ Responsibilities	Timescale for Action
		Manage livelihood restoration process and vulnerable party resettlement issues. Respond to livelihood restoration and resettlement (not including land acquisition) feedback and grievances in a timely manner.	
Social Safeguards Specialist	DGDC team	Implement RAP economic displacement Provide liaison between DGDC and PAPs Monitor RAP, with particular attention to vulnerable persons Identify and provide additional support as required.	Present-ongoing throughout Project operations
CLO	DGDC team	Support Implementation of RAP Manage General Grievances Responsible for general Project-related community consultation.	Present-ongoing throughout Project operations
Consultant	Consultant	Audit / supervise the process.	TBD
Eclipse	Consultant	Conduct socio-economic surveys of PAPs	July-November 2020

11.3 Compensation Payment Procedure

Appendix B presents the basis of valuation of assets for land and crops. Prior to disbursement of compensation and commencement of livelihood restoration measures, each eligible PAP will sign a compensation certificate which sets out the mutual commitments for each party. The format of the certificates will be easily understandable to the PAPs. This will be countersigned by GoCD Department of Lands and Surveys. This compensation plan includes commitments as follows:

- GoCD to pay the agreed compensation prior to the commencement of project construction and land clearance;
- PAP to vacate the affected land including harvesting crops prior construction; and
- Both parties to abide by the requirements of the RAP.

Following agreement and signing of the certificates, compensation will be disbursed to the bank account of the owner of the property and resettlement and livelihood restoration activities will commence and the PAPs will be requested to vacate the site. The GoCD will be responsible for ensuring receipt of the financial compensation of the parties. Vacation of the site will be carried out by the PAPs and monitored by DGDC.

11.4 Resettlement Procedure

If applicable, once a suitable resettlement site has been identified, the Department of Lands and Survey shall formally survey the property and negotiate with the PAP and upon agreement submit request for permission for its transfer. The Department of Lands and Surveys is only able to accommodate resettlement for properties/lands owned by the State. There is no provision for acquiring private property for transfer. This process includes commitments as follows:

- GoCD to transfer the property to the PAP prior to the commencement of project construction and land clearance, purchase, certification and transfer;
- PAP to vacate the affected parcel including harvesting crops prior construction; and
- Both parties to abide by the requirements of the RAP.

11.5 Livelihood Restoration and Enhancement Measures

DGDC will support with the coordination of any transport or livelihood restoration support measures required by the PAPs during the physical relocation process. Careful monitoring and evaluation will be required to manage the risk of unnecessary hardship, and to confirm that the various assistance activities are working as intended. The monitoring process is described in further detail in Section 12 of this document.

12. GRIEVANCE MANAGEMENT

12.1 Overview

The Project is committed to maintaining lasting, transparent, culturally appropriate and efficient relationships with its internal and external stakeholders, through communication and engagement measures that allow receiving, analyzing and solving any concern, doubt, question regarding the environmental and social performance of the Project in all of its activities. The External Grievance Mechanism is an instrument to guarantee transparency and commitment between the Project, the local population and any interested party

Based on the foregoing, the Project has developed an External Grievance Mechanism with the objective of identifying and managing the potential external nonconformities (e.g. from the affected communities) and/or complaints in a timely and effective manner.

This grievance mechanism is on place and has been communicated to the community and general population. It is published on DGDC's website (www.geodominica.dm) and allows for grievances to be submitted online and anonymously.

12.1.1 Objective

Establish an External Grievance Mechanism so that the Project can handle external complaints, presented by stakeholders outside the Project (e.g. affected communities, external stakeholders, interested groups, etc.), during the development of its projects by giving them an adequate response, generating satisfactory agreements and implementing compensatory and corrective actions, when necessary.

By establishing an effective External Grievance Mechanism, DGDC will be able to manage potential conflicts of interest by segregating the roles and responsibilities of individuals involved in the concern, suggestion or grievance management process and avoiding placing individuals in a position where conflicts could be perceived to arise. The Project recognizes that unforeseen impacts may occur, and that the maintenance of an open line of communication with the communities and/or those potentially affected by the Project is important to maintain transparent and cordial relations. In addition, international standards require the establishment of an External Grievance Mechanism in order to address the interested parties' concerns.

As a general policy, DGDC will work proactively towards preventing grievances through the implementation of mitigation measures (as identified by the ESIA) and liaising with the community. These activities are designed to anticipate and address potential issues before they become grievances. This will be the responsibility of the Project Manager and the Community Liaison Officer (CLO).

The sections below consider types of grievances that may arise, confidentiality and anonymity, and the Project's grievance resolution process.

The grievance mechanism covers the various aspects of the Project, including:

- The Project in general, including planning, construction and operation;
- The process of environmental impact assessment; and
- The compensation and resettlement processes.

Each affected person, agency or party representing the general good,is free to register a grievance, in accordance with procedures specified below. The grievance process focuses on first identifying whether the grievance can be addressed through additional communication between the complainant and members of the Project Team, or by providing additional information to the complainant. If the grievance cannot be resolved internally, the Project Team will then seek to resolve the grievance through mediation by local

authorities, and finally, if a resolution cannot be reached, judicial appeal. The procedure does not replace the public mechanisms of resolution of conflicts in Dominica's legal system but covers the legal process in the Grievance Mechanism to minimize the management of grievances and escalation to the judicial system.

12.1.2 Scope of Application

This plan will apply during the development of DGDC's activities and during the Project's life cycle. It is DGDC's responsibility to ensure that reception complaints are aligned to international best practices.

12.1.3 Definitions

The main terms used in this document are defined below:

Table 4: Terms and Definitions

Term	Definition
Claim	Concern, suggestion, complaint, or grievance raised by an individual or group of individuals that need to be addressed.
Claimant	Person or group of people communicating a claim to DGDC.
Concern	Requests for information or general negative perceptions unrelated to a specific Project impact or incident. If not addressed to the satisfaction of the claimant, concerns may become claims.
Conflict of interest	A conflict of interest exists where there is a divergence between the interests of an employee or contractor and his or her responsibilities or capabilities under this directive, such that an independent observer might reasonably question whether the actions of that person are influenced by his or her own interests.
Contractor	An individual or a company that has entered into a contract to provide goods or services to DGDC. The term covers parties directly contracted by DGDC and those contracted by a Contractor company, also referred to as subcontractors.
Grievance	A an actual or perceived problem raised by an individual or group of individuals that that might give grounds for complaint and needs to be addressed. Claims can result from either real or perceived impacts of DGDC's operations. The terms "claim" and "grievance" can be used interchangeably.
Suggestion	Proposal, insinuation, or indication that is submitted with the aim of proposing an action to improve DGDC's internal processes.
Retaliation	Any adverse action taken against a Claimant, employee, or contractor whose purpose is to frustrate the operation of this directive.
External Grievance Mechanism	A procedure through which a grievance can be raised by any interested party, assessed, investigated and responded to. It is also a framework through which workers can gain access to remedy for any adverse impacts or damage they have suffered as a result of business activities.

12.2 Roles and Responsibilities

In order to properly implement the External Grievance Mechanism, DGDC requires the involvement of the people listed below.

Table 5.2 Roles and Responsibilities

Role	Responsibilities
Board of Directors	■ Review and approve the External Grievance Mechanism.
Finance & HR Manager	■ Ensure the availability of resources necessary for the implementation of the External Grievance Mechanism.
Representative of DGDC's Legal Area	■ Evaluate and determine the origin of the complaints received and define the measures to be taken in response, as suitable according to what is stated in this plan.
Managing Director	■ Be familiarized with the External Grievance Mechanism and provide the necessary resources to ensure its proper implementation.
Safeguards Manager	■ Ensure the correct implementation of the External Grievance Mechanism. ■ Review and approve the contractor project-specific External Grievance Mechanism. ■ Update the External Grievance Mechanism.
Grievance Mechanism Team	■ Be familiarized and disseminate the External Grievance Mechanism among external stakeholders. ■ Prepare the Communication Report, and follow up on the feedback received. ■ Share the External Grievance Mechanism Database with the Managing Director. ■ Share the received feedback with the Project Manager.
Community Liaison Officer (CLO)	■ Collect on a weekly basis the complaints presented, whether submitted physically or via website. ■ Review the nature of the complaint, as well as the company's departments potentially involved. ■ Solve, as immediate as possible the feedback received, if there are conditions to do so. ■ Keep a record of the solutions that were given for documentation, monitoring or verification of the solution applied.
Employees, contractors and subcontractors	■ Read and be familiarized with the External Grievance Mechanism.

Source: DGDC, 2020

12.3 Activities

The External Grievance Mechanism Plan establishes the guidelines for external stakeholders to submit complaints, grievances and concerns arising from any project's activities and operations, ensuring the accessibility and effectiveness of the process.

12.3.1 Principles

DGDC recognizes that this plan has to guarantee the same level of integrity and respect for all the people involved, as well as for any type of claim. To this regard, the Project's External Grievance Mechanism will be:

- **Understandable and reliable** (e.g. the affected stakeholders must understand the procedure, the confidentiality of the person filing the complaint must be protected, the expected deadline for receiving a response must be shared);
- **Culturally appropriated and accessible** (e.g. complaints can be filed in the local language, the technology required to file a complaint must be of common use, illiterate people can file complaints verbally);
- **Free of charge** (e.g. raising a complaint will not have any cost);
- **Anonymity** (e.g. the claimant will have the option to remain anonymous);
- **Proportional** (e.g. to provide the appropriate level of management to address the grievance promptly);
- **Rights-Compatible** (e.g. outcomes and remedies will be in line with internationally recognized human rights legislation and national law. No aspect of the mechanism will prevent community members from enforcing their legal rights. Community members will be protected against retaliation for having raised complaints);
- **Inclusive and non-discriminatory** (e.g. all grievances, from all community members regardless of age, ethnicity, mental or physical disability, race, religion, gender, sexual orientation or gender identity, will be accepted, reviewed and solved as needed);
- **Transparent** (e.g. every complaint will be treated seriously, and dealt with consistently and in an impartial, confidential and transparent manner. The process is transparent and provides timely feedback to the claimant).

The present plan establishes the guidelines of the External Grievance Mechanism and describes how the Project along with its CLO will proceed in order to adequately and satisfactorily address the possible complaints expressed by the community or other external stakeholders. Complaints related to internal stakeholders (e.g. workers, contractors, subcontractors, etc.) are covered on the Internal Grievance Mechanism Management Plan.

The External Grievance Mechanism aims to prevent social contingencies and conflicts with the people that might be affected by the development of the Project, since it will provide, at all times, effective attention, and it has the obligation to respond to the requests of all claimants.

DGDC has established a process for the reception, registration, review, analysis, resolution and evaluation of complaints, claims and concerns to be implemented in all of its projects. The process is documented through a physical record file and will end with the closure and written agreement on the resolution of both parties (i.e. the claimant and the Project).

12.3.2 Publication of the Mechanism

Based on the Stakeholder Engagement Plan, the Safeguards Manager and CLO will continue to inform the affected communities and other external stakeholders about the Grievance Mechanism previously disclosed and the communication channels to submit complaints, claims or suggestions regarding any activities related to the Project, as well as how and where to submit them. This information is shared through:

- Direct dialogue;
- Distribution of printed material such as brochures and posters, which will be proposed by the ESG team and reviewed by the Marketing and Communication management of DGDC;
- Available information at the Community Centre;

- Press and media;

12.3.3 Grievance Mechanism Procedure

In order to ensure the proper implementation of the External Grievance Mechanism, and the resolution of the feedback received, this mechanism is divided into four main steps. These steps are presented in the figure below.

Source: ERM, 2020

Figure 12-1: General Grievance Mechanism Procedure

These steps are designed based on the recommendations of the International Finance Corporation (IFC) and World Bank Group, through which a communication channel and responsible for monitoring in each of them is designated.

12.3.3.1 Reception and Registration

The CLO will manage the External Grievance Mechanism. The external claimants will be able to submit their grievances through the following reception channels:

- Website – www.geodominica.dm/grievance/reporting/

  Telephone and emails. The points of contact for grievances and comments are:

Name:	Allan Toussaint
Address:	Floors 1&2, 18 Kennedy Avenue, Roseau
Email:	Allan.toussaint@geodominica.com
Telephone Number:	(767) 448 6178/79; 275 7392

Name:	Lyn Fontenelle
Address:	Floors 1&2, 18 Kennedy Avenue, Roseau

Email:	Lyn.fontenelle@geodominica.com
Telephone Number:	(767) 448 6178/79; 235 5462

- A Grievances Mailbox placed at the Community Centre. The mailbox's precise location will be shared with the community during public consultation and other disclosure of information events.

Any complaint or suggestion that is entered by the aforementioned means must follow the External GM form which may contain all or some of the following information:

- Place and date of the complaint or suggestion;
- Reason for the feedback, with details of the events;
- Claimant's contact information (In case the grievance is not anonymous); and
- Claimant's proposed solution to the issue.

12.3.4 World Bank Grievance Redress Service

The process will begin with the receipt of a complaint or suggestion by the CLO and notify the claimant that the claim has been received, will be reviewed and taken for analysis. DGDC's grievance flow chart is provided in Figure 12.2. The Grievance Redress Service (GRS) is an avenue for individuals and communities to submit complaints directly to the World Bank if they believe that a World Bank project has or is likely to have adverse effects on them, their community, or their environment. The GRS enhances the World Bank's responsiveness and accountability to project-affected communities by ensuring that grievances are promptly reviewed and addressed.
Any individual or community who believes that a World Bank-supported project has or is likely to, adversely affect them can submit a complaint. Complaints must be in writing and addressed to the GRS. They can be sent:

- ONLINE – through the GRS website at www.worldbank.org/grs
- BY EMAIL at grievances@worldbank.org
- BY LETTER OR BY HAND delivery to any World Bank Country Office
- BY LETTER to the World Bank Headquarters in Washington at The World Bank Grievance Redress Service (GRS) MSN MC 10-1018 1818 H St NW Washington DC 20433, USA

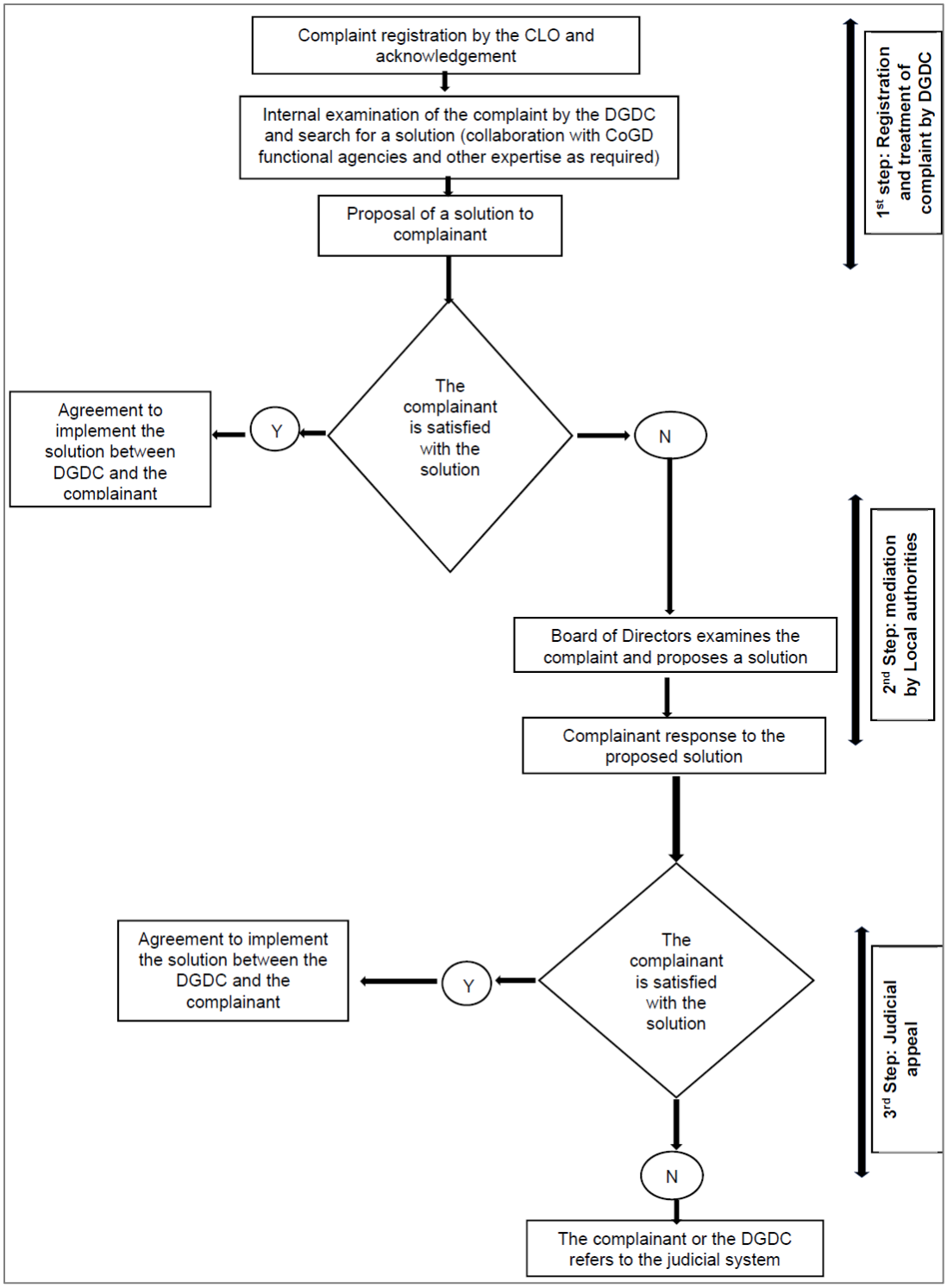


Figure 12-2: DGDC's Grievance Flow Chart

Once the suggestions and/or complaints have been received, the CLO will complete the Communication Report and the information collected regarding the complaint and/or suggestion will be captured in the External GM Database to register the complaints and/or suggestions.

If the claim is readily resolvable (e.g., a request that can be immediately granted or an easy solution can be applied without an investigation process), the person from the CLO receiving the claim takes action to address the issue directly and records the details in the External GM Database. If the claim subject is considered sensitive by the claimant (e.g., in cases regarding abuse, sexual harassment, or other forms of gender-based violence), a special point of contact with adequate training will be provided from the Ministry of Social Services through the office of the HR Manager. , . The claimant will have the option to talk to a point person of their same gender, if requested. The approach to these claims should be in line with the survivor-centered approach detailed by the WB and IDB: “The survivor-centered approach is based on a set of principles and skills designed to guide professionals—regardless of their role—in their engagement with survivors (predominantly women and girls but also men and boys) who have experienced sexual or other forms of violence. The survivor-centered approach aims to create a supportive environment in which the survivor’s interests are respected and prioritized, and in which the survivor is treated with dignity and respect. The approach helps to promote the survivor’s recovery and ability to identify and express needs and wishes, as well as to reinforce the survivor’s capacity to make decisions about possible interventions.” (The World Bank, Good Practice Note: Addressing Sexual Exploitation and Abuse and Sexual Harassment in Investment Project Financing involving Major Civil Works).

Claims will not be applicable in cases when:

1. It is not directly related to DGDC, its contractors, or subcontractors;
2. It is out of DGDC’s influence;
3. Its nature exceeds the scope of the present External Grievance Mechanism;

4.There are other formal mechanisms/institutions or community procedures more appropriate to address the issue.

When the claim is classified as non-applicable following the above criteria, DGDC will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, DGDC will provide information to help them redirect their claim to the right institution or party.

The External Grievance Database is updated weekly to reflect the current state of the claim until the claim has been resolved according to the claimant. Reception of the claim will be acknowledged within ten (10) days after the claim is received. If an investigation is needed, this will take up to 30 days (low risk claims), up to 15 days (medium risk claims) and 5 days (high risk claims).

The Project will provide a means by which all external stakeholders will be able to raise anonymous complaints. This gives the most vulnerable members of the affected communities, the confidence that they will not be retaliated against for raising concerns and can be fundamental to shifting power dynamics in between the Project and the communities. Therefore, in case of an anonymous case, the resolution will be published on a visible and accessible notice board at the Community Center.

12.3.4.1 Review, Analysis and Investigation

Once the complaints have been filed, the review, analysis and investigation process will unfold as follows:

1. The CLO will collect on a weekly basis the complaints presented, whether submitted physically or via website, and will review the nature of the complaint, as well as the company's departments potentially involved;
2. The CLO will make an initial assessment of severity in coordination with the H&S Manager, if necessary. The grievances will be classified in four categories:

Table 12.3 Classification of Grievances

Classification	Risk Level	Validity	Response
Non-Admissible	None	Unsubstantiated	CLO will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, provide information to help them redirect their claim to the right institution or party.
Low	No or low	Unsubstantiated	CLO will conduct investigation, document findings and provide a response
Medium	Possible risk and likely a one-off event	Possible substantiation	CLO and an appropriate investigation team will conduct investigation. The Site Manager or Occupation Health and Safety Manager may decide to stop work during the investigation to allow the corrective preventive actions to be determined. The CLO will provide a response.
High	Probable risk and could reoccur	Probable substantiation	CLO will get the contractor to organise a Major Investigation Team including DGDC and GoCD for prompt investigation and resolution. Work will be stopped in the affected area. The CLO will provide a response.

a. Non-Admissible (e.g. claims that are not directly related to the Project, its contractors or subcontractors, out of DGDC's influence);

b. **Low Risk** (e.g. claims that do not require resolution per se, but instead only require information or a certain clarification to be provided to the claimant. If there are recurring complaints that have been previously received and addressed by the Project, DGDC will reconsider elevating the importance of the complaint, as this might be a sign that the response to the grievance has been insufficient or inadequate);

c. Medium Risk (e.g. claims that require resolution and are related to minor risks associated with health, the environment, construction, transportation, and external stakeholders. Although important, they do not pose an immediate risk); and

d. **High Risk** (e.g. claims related to the security and safety of the community stakeholders, as well of those that, according to criteria of the Community Relations team, require immediate response as the claim poses an immediate major health and safety risk or a risk to an individual, to a large or small group or several groups of stakeholders. This includes claims regarding illegal and abusive activities).

3. The CLO will prepare the Communication Report that includes the information listed below:

   a. Internal tracking folio number provided to the claimant;

   b. Type of feedback,

   c. Area potentially involved;

   d. Claimant's information (In case the grievance is not anonymous);

   e. Date the complaint or suggestion was originated;

   f. Grievance Risk Category (Low, Medium or High);

   g. Brief description of the complaint or suggestion;

   h. Area responsible for monitoring and solution;

   i. Recommended solution; and

   j. Term of resolution.

Once the claim has been reviewed, the investigation must be carried out in the first instance by the CLO. In case the feedback transcends and involves more areas of the Project, the suggestions and/or complaints will also be channeled to the Project Manager and the HR Manager, as appropriate, to coordinate resolution with the departments involved, depending on the scope of each, and to determine the actions to follow.

Regardless of the categorization of the claim, the claimant must always be informed that her or his grievance has been received and it is being investigated. The answer must be given in written and/or verbal form, in a clear and precise language, preferably respecting the claimant's language. In cases where the complaint is anonymous, the response will be published at the Project's Community Relations Office/Community Centre. The deadline for the resolution of a complaint or claim is according to the categories is presented in the table above.

In high-risk situations, where there is a possibility of serious danger (e.g., death, sexual harassment), DGDC will consider involving other member teams to weigh in on the resolution strategy. In these type of cases, an alternative timeline will be established for addressing and involving third parties as needed, such as police and hospitals. The Project will always protect the confidentiality of the claimant. The special procedure for High Risk Claims is described below.

1. The claim enters an expedited process for investigation and resolution by the CLO and if applicable, the Major Investigation Team, when appropriate.
2. The Major Investigation Team initiates the investigation immediately and coordinates with local authorities to appropriately address the matter for claims related to allegations of illegal or abusive acts.
3. The CLO meets the claimant to gather additional information as necessary. Subsequently, he or she investigates the claim (e.g., meets with members of the security team involved in the claim), develops, and implements corrective actions in collaboration with other project staff, as necessary.
4. If both the CLO and other staff involved in the resolution of the claim are all the same gender, and the claimant prefers to speak to a person of his or her same gender, DGDC will facilitate this request. This option will be disseminated when disclosing the procedure. If additional investigations are needed, these are promptly undertaken.

The CLO will log the receipt of a comment, formally acknowledge it, track progress on its investigation and resolution, and respond in writing with feedback to the aggrieved party. They will initiate the investigation and ensure its speedy conclusion aiming to provide a response with ten (10) working days, unless there are exceptional circumstances. If the Project receives a large number of unsubstantiated grievances, the process will be reviewed to define instances when no response is needed.

If the person responsible of the claim is not able to obtain a resolution within 10 days of the reception of the claim, he or she submits the claim to the CLO, who notifies and seeks advice from the Safeguards Manager.

Where investigations are required, Project staff and outside authorities as appropriate will assist with the process. The CLO will collaborate with GoCD to identify an appropriate investigation team with the correct skills to review the issue raised and to decide whether it is Project related or whether it is more appropriately addressed by a relevant authority outside the Project.

The investigation will also aim to identify whether the incident leading to the grievance is a singular occurrence or likely to reoccur. Identifying and implementing activities, procedures, equipment and training to address and prevent reoccurrence will be part of the investigation activities. In some cases, it will be appropriate for the CLO to follow up at a later date to see if the person or organization is satisfied with the resolution or remedial actions.

Before the final resolution is issued, the agreed resolution will be reviewed by the claimant, or his or her worker representative, and will confirm his or her agreement with the solution proposed.

12.3.4.2 Resolution

Once the complaints have been categorized and reviewed, the resolution and closure process will unfold as follows:

1. The first step for the resolution is the determination of the timeframe and its inclusion in the registration file previously elaborated.
2. The claim will be discussed by the CLO, and if necessary, the managers of the areas involved. In the case of complaints related to allegations of illegal or abusive acts, the Project will immediately initiate the investigation to adequately address the matter. Based on the investigation, the complaint may or may not proceed.
3. Depending on the risk category, the approach will be defined. The CLO, together with a representative of the Legal Area will evaluate and determine the origin of the complaint and define the measures to be taken in response. All responses must be signed by the ESG Manager before being communicated to the employee and/or interested parties.
4. If the complaint is not admissible, the claimant will be notified.
5. The CLO and the Managing Director will have performed an analysis of all the viable resolutions, seeking to, at all times, provide solutions that respond to the claimant, from a position of dialogue and respect. A complaint will be dismissed only when all the instances of solution have been exhausted, explaining in writing to the claimant, in a clear and indubitable manner, the reasons for the refusal on the resolution of the complaint.
6. All documentation issued during the process by the company to interested parties must be sent by email or written notification. In any case, the answer must have the corresponding record (the folio of complaint or suggestion) and will be properly archived as part of the process.

12.3.4.3 Right to Appeal

If an external stakeholder who is not satisfied with the procedure or resolution, she or he can contest DGDC's decision. The claimant will have a maximum period of fifteen (15) business days to express any disagreement with the response and appeal it. Once the deadline has elapsed and there are no new grounds for complaint, the process will be considered closed.

In the event that a claimant wishes to challenge/appeal DGDC's decision or propose a counter offer, the Board of Directors will decide whether DGDC can resolve the dispute or it is necessary to involve a third party (e.g. a mediator, technical expert, local authority, or ombudsman) to reach an agreement between the parties and resolve the dispute. The claimant will always have the right to seek other legal or administrative resources. The last resort will be the national judicial process.

When a resolution agreement is established, both parties, the Head of Safeguards acting as the representative of DGDC and the claimant, will sign it in writing. Once the solution is implemented, both parties in recognition of compliance with the agreement will sign a compliance agreement again.

12.3.4.4 Evaluation and Follow Up

It is the responsibility of the CLO to follow up on all responses to suggestions and/or complaints in written and/or verbal form, especially those of medium and high priority, so as to confirm that the response given to the interest group was adequate, given the circumstances and criteria applicable at the time of filing the

complaint. The External GM Database is used to follow up each claim until is resolved and closed. Both a grievance and commitments register is kept by DGDC.

12.4 Confidentiality and Protection from Retaliation

The Project is committed to protecting the identity of claimants and anyone else involved in the claim, and to handling personal information in accordance with legal requirements. This duty extends to all employees and representatives of DGDC, its contractors and community members who participate in the External Grievance Mechanism process.

Information about a claim is shared within the company on a need-to-know basis and only to the extent necessary to complete the steps in this directive. DGDC will not share personal information with third parties unless required by law or authorized by the claimant.

When a claim relates to a specific DGDC or contractor employee, that person cannot play a role in the External Grievance Mechanism process in order to prevent conflicts of interest.

DGDC does not tolerate retaliation against claimants, be they an employee, contractor or external stakeholder. When concerns about retaliation are raised, Human Resources/ CLO is responsible for leading an investigation into the alleged retaliation under DGDC's Human Resources Policy and Code of Conduct.

12.5 Documentation and Monitoring

Weekly during construction and bi-annually during operation, the CLO will send the External GM Database to the Project Manager with information on the feedback received through a consolidated report showing the status of each claim and its indicators, removing identification information to protect the confidentiality of the complainant and guaranteeing anonymity.

This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

The External Grievance Mechanism Plan will be reviewed annually, however, if required, the mechanism could be updated as necessary. It will also ensure that contractors update their procedures at least once a year.

12.6 Key Performance Indicators

The table below present the key performance indicators that will evaluate the implementation of this plan:

Table 12.4 Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Method/Tool/ Frequency
GM attainment	DGDC will review the External Grievance Database, including complaints closed and those unresolved. Number of grievances received per month versus number of grievances resolved.	100% of grievances resolved within the established GM timeframe	External Grievance Mechanism Database and CLO / Quarterly
GM time efficiency	DGDC will review the External Grievance Database, especially the number of days between the grievances submission until its resolution and closure to calculate	Max. 10 days	External Grievance Mechanism Database and CLO / Quarterly

Impact	Indicator	Performance Goals/ KPIs	Method/Tool/ Frequency
	the average length of time needed to resolve grievances.		
GM Focus/ Risk Areas	DGDC will review the External Grievance Database and if necessary talk to the Community Relations Team to breakdown the grievances topics (e.g. health, safety, etc.) and grievance source	Resolve 100% of grievances from all sources and about all topics. Disseminate information regarding the different solutions when there are recurrent complaints in order to decrease recurrent grievances.	External Grievance Mechanism Database and CLO / Quarterly
Method of grievance reporting	DGDC will review the External Grievance Database and engage with community members to check the use and success of the different grievance reporting methods (e.g., number of grievances received by phone, at the office, website, and boxes).	100% of reporting methods will be functional and accessible at all times.	CLO / Quarterly
GM dissemination	DGDC will monitor all GM informational documents, meetings, and events where the GM was disclosed and explained to the affected communities.	GM dissemination of information in at least 70% of disclosure of information events, consultations and other activities, within each of the stakeholder groups and communities.	CLO Records / Quarterly

13. MONITORING AND EVALUATION

13.1 Monitoring Objectives

Monitoring and evaluation are essential components of the RAP process. The objective is to provide feedback and to identify problems and successes as early as possible to allow for timely adjustment to implementation arrangements as needed. Monitoring and evaluation activities need to be integrated into the overall Project management process and a comprehensive monitoring plan that identifies the organizational responsibilities, methodology, and the schedule for monitoring and reporting must be developed for the RAP. For a full list of monitoring and evaluation objectives, see Appendix C.

The monitoring and evaluation process includes the following objectives:

- Monitoring of specific situations or difficulties arising from the implementation of the RAP or compliance with its objectives; and
- Evaluation of the mid- and long-term impacts of the RAP on affected households' livelihood, environment, local capacities, on economic development and settlement.

Monitoring aims to correct implementation methods during the course of the Project, as required, while evaluation is intended at checking whether policies have been complied with and provides lessons learnt for amending strategies from a longer-term

13.2 Monitoring Indicators

Monitoring will address the following aspects:

- Socioeconomic monitoring: follow-up of the welfare/status of the PAPs including regular survey of current income and cost of living, re-establishment of property, residence and livelihoods and other economic activities;
- Grievances and grievance management system including any issues to be resolved; and
- Assistance in livelihood restoration including any unforeseen costs/challenges such as transport or other costs.

The monitoring and evaluation measures put in place are designed to ensure that the implementation of the RAP is carried out in accordance with the relevant requirements of the WBG, IDB, CDB and IFC as well as national requirements.

Measuring progress and impacts related to the aspects described above would be based on the following indicators:

- Livelihoods would be measured through a quantitative income or expenditure survey;
- Use of capital will be reviewed via interviews and receipts to determine livelihood sustainability; and
- Qualitative indicators measuring perception and well-being of PAPs.

13.3 Monitoring Process

The DGDC Safeguards Specialist will undertake monitoring of the RAP implementation. Bi-monthly progress reports will be prepared for up to two years from the finalization of implementation. The monitoring will consider the timeline of the process, outcomes of compensation/livelihood restoration and any other impacts that occur as part of the process. The RAP implementation schedule is shown in Table 12-1.

Table 6 RAP Implementation Schedule

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TASKS	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8
Completion of RAP								
Approval of RAP/Community Consultation								
Implementation of RAP								
Payment of Compensation to PAPs								
DGDC Site Clearance								
Grievance Mechanisms and Procedures Implemented								
Construction Begins								
Performance Monitoring								
External Evaluations (up to two years)								

13.4 Evaluation Objectives

Evaluation is a key step to ensure that the RAP process is being completed in line with WBG / IFC policies. The evaluation of the RAP will have the following specific objectives:

- Assessment of the compliance of the implementation of resettlement, relocation and livelihood restoration activities with objectives and methods as set out in this RAP;
- Assessment of the compliance of the implementation of the RAP process with laws, regulations and safeguard policies as stated above;
- Assessment of compensation procedures as they have been implemented;

- Evaluation of the impact of the resettlement, relocation and livelihood restoration process on incomes and standard of living, with focus on the requirement that PAPs income are restored or improved; and
- Identification of actions to take to improve the positive impacts of the programme and mitigate its possible negative impacts, if any.

13.5 Evaluation Process

DGDC will use an independent consultant (Evaluator) to conduct an annual evaluation starting six months after implementation of the RAP to evaluate compliance with objectives, procedures, policies, laws and regulations. The Evaluator will be an independent consultant with experience in the conduct of resettlement and livelihood restoration planning. The Evaluator will be carefully chosen on the basis of hands on experience, no previous involvement in the Project, and proven ability to identify actions that improve implementation and mitigate negative impacts of economic displacement.

The RAP implementation will be evaluated against the requirements of the RAP. These criteria will likely include access to employment, income, food security livelihood restoration and enterprise, and health and nutrition. The grievance management system will also be evaluated for its effectiveness. This evaluation will also verify that compensation payments have been made as promised, have been properly processed, and recommendations are being implemented. The schedule for independent evaluation of RAP implementation is six months following completion of RAP implementation. The evaluation will be repeated each year for 2 years following the finalization of implementation.

14. BUDGET AND SCHEDULE

It is essential that all costs be estimated carefully and included in the detailed RAP budget. DGDC have itemized resettlement costs by categories of impact, additional entitlements and other resettlement expenditures including training, coordination, and monitoring. The results are presented in a tabular form below that illustrates expenditures over the life of the Project. Costs included are:

- Resettlement plan preparation consultancy;
- Cash compensation for land;
- Cash compensation for crops, trees, or livestock;
- Compensation for structures;
- Livelihood restoration measure costs;
- Conflict resolution; and
- Monitoring, evaluation and auditing costs.

The estimated RAP budget is presented in Table 13-1. These costs are indicative and consultant fees will need to be verified.

Table 7: Estimated RAP Budget

ITEM	Description	COST USD*
1	Land Acquisition Compensation	662,811
2	Structural Compensation	47,295
3	Tree/Crop Compensation	27511
4.	Livelihood Restoration	100,000
5	Vulnerable Assistance (1 year)	10,000[21]
Sub-total		***847,617***
6	Program Development, Management and Grievances	2,000
7	Community Consultation and Engagement	4,000
8	External Evaluation	10,000 (2 years)
Sub-total		***16,000***
TOTAL		***863,617***

**USD Conversion Rates based upon exchange rate of 1 ECD =0.37 USD as of December 2020*

[21] Estimated as some vulnerable owners wouldn't declare income.

15. REFERENCES

Commonwealth of Dominica, Land Acquisition Act Chapter 53:02

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NPC (2011). Macroeconomic Impacts of the Domestic Oil & Gas Industry, September 15, 2011 (PWC multipliers used).

World Bank Group (2001) Involuntary Resettlement Policy Operational Policy (OP) 4.12

World Bank Group (2006). Physical Cultural Resources Operational Policy (OP) 4.11

Central Intelligence Agency World Factbook Website (2017). [Accessed at https://www.cia.gov/library/publications/the-world-factbook/geos/do.html in April 2018]

Post Disaster Needs Assessment Hurricane Maria, September 18 2017, Government of the Commonwealth of Dominica.

APPENDIX A ASSETS INVENTORY – PHYSICAL STRUCTURES

Figure A-1: Potential Residential Structure (currently Goat/Sheep Shed) A1

Figure A-2: Rabbit Hutch Structure A2

Figure A-3: Residential Structure B1

Figure A-4: Residential Structure Incomplete C3

APPENDIX B BASIS OF VALUATION

Lands

Lands are valued at replacement cost by the Property Valuations Unit (PVU) of the Department of Lands & Surveys using the following approach:

Market Value + transactions cost

Market Value is defined as 'the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction after property marketing and where the parties had each acted knowledgeably, prudently and without compulsion'.

- Each property is seen as unique;
- Inspection of each property is done and evaluated using the following factors:
  - Services;
  - Access;
  - Topography;
  - Land use;
  - Market (supply & demand); and
  - Size.

Transaction Cost include all fees and costs associated with the transaction. These include:

- Assurance Fund – 1%
- Judicial Fee – $2^{1/2}$ %
- Stamp Duty – 4%
- Solicitor's Fees – 3%
- Vendor's Fees – 3%

In instances where properties are acquired by the Government, provision is made in the Land Acquisition Surveyors fees and other costs incurred are also paid.

Structures

The valuation of structures is driven by the market. Given that underdeveloped nature of market forces in Dominica, the PVU uses a 'cost of construction' approach. A full inspection of the structure is done by experienced officers of the unit and the following factors taken into account:

- Age of structure;
- Quality of finishing; and
- Type of structure i.e. intended use and materials used in construction.

Present rates used by the PVU range from EC$250-$275 per square foot. Straight line depreciation (age of building/anticipated life) is applied.

Crops

Crop valuation is done by officers of the Extension Unit of the Ministry of Agriculture using a combination of the following:

- Cost of Production of a crop;
- Appearance of crop
- Selling price at time of valuation; and
- Bearing Capacity.

Therefore:

- Cost of Production

An assessment is done to ascertain what stage in the production cycle the affected crops are at and known costs are apportioned based on field size and location. Activities include land clearing, ploughing and hoeing, planting, weed control & fertilizing, pest and disease management, transportation, harvesting, and marketing. This method is best employed when farm records exist.

- Selling Price at time of valuation

Where insufficient records exist, crops are valued at a reasonable/average selling price of the finished product at the time of valuation.

- Bearing Capacity

In addition to costs of production, the valuation considers the number of years/cycles for which the farmer could have reasonably expected to gain returns from the current crop.

Crops are classified e.g.

A. Musa Species
    a. Bananas
    b. Plantains

B. Tree Crops
    a. Citrus – grapefruit, oranges, limes, easy peelers
    b. Coconut

C. Roots and Tubers
    a. Dasheen
    b. Ginger

One of the following two formulas are used in the valuation:

I. For non-bearing crops

Crop value = establishment cost + the sum of maintenance cost during development stage

$$CV = EC + MC$$

II. For bearing crops

Crop value = farm price * estimated marketable yield * age of crop till replacement (sustained production)

$$CV = FP * EMY * ATR$$

Actual Unit Costs for Crops for PAPs

Name of Crop	Plant Bearing Unit Cost EC$	Non-Bearing Unit Cost EC$
Banana	8	3
Dasheen	3	1
Grapefruit	100-200	
Sweet Orange	150-200	
Seville Orange	125	
Mango	150	
Coffee	100	50
Lauriere(Lumber)	98.4	
Ortanique	150	
Tangerine	125	
Coconut	175	75
Guava	50	
WI Lime	100	
Lemon	175	
Avacado	150	
Sugar Apple	75	
Pomerack	50	
Karapit	4/bf*	
Bois Bander	5/bf*	
Pipiwi	3/bf*	
Gommier	4/bf*	

*board foot

APPENDIX C COMPLETION AUDIT TABLE OF CONTENTS

1. Executive Summary: Concise summary of resettlement undertaken to date, need for any on-going resettlement, magnitude of displacement, activities undertaken, grievances and key issues addressed, outstanding and on-going monitoring and evaluation processes and key recommendations.
2. Background: A brief description of the monitoring process to date covering the project and impacted communities, magnitude of displacement, key resettlement and livelihood impacts, legal framework, eligibility criteria and entitlement framework, timing of the various components of physical and economic displacement undertaken, resettlement and/or livelihood restoration activities and compensation provided and major or outstanding issues or grievances.
3. Review Objectives: Outline of the main objectives of the resettlement and/or livelihood restoration plan and a summary of studies and activities undertaken in support of resettlement implementation and livelihood restoration (e.g., preliminary and on-going consultation, stakeholder mapping and census surveys, asset surveys, socio-economic baseline studies, participatory planning meetings, site selection studies, organizational structures for implementation), and assessment of the process and evaluation of the outcome (including any participatory monitoring and evaluation methodologies used).
4. Key Findings: Issues to be considered may include, among others:

   a. Extent of public information and consultation in advance of land acquisition, and adequacy of ongoing consultation;

   b. Types of compensation provided and adequacy of that compensation (e.g., sufficient to cover replacement costs of lost assets, housing conditions, compensation/entitlements, income restoration and livelihood sustainability measures);

   c. Level of participation of affected people in decisions regarding compensation rates, location of new resettlement sites and options for livelihood restoration;

   d. Adequacy of replacement housing in terms of physical structure, location, and access to resources and services (such as health, education, water and sanitation, transportation, social and medical security, agricultural and pastoral land, employment opportunities and training and community development initiatives);

   e. Effectiveness of livelihood restoration measures;

   f. Integration into host communities;

   g. Impact on cultural property;

   h. Measures taken to protect (affected) vulnerable persons and groups;

   i. Adequacy of the grievance redress process and outcomes; and

   j. Monitoring and evaluation process and outcomes.
5. Conclusion and Key Recommendations/Corrective Actions: Concise summary of conclusions and recommendations, and for any gaps or outstanding issues, provide a proposed time bound Corrective Action Plan with Key Actions, dedicated Human Resources, proposed Timeline for closeout and a Budget.

APPENDIX D LAND ACQUISITION ACT, CHAPTER 53:02

LAND ACQUISITION ACT

CHAPTER 53:02

Act
7 of 1946
Amended by
27 of 1966
9 of 1971
7 of 1986

Current Authorised Pages

Pages (inclusive)	*Authorised by L.R.O.*
1-20	*1/1991*

Note
on
Subsidiary Legislation

This Chapter contains no Subsidiary Legislation.

CHAPTER 53:02

LAND ACQUISITION ACT

ARRANGEMENT OF SECTIONS

SECTION

1. Short title.

INTERPRETATION

2. Interpretation.

ACQUISITION OF LAND AND ABANDONMENT OF ACQUISITION

3. Acquisition of land.
4. Preliminary notification and power to enter land.
5. Power to apply land to purposes of acquisition without waiting for formal vesting.
6. Authorised officer to treat with landowner.
7. Boundaries of land and issue of notice of acquisition.
8. Authorised officer may require information as to interests in land.
9. Claim of person interested to have land acquired or abandoned.
10. Abandonment of acquisition.

APPOINTMENT AND POWERS OF BOARD OF ASSESSMENT

11. Determination of questions by board of assessment.
12. Appointment of board of assessment.
13. Documents etc., to be forwarded to the Board.
14. Inquiry by Board.
15. Procedure at inquiry.
16. Power of entry for purposes of inquiry.
17. Award of Board.

SECTION

DETERMINATION OF SMALL CLAIMS FOR COMPENSATION

18. Procedure where claim for compensation does not exceed certain amounts.

PROVISIONS GOVERNING ASSESSMENT OF COMPENSATION, ETC.

19. Rules for assessment of compensation.
20. Special rules as to severance.
21. Interest.
22. Rules as to costs.

MISCELLANEOUS

23. Absentee owners.
24. Compensation to persons interested in adjacent land.
25. Special provisions as to leases.
26. Persons in possession to be deemed owners.
27. Fees and expenses of Board.
28. Conveyancing, etc., cost to be paid by authorised officer.
29. Payment of compensation, etc.
30. Exemption from stamp duty and fees.
31. Limitation of time for making claims.
32. Assaulting or obstructing officer.
33. Saving.

CHAPTER 53:02

LAND ACQUISITION ACT

AN ACT to authorise the acquisition of land for public purposes. 1961 Ed. Cap. 170. 7 of 1946.

[3rd June 1946] Commencement.

1. This Act may be cited as the – Short title.

LAND ACQUISITION ACT.

INTERPRETATION

2. (1) In this Act – Interpretation [7 of 1986].

"authorised officer" means any person who may from time to time be appointed as such by the Minister for the purposes of this Act;

"land" includes messuages, tenements and hereditaments corporeal or incorporeal, and immovable property of every tenure of description, whatever may be the estate or interest therein;

"person interested" means every person claiming or entitled to claim compensation under this Act; but a tenant by the month or at will is not a person interested for the purposes of this Act.

(2) For the avoidance of doubt it is hereby declared that the expression "public purpose" in this Act includes the purpose of fulfilling any obligation of the Government under any treaty or agreement made by the Government with the Government of any other country, territory or place, and any purpose pertaining or ancillary thereto.

ACQUISITION OF LAND AND ABANDONMENT OF ACQUISITION

3. (1) If the Minister considers that any land should be acquired for a public purpose he may cause a declaration to that effect to be made in the manner provided by this section, and the declaration shall be conclusive evidence that the land to which it relates is required for a public purpose. Acquisition of land.

(2) Every declaration shall be published in two ordinary issues of the *Gazette* and a copy thereof, prior to the publication shall be served on the owner or occupier of the land to be acquired, and should the owner or occupier after diligent inquiry not be found within the State, it shall be posted on one of the buildings (if any) on the land or exhibited at suitable places in the locality in which the land is situated, and in the declaration shall be specified the following particulars to the land which is to be acquired:

(a) the parish or district in which the land is situated;

(b) a description of the land, giving the approximate area and such other particulars as are necessary to identify the land;

(c) in cases where a plan has been prepared, the place where, and the time when, a plan of the land can be inspected;

(d) the public purpose for which the land is required.

(3) Upon the second publication of the declaration in the *Gazette* the land shall vest absolutely in the State.

(4) Nothing in this section shall be deemed to prevent the acquisition of lands for public purposes by private treaty.

Preliminary notification and power to enter land.

4. If it appears to the Minister that any land is likely to be required for any purpose which in the opinion of the Minister is a public purpose and it is necessary to make a preliminary survey or other investigation of the land, he may cause a notification to that effect to be published in the *Gazette*, and thereupon it shall be lawful for the authorised officer (and his agents, assistants and workmen) to do all or any of the following things:

(a) to enter upon and survey and take levels of any land in any locality to which the notification relates;

(b) to dig or bore into the subsoil of the land;

(c) to do all other acts necessary to ascertain whether the land is adapted to such purpose;

(d) to set out the boundaries of the land intended to be taken, and the intended line of work, if any, proposed to be done thereon;

(e) to mark levels and lines by placing marks and cutting trenches;

(f) where otherwise the survey cannot be completed, the levels taken or the boundaries or line of the work set out, to cut down and clear away any standing crop, fence, tree or bush;

(g) to do all such other acts as may be incidental to or necessary for any of the purposes aforesaid; but the authorised officer shall not enter into any building, or into or upon any enclosed yard, court, or garden attached to a dwelling-house, except at all reasonable hours and, except with the consent of the occupier thereof, without previously giving to the occupier at least seven days' notice in writing of his intention to do so. Compensation shall be assessed and paid to the persons interested in the land so entered for any actual damage or injury resulting to them by reason of the exercise of the powers conferred by this section –

(i) in so far as it relates to land the acquisition of which is subsequently deemed to be abandoned under section 9 or abandoned under section 10, as though it were compensation payable under this Act for the acquisition of the land;

(ii) in so far as it relates to land the compulsory acquisition of which is subsequently completed under section 3(1) as though it were part of the compensation for the acquisition of the land.

Power to apply land to purposes of acquisition without waiting for formal vesting.

5. If at any time after the publication of a notification in accordance with the provisions of section 4, it appears to the Minister that the land or some parcel of the land to which it refers should be acquired but that for any reason it is not possible to make an immediate declaration to that effect, the Minister may direct the authorised officer to do any work on the land or parcel thereof connected with the use to which the land is intended to be put on its acquisition, and thereupon the authorised officer may proceed with the execution of the work. Compensation shall be paid to the persons interested for any actual damage or injury resulting to them by reason of the exercise of the power conferred by this section and shall be determined in the same way as compensation for

actual damage or injury resulting from the exercise of the powers conferred by section 4.

Authorised officer to treat with landowner.

6. (1) As soon as any declaration has been published in accordance with the provisions of section 3, the authorised officer shall, without delay, enter into negotiations (or further negotiations) for the purchase of the land to which the declaration relates upon reasonable terms and conditions and by voluntary agreement with the owner of the land.

(2) It is not necessary for the authorised officer to await the publication of the declaration before he endeavours to ascertain from the owner the terms and conditions on which he is willing to sell his land, but no negotiations or agreement shall be deemed to be concluded unless and until the conditions of sale and acquisition have been approved in writing by the Minister.

Boundaries of land and issue of notice of acquisition.

7. (1) As soon as may be after any land has been acquired compulsorily, the authorised officer shall, if the boundaries of the land have not been set out or if they cannot be identified by reference to any plan, cause the same to be set out, and he shall also issue a notice of acquisition in accordance with this section.

(2) Every notice of acquisition under this section shall –

(a) state the decision of the Minister to acquire and take possession of the land compulsorily;

(b) contain the particulars which, in relation to the land, were included in the declaration provided for by section 3(2); and

(c) require all persons interested, as soon as is reasonably practicable, either –

(i) to appear personally or by attorney or agent before the authorised officer to state the nature of their respective interests in the land and the amounts and full particulars of their claims to compensation in respect of those interests, distinguishing the amounts under separate heads and showing how the amount claimed under each head is calculated; or

(ii) to render to the authorised officer a statement in

writing, signed by them or by their attorneys or agents, setting forth the like matters.

(3) The authorised officer shall cause a copy of the notice of acquisition to be served, either personally on, or by registered post addressed to the last known place of abode or business of, every person who is known or believed by the authorised officer to be entitled to compensation in respect of the acquisition, and whose whereabouts are known to the authorised officer; but where the whereabouts of any such person are not known, the authorised officer shall cause copies of the notice to be posted on one of the buildings (if any) on the land or exhibited at suitable places in the locality in which the land is situated.

(4) Any person who without lawful authority or excuse removes or destroys any landmark placed, or removes or defaces or destroys any notice posted or exhibited, by the authorised officer in or upon the land or any building thereon in accordance with the provisions of this Act, is liable on summary conviction to a fine of one thousand dollars or to imprisonment for three months.

Authorised officer may require information as to interests in land.

8. (1) The authorised officer may, by notice served personally, or by registered post addressed to the last known place of abode or business of the person concerned, require the owner or occupier of, or any person interested in, any land or in any part thereof, in respect of which a declaration or a notification has been published in the *Gazette* under section 3 or section 4 respectively, to deliver to him within a time to be specified in the notice, being not less than twenty-one days after service of the notice, a statement in writing containing, so far as may be within his own knowledge, the name of every person possessing any interest in the land, or any part thereof, whether as partner, mortgagee, lessee, tenant or otherwise, and the nature of the interest.

(2) Every person who is required to make and deliver a statement under this section and who, without reasonable excuse, refuses to make or deliver the statement, or wilfully makes any such statement which is false or incomplete in any material particular, is liable on summary conviction to a fine of one thousand dollars or to imprisonment for three months.

Claim of person interested to have land acquired or abandoned.

9. If within three months after entry has been made on any land under the provisions of section 4, the land is not acquired or abandoned, any person interested in the land or any part thereof may serve a notice on the authorised officer requiring that the acquisition of the land or part

thereof be completed or abandoned, and, if within one month thereafter, the acquisition of the land or part thereof is not completed or abandoned in accordance with the provisions of this Act, the acquisition of the land or part thereof shall be deemed to have been abandoned.

Abandonment of acquisition.

10. (1) At any time before any land has been acquired compulsorily the Minister may, by Notification published in the *Gazette*, declare that the intended acquisition of the land is abandoned.

(2) When the acquisition of any land is abandoned in accordance with the provisions of this section, or is deemed to have been abandoned under section 9, any compensation payable by virtue of this Act shall, in default of agreement, be assessed as though it was compensation payable under this Act for the acquisition of land.

(3) No compensation is payable in any case for loss of bargain or for damages for breach of contract.

APPOINTMENT AND POWERS OF BOARD OF ASSESSMENT

Determination of questions by board of assessment.

11. (1) All questions and claims relating to the payment of compensation under this Act and to the appointment of such compensation shall, save as is hereinafter provided, be submitted to a board of assessment to be appointed in each case in accordance with the provisions of section 12.

(2) A board of assessment shall have full power to assess, award and apportion compensation in such cases, in accordance with the provisions of this Act.

Appointment of board of assessment. [7 of 1986].

12. (1) As soon as it becomes necessary to do so the Minister shall cause a board of assessment (hereinafter referred to as "a Board" or "the Board") to be appointed.

(2) A Board for the purposes of this Act shall in every case be constituted of –

(a) a Chairman who shall be the Resident Judge or a person nominated by him from the panel established under subsection (3);

(b) a member to be appointed by the Minister provided always that the member so appointed shall not be a public officer;

(c) a member to be nominated by the owner of the land to be acquired provided that where in any case the Minister is satisfied that the owner of the land has refused to exercise his right to nominate a member of the Board, or has unreasonably delayed the nomination, or where the persons interested in the land have failed to agree upon the nomination, the Minister, by order in writing, may direct the Chairman to proceed with the inquiry notwithstanding that there has been no such nomination by the owner, and in every such case the Board shall be deemed to be lawfully constituted without the presence of such member, and, if there is any difference of opinion as to the amount of compensation that should be awarded, the decision of the Chairman shall be deemed to be the decision of the Board.

(3) The Resident Judge shall, for the purposes of this section, draw up and maintain a panel of not less than three persons appearing to him qualified to perform the functions of Chairman of the Board. He shall make appointments to the panel either of his own motion or on the application of the authorised officer and may request nominations for appointment from such persons and organisations as he may think fit.

(4) In this section, "the Resident Judge" means the Judge of the High Court assigned for duty to Dominica under section 16 of the Supreme Court Order. Ch. 4:01.

Documents etc., to be forwrded to the Board.

13. (1) Upon the appointment of a Board, or where proceedings are taken before a Magistrate for the determination of any question relating to the payment of compensation, the authorised officer shall forward to the Chairman, or to the Magistrate, as the case may be, those of the following documents and particulars which relate to the acquisition or the intended acquisition of the land, as the case may be:

(a) a copy of any Notification and declaration which has been published in the *Gazette*;

(b) a copy of the notice of acquisition;

(c) a copy of any notice issued or received by him;

(d) a copy of all statements received by him in compliance with any notice issued by him;

(e) the names and addresses of the persons who the authorised officer has reason to believe are interested in the land; and

(f) a copy of the report required by this section.

(2) The report to be sent to the Board shall state the opinion of the authorised officer, and his reasons for such opinion, upon each of the following matters:

(a) what is a fair and proper description of the land acquired, including particulars of any building, trees or standing crops thereon;

(b) the approximate acreage of the land;

(c) the value of the land, for the purposes of compensation under this Act;

(d) the amount of provisional compensation which should be paid for the land, including any damage payable in respect of entry into possession;

(e) the apportionment of the provisional compensation among the persons interested in the land, in respect of their interests.

(3) The authorised officer, in assessing the amount of any compensation for the purpose of a report under this section, shall have regard to the rules prescribed by this Act which may and may not be taken into consideration in assessing compensation.

Inquiry by Board.

14. Where a Board has been appointed under this Act, the Board shall hold an inquiry at a place, date and time to be fixed by the Chairman, of which not less than fourteen clear days' notice shall be given to the parties concerned, and every such inquiry shall be conducted in public.

Procedure at inquiry.

15. The procedure at an inquiry before a Board, the summoning and remuneration of witnesses for attendance thereat, and all questions incidental to the inquiry shall be governed by the provisions of the laws for the time being in force relating to civil proceedings in the High Court; but in the case of any doubt arising on any question of practice and procedure the same may be settled by the Chairman.

Power of entry for purposes of inquiry.

16. The Board, or any person authorised by them, may at any time before, during or after an inquiry under this Act, enter upon and inspect any land for any purpose connected with the inquiry.

Award of Board. [27 of 1966].

17. (1) At the conclusion of the inquiry the Board shall decide upon the claims for compensation and apportionments submitted to them and shall make an award under the hand of the Chairman who shall cause the same to be filed in the High Court.

(2) In case the Chairman and one or both of the members agree as to the amount of compensation, or as to the amount of any item, or in case the Chairman, as to any such amount awards any sum greater than the lower, and less than the greater of the amounts found by the members respectively, then the decision of the Chairman shall, subject to appeal as in this section provided, be recorded as the decision of the Board.

(3) In case the Chairman, as to the total amount of compensation, or as to the amount of any item, finds for a less sum than the smaller, or a greater sum than the greater, of the amounts found by the members respectively, then the decision of the Chairman shall, subject to appeal as herein provided, be entered as the decision of the Board.

(4) An appeal shall lie against the decision of the Board, and for the purposes of the appeal the decision of the Board shall be deemed to be a final judgment or decision of a Judge of the High Court sitting as a Court of first instance.

DETERMINATION OF SMALL CLAIMS FOR COMPENSATION

Procedure where claim for compensation does not exceed certain amounts. [7 of 1986].

18. (1) Notwithstanding anything in any Act to the contrary, in any case in which the compensation claimed does not exceed two thousand dollars, and in any case in which the compensation claimed does not exceed five thousand dollars and, in the latter case, the parties agree in writing to the settlement of the claim by a Magistrate, the amount of the compensation to be paid in any such case shall be determined by a Magistrate.

(2) Any Magistrate, upon the application of either party with respect to any question of disputed compensation in either of the cases mentioned in subsection (1), may summon the other party to appear

before him at a time and place to be named in the summons and to hear and determine the question of disputed compensation.

(3) For the purposes of any proceeding under this section –

(a) the procedure to be followed, the summoning and remuneration of witnesses, and all questions incidental to the proceeding shall be governed by any law for the time being in force in the State relating to the recovery of claims before a Magistrate, and all the provisions of any such law shall apply *mutatis mutandis* to any such proceeding; and

(b) the provisions of section 16, 19, 20, 21, 22 and 25 of this Act shall apply with such verbal alteration (not affecting the substance) as may be necessary to make the same applicable.

(4) An appeal shall lie against the determination by a Magistrate of any question of disputed compensation under this section in like manner as if the determination was given in the exercise of the summary jurisdiction of a Magistrate in a civil matter under the provisions of the Magistrate's Code of Procedure Act, and for the purposes of the appeal the determination of the Magistrate under this section shall be deemed to be a decision of the Magistrate within the meaning of section 141 of the said Act.

Ch. 4:20.

PROVISIONS GOVERNING ASSESSMENT OF COMPENSATION, ETC.

Rules for assessment of compensation.

19. Subject to the provisions of this Act the following rules shall apply to the assessment and award of compensation by a Board for the compulsory acquisition of land:

(a) the value of the land shall, subject as hereinafter provided, be taken to be the amount which the land, in its condition at the time of acquisition, if sold in the open market by a willing seller, might have been expected to have realised at a date twelve months prior to the date of the second publication in the *Gazette* of the declaration under section 3; but this rule shall not affect the assessment of compensation for any damage sustained by the person interested by reason of severance, or by reason

of the acquisition injuriously affecting his other property or his earnings, or for disturbance, or any other matter not directly based on the value of the land;

(b) the special suitability or adaptability of the land for any purpose shall not be taken into account if that purpose is a purpose to which the land could be applied only in pursuance of statutory powers not already granted, or for which there is no market apart from the special needs of a particular purchaser or the requirements of any Government department;

(c) where the value of the land is increased by reason of the use thereof or of any premises thereon in a manner which could be restrained by any court or is contrary to law or is detrimental to the health of the inmates of the premises or to public health, the amount of that increase shall not be taken into account;

(d) where land is, and but for the compulsory acquisition would continue to be, devoted to a purpose of such a nature that there is no general demand or market for land for that purpose, the compensation may, if the Board is satisfied that reinstatement in some other place is *bona fide* intended, be assessed on the basis of the reasonable cost of equivalent reinstatement;

(e) no allowance shall be made on account of –

(i) the acquisition being compulsory or the degree of urgency or necessity which has led to the acquisition;

(ii) any disinclination of the person interested to part with the land acquired;

(iii) any damage sustained by the person interested which, if caused by a private person, would not render such person liable to an action;

(iv) any damage, not being in the nature of deprivation of or interference with an easement, servitude or legal right, which, after the time of awarding compensation, is likely to be caused by or in consequence of the use to which the land acquired will be

put, but nothing herein shall prejudice any claim under this Act for damage subsequently sustained in consequence of the use to which the land acquired is put;

(v) any increase to the value of the land acquired likely to accrue from the use to which the land acquired will be put;

(vi) any outlay or improvement of the land which has been made, commenced or effected within twelve months before the publication of the declaration under section 3, with the intention of enhancing the compensation to be awarded therefor in the event of the land being acquired for public purposes.

Special rules as to severance.

20. As to severance, compensation may be assessed on the footing that any specified works, crossings or access agreed to on behalf of the Minister shall be erected, provided and allowed, and any such agreement shall be reduced into writing and be signed by the Chairman and shall be valid and effectual and binding on the parties.

Interest.

21. The Board, in awarding compensation, may add thereto interest at the rate of six per cent per annum, calculated from the date upon which the authorised officer entered into possession of the land acquired until the date of the payment of the compensation awarded by the Board.

Rules as to costs. [9 of 1971].

22. (1) The authorised officer shall pay to the claimant such reasonable costs as may have been incurred by him in or about the preparation and submission of his claim; but in no case shall an amount exceeding five hundred dollars be payable by the authorised officer, by way of costs to any claimant in respect of a claim made under this Act.

(2) Subject to the provisions of subsection (1), where an unconditional offer in writing of any amount as compensation has been made to any claimant by or on behalf of the authorised officer and the sum awarded as compensation does not exceed the amount offered, the Chairman shall, unless for special reasons he thinks it proper not to do so, order the claimant to bear his own costs and to pay the costs of the authorised officer so far as the costs of the authorised officer were incurred after the offer was made; and, where the claimant has failed to

put forward a proper claim in sufficient time to enable the authorised officer to make a proper offer, the foregoing provisions of this section shall apply as if an unconditional offer had been made by or on behalf of the authorised officer at the time when, in the opinion of the Board, a proper claim should have been put forward and the claimant had been awarded a sum not exceeding the amount of the offer.

(3) Subject to the provision of subsection (1), where a claimant has made an unconditional offer in writing to accept an amount as compensation and has put forward a proper claim in sufficient time to enable the authorised officer to make a proper offer, and the sum awarded is equal to or exceeds that amount, the Chairman shall, unless for special reasons he thinks it proper not to do so, order the authorised officer to bear his own costs and to pay the cost of the claimant so far as the costs of the claimant were incurred after the offer was made.

(4) Subject to the preceding provisions of this section, the costs shall be in the discretion of the Chairman who may direct to and by whom and in what manner those costs or any part thereof shall be paid, and he may in any case direct the costs to be taxed by the Registrar of the High Court.

(5) The mode of enforcing any order as to costs shall be in the manner prescribed by the practice of the High Court.

(6) Where the Chairman orders the claimant to pay the costs or any part of the costs of the authorised officer, the authorised officer may deduct the amount so payable by the claimant from the amount of any compensation which may be payable to him.

MISCELLANEOUS

Absentee owners.

23. (1) Where there is no person competent to alienate land or to receive or to give a sufficient discharge for any compensation awarded, or where any person interested in land, by reason of his absence from the State and of his not being represented therein by a duly authorised attorney, does not submit a statement to or appear before the authorised officer as required by section 7, and where such person after diligent inquiry cannot be found, the authorised officer shall pay the compensation into the High Court to the credit of the person entitled thereto.

(2) Any compensation paid into the High Court by virtue of this section may, on the subsequent application of any person claiming to be entitled thereto, be paid out to such person on the order of a Judge of the Court.

(3) All moneys paid into the High Court under the provisions of this section, which remain unclaimed for twelve years after the payment shall be transferred and paid into the Treasury as revenue and all legal claims thereto shall be forever barred.

Compensation to persons interested in adjacent land.

24. A person interested in any land which, without any portion thereof being compulsorily acquired, has been damaged by the erection or construction on land compulsorily acquired of any works in respect of which the land was acquired, is entitled to compensation in respect of the damage; but compensation shall not be payable under this section in respect of any damage which, if caused by a private person, would not render such person liable to an action.

Special provisions as to leases.

25. (1) If any land is comprised in a lease for a term of years unexpired and part only of the land is acquired compulsorily, the rent payable in respect of the land comprised in the lease may, on the application of the lessor or the lessee to a Judge of the High Court, be apportioned between the land acquired and the residue of the land.

(2) After the apportionment the lessee is, as to all future accruing rent, liable to pay only so much of the rent as is so apportioned in respect of the residue of the land, and as to the residue of the land, and as against the lessee, the lessor shall have all the same rights and remedies for the recovery of such portion of the rent as previously to the apportionment he had for the recovery of the whole rent reserved by the lease, and all the covenants, conditions, and agreements of the lease, except as to the amount of rent to be paid, shall remain in force with regard to the residue of the land in the same manner as they would have done in case the residue of the land only had been included in the lease.

(3) Where it is shown that the compulsory acquisition of a portion of land comprised in a lease has rendered the residue unsuitable for the purpose for which the land was leased or where in the circumstances the Judge considers it just to do so the Judge may rescind the lease altogether; and in such case the lessee is only liable to pay the rent due at the date of the occurrence of the circumstance on which the rescission order is based.

(4) Where as the result of the rescission of lease the lessor or lessee suffers any loss or injury he is entitled to compensation as hereinbefore provided in this Act.

Persons in possession to be deemed owners.

26. When any question arises touching the title of any person to any land which may be entered upon or acquired for the purposes of this Act, or touching any estate or interest therein, the person having the ostensible possession or enjoyment of the rents and profits of the land shall, for the purposes of this Act, be deemed to be the owner of the same until the contrary is proved.

Fees and expenses of Board.

27. (1) Every assessor shall receive for his services such fee as the Minister, on the recommendation of the Chairman, may direct.

(2) The Minister may also authorise the reimbursement of the travelling and subsistence expenses incurred by the Chairman and members of a Board appointed under this Act.

Coveyancing, etc., cost to be paid by authorised officer.

28. All reasonable costs, charges, and expenses incurred by the owners of the land or persons interested therein for all conveyances and assurances of any lands purchased or acquired, and of any outstanding terms of interest therein, and of deducing, evidencing and producing title to such lands, terms and interest, and of making out such abstracts and attested copies as the authorised officer may require, shall be paid by the authorised officer.

Payment of compensation, etc.

29. All amounts which have been awarded by way of compensation under this Act, including interests and costs to be paid by the authorised officer, and all other costs, charges and expenses which are incurred under the authority of this Act, shall be paid out of the Consolidated Fund of the State on the warrant of the Minister.

Exemption from stamp duty and fees.

30. Notwithstanding anything in any Act to the contrary, no instrument or document relating to anything lawfully done under, or for the purposes of this Act, is chargeable with any stamp duty, registration or recording fee.

Limitation of time for making claims.

31. Except with the approval of the Minister in any case in which he considers that injustice may otherwise be done, no claim for compensation which may be made under the provisions of this Act shall be admitted or entertained unless the claim is made within twelve months after the date on which entry has been made on the land under section 4 or, if a declaration has been made under section 3, within a similar period after the date of the second publication of the declaration.

Assaulting or obstructing officer.

32. Any person who –

(a) assaults or obstructs or aids and abets any person in assaulting or obstructing the authorised officer or any of his agents, assistants or workmen in the execution of his or their duty under this Act; or

(b) opposes or impedes the lawful occupation or taking of possession of any land under this Act,

is liable on summary conviction, to a fine of three thousand dollars or to imprisonment for three months.

Saving. L.I. Cap. 91, 1927 Rev.

33. The repeal of the Acquisition of Land Act effected by this Act shall not prejudice or affect –

(a) the operation of any resolution, direction, notice or order issued or made before the coming into operation of this Act under the Act hereby repealed; and

(b) any action, suit, matter or proceeding, or any transaction commenced and pending before the coming into operation of this Act under the Act hereby repealed.

APPENDIX C PUBLIC CONSULTATION REPORT

Appendix C

Public Consultation held on March 16, 2021

Proposed Dominica Geothermal Development

May 2021

Project No.: 0531607

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1. Public Consultation

People have a right to be consulted. According to the IDB's Guidelines on Consultation and Stakeholder Engagement in IDB Projects, "people should be able to receive accurate, comprehensible information about the objectives, scope, timing and potential impacts and risks associated with a project. It means that they will be given the opportunity to express their concerns, fears, and doubts, will be allowed to share their knowledge, insights, and understanding, and will be able to recommend modifications or changes in the operation. It also means that their concerns, fears and recommendations will be seriously considered and, wherever possible, addressed" (IDB, July 2013[1]).

Dominica Geothermal Development Company (DGDC), with financial support from various partners, is planning to construct a 10 MW Domestic Power plant. Dominica Electricity Services Limited (DOMLEC) is Dominica's privately owned electricity generation and distribution company, currently the sole generator and distributor (apart from some small scale solar installations) on the island. DGDC will sell geothermal energy to DOMLEC, who will distribute it to residents on the national grid.

In 2018, Jacobs New Zealand Limited (Jacobs) prepared an Environmental and Social Impact Assessment (ESIA) for the construction and operation of the Dominica Geothermal Project. The Project included the construction and operation of geothermal wells, reinjection systems and a geothermal power plant with a capacity of 7 MW and connection to the Dominica electrical grid and associated infrastructure. Following an unsuccessful procurement in November 2019, carried out by the Commonwealth of Dominica using World Bank financing and procurements rules, there has been subsequent design modifications (e.g., increase in capacity from 7 MW to 10 MW, the addition of a production well pad and well, and the relocation of the reinjection well pad and well; see Section 3.0). While the Jacobs ESIA was reviewed and approved by the World Bank in 2018, due to the design modifications and advances in the preparation for the construction, an additional ESIA was prepared in 2020 by ECLIPSE, Inc., that assessed the impacts of the relocation of the reinjection well, its pad, and reinjection pipeline. In February 2021, Environmental Resources Management (ERM) prepared an Addendum to the ESIA. The Addendum documents the extensive stakeholder engagement that has taken place prior to the Public Consultation. The Public Consultation for this Addendum was held via Zoom on March 16, 2021 at 9am. This report summarizes the results from the public consultation, includes an overview of participation in the consultation and provides evidence from the consultation process.

1.2 Public Consultation Objectives

The Public Consultation had two main objectives:

1) Present and Communicate the outcomes of the Project Update and Addendum; and

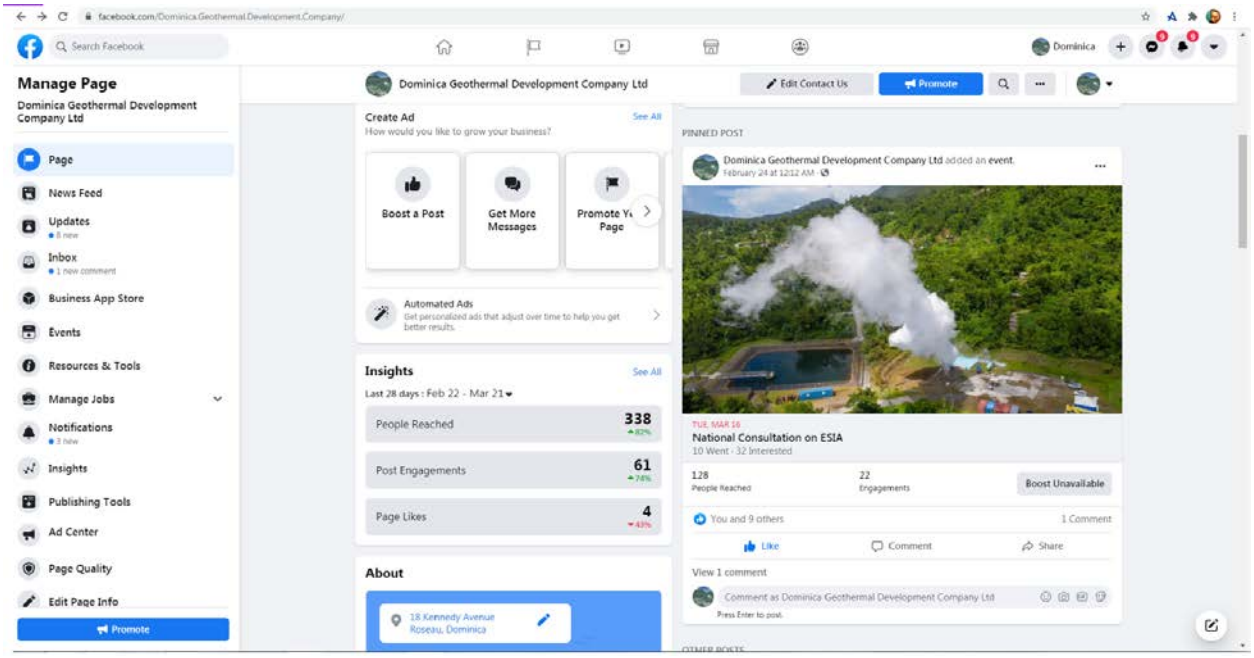
2) Share and hear the stakeholders' feedback, ideas, comments and opinions on the Project and its high-level impacts.

[1] Inter-American Development Bank, *Guidelines on Consultation and Stakeholder Engagement in IDB Projects*, July 2013. Available at: https://publications.iadb.org/publications/english/document/Guidelines-on-Consultation-and-Stakeholder-Engagement-in-IDB-Projects.pdf

1.3 Public Consultation Logistics

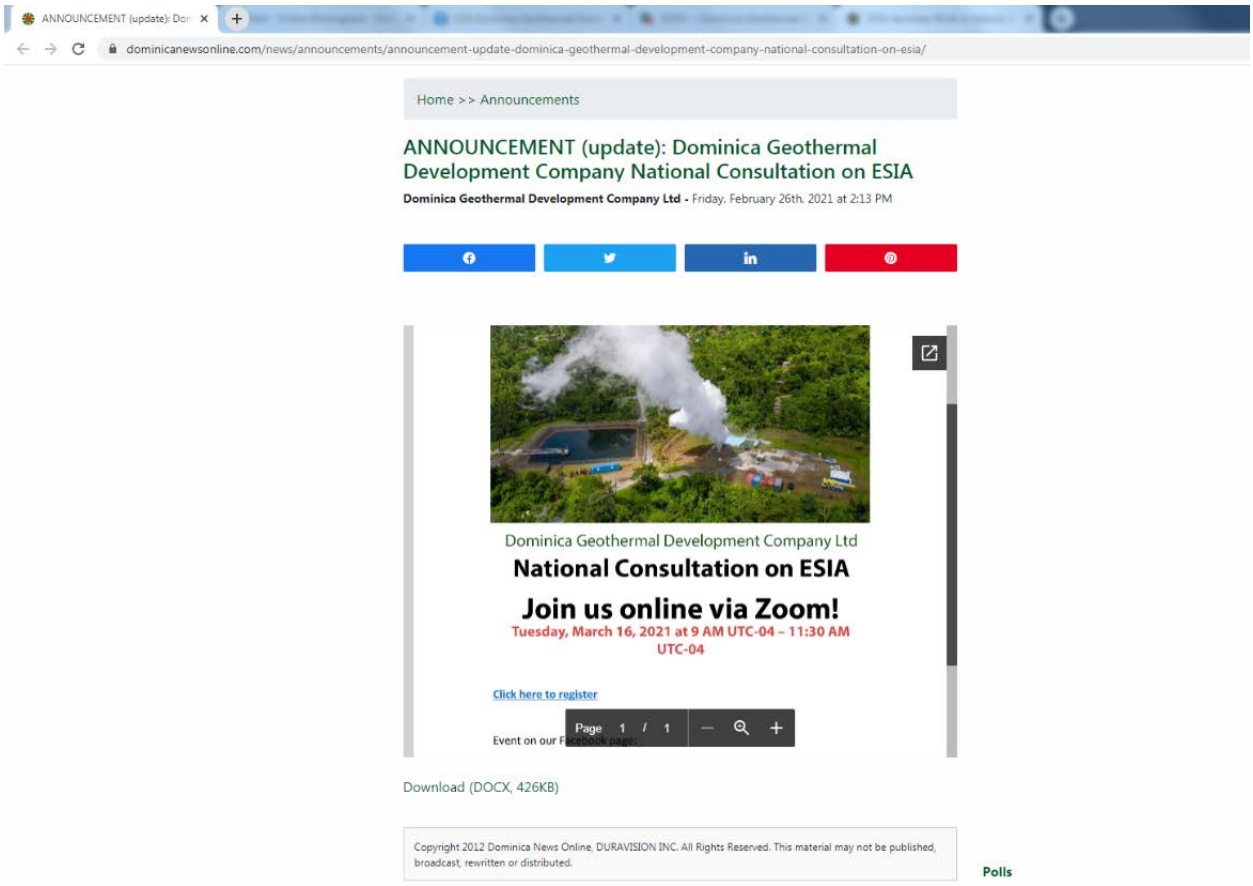
In accordance with the IDB's Directive B6, a Public Consultation was held via Zoom, on March 16, 2021 at 9am. ERM and DGDC conducted the event. The meeting was attended by 58 stakeholders.

To extend the invitation to the public, the event was advertised in social media (on the Facebook page of DGDC) and in the local press (Dominica Online News) during the week and days prior to the event. The invitation to the event was published on Facebook on February 24, 2021 and on Dominica News Online on February 26, 2021.



Source: Facebook, DGDC.

Figure 1-1: Public Consultation Announcement on Facebook



Source: Dominica Online News.

Figure 1-2: Public Consultation Announcement on Dominica Online News

The attendants to the Public Consultation, included stakeholders from the public sector, private entities, non-profit and civil society organizations, among others (see Registration Sheet in *Appendix C*). Attendance at the meeting was significant and attendees were participatory, which resulted in a meaningful discussion with the Project proponent.

DGDC presented for approximately 30 minutes, focusing on updates to the geothermal Project. Participants were then given the opportunity to ask questions about the technical updates. After, ERM presented the outcomes of the Addendum, focusing on the potential environmental and social impacts. After ERM's presentation, attendees had the opportunity to ask questions and make comments again. The meeting lasted for approximately one and a half hours.

The appendices to this report include the following:

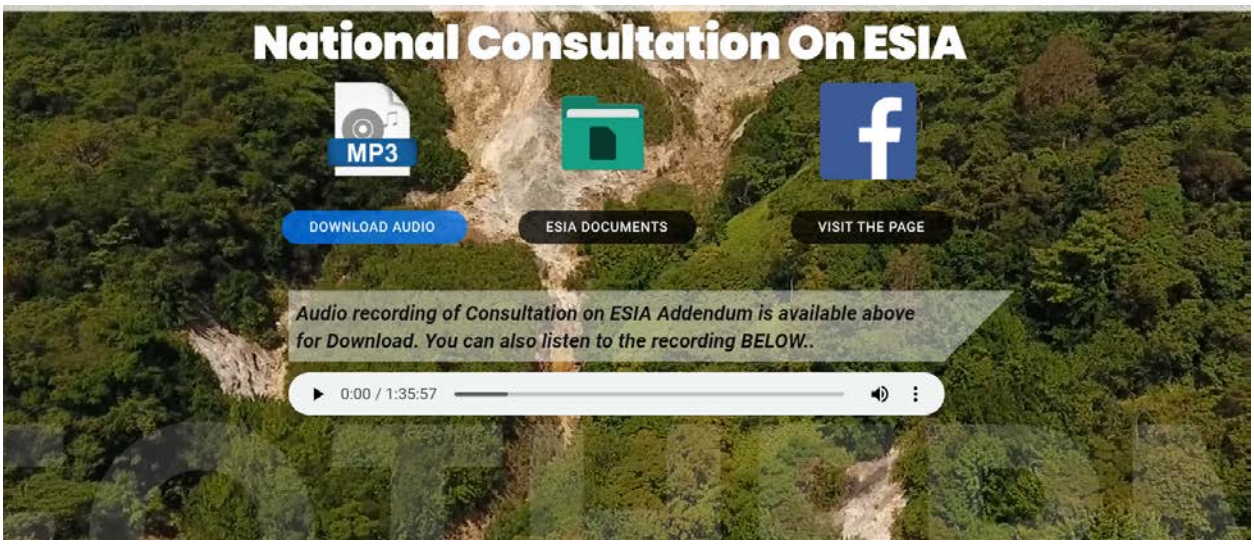
- ERM Presentation Slides for the Public Consultation (*Appendix A*);
- Registration Sheet (*Appendix B*); and
- Questions and Answers Register-Verbatim (*Appendix C*).

1.4 Key Questions and Comments from Attendees

The key issues and concerns expressed by the stakeholders revolved mainly around issues linked to the Government's position, the potential for reduced energy prices and safety concerns. The main environmental and social aspects raised from the community related to emergency preparedness. DGDC explained the steps that the Project is taking to ensure the safety of the communities, including management plans and monitoring. The community also inquired as to the possibility for local jobs and training, and DGDC clarified that they will seek to hire locally as much as possible. DGDC shared an email address and phone number to gather any additional comments following the event.

1.5 Conclusion

No significant environmental and social issues were raised by the participating stakeholders during this session. Based on the type of questions raised during the public consultation, the main concerns regard potential price decreases and contingencies. The consultation was delivered in a meaningful manner, involving different categories of stakeholders. DGDC has made available a copy of the presentation audio and documents on their website.



Appendix A – ERM Presentation Slides

Public Consultation

Proposed Geothermal Project and its Associated Facilities in Dominica

March 16, 2021

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The business of sustainability

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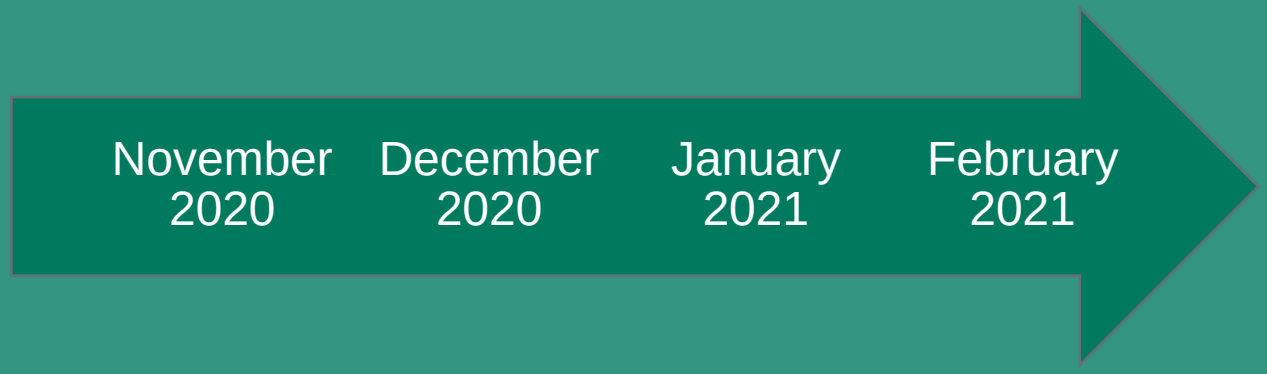
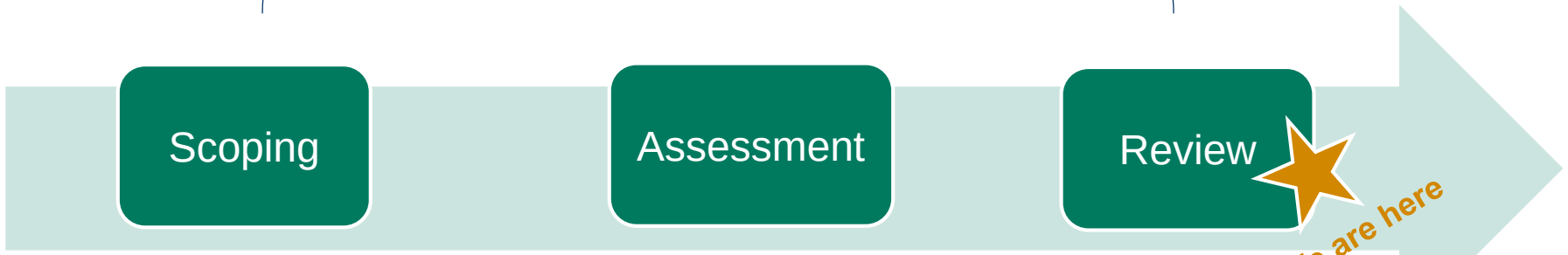


ESIA Addendum Timeline Process

Addendum to the ESIA Process

Stakeholder Engagement

- Solicit stakeholder feedback on the Project and Addendum to the ESIA process at key stages
- Gather local knowledge for consideration in the Project



Scoping

- Predict likely interactions between the Project and the environment
- Review meetings held with key stakeholder and their comments.

Assessment

- Execute environmental, biological and socio-economic assessment
- Identified and assessed potential impacts
- Prepare Addendum

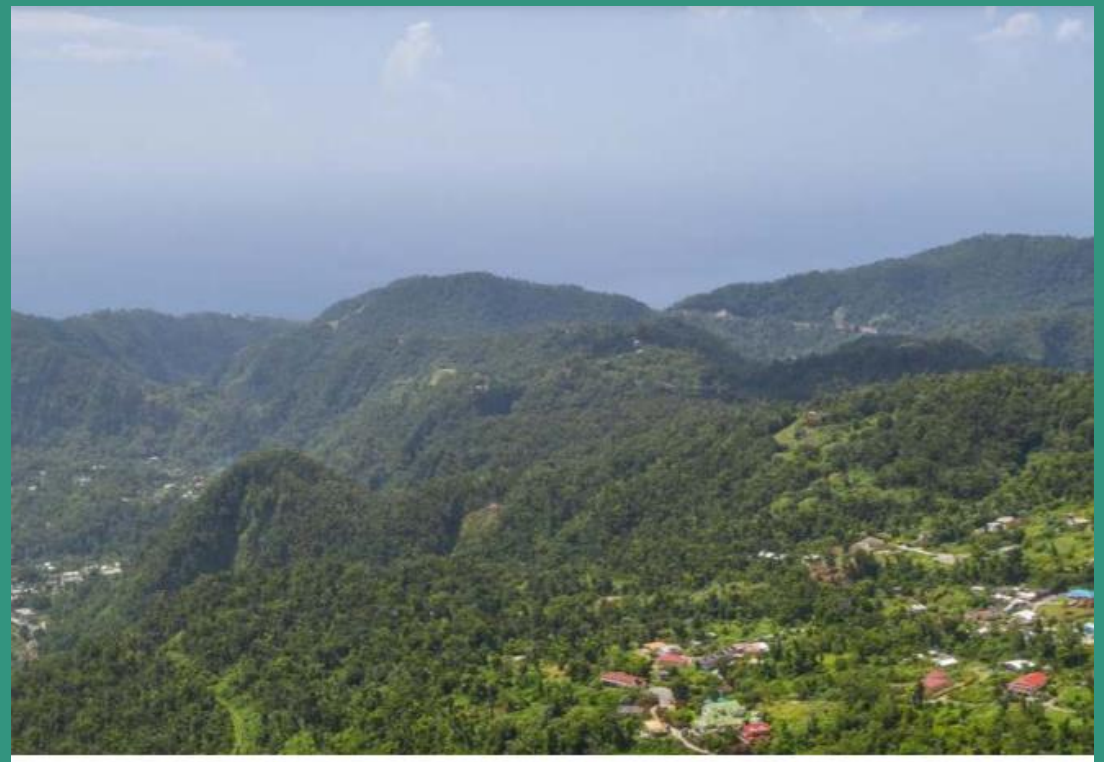
Review

- Hold public disclosure meetings to explain Addendum to the ESIA results and solicit stakeholder feedback
- Revise Addendum to the ESIA based on public feedback

Components and Requirements of the Addendum

- Project Description
- Regulatory/legislative requirements
- Baseline Assessment
  - Biological Resources
    - Protected Areas
    - Critical Habitat Assessment
    - Ecosystem Services
  - Social Resources
    - Migration, Gender, Human Rights, COVID-19
    - Land Acquisition and Resettlement
- Impact Assessment and Proposed Mitigations
- Environmental and Social Management Plans – Appendix B

- International Lender Requirements – Most major capital projects
  - Inter-American Development Bank's (IDB's) Operational Policies
  - Caribbean Development Bank's (CDB's) Operational Policies
  - World Bank (WB) Guidelines for geothermal projects
  - International Finance Corporation (IFC) Performance Standards



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Environmental and Social Impact Assessment (ESIA) Addendum

Proposed Dominica Geothermal Development

February 2021

Project No.: 0531607

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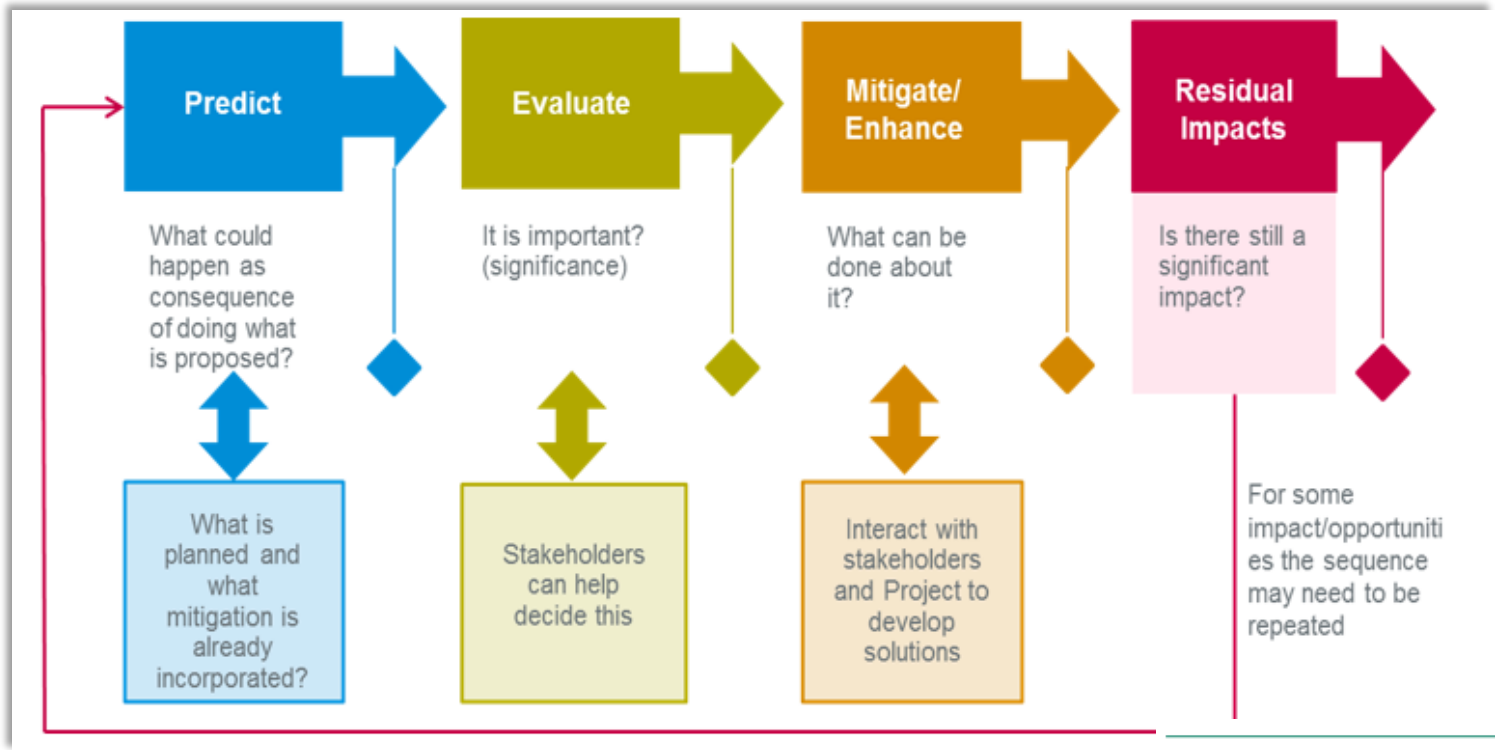
Addendum to the Environmental and Social Impact Assessment

Impact Assessment Methodology



Impact Significance Matrix		Sensitivity / Vulnerability / Importance of Resource/Receptor		
		Low	Medium	High
Negative Impacts				
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major
Positive Impacts				
Magnitude of Impact	N/A	Positive	Positive	Positive

Biological Environment

Terrestrial Biology – Existing Conditions

- Dominica contains the most extensive “almost” undisturbed tropical forest in the Lesser Antilles or Leeward Islands in the Caribbean.
- Peak deforestation due to land conversion for agriculture in the 19th century, however in the past decade reports show low deforestation.
- The vegetation cover of the Project site is primary rainforest, secondary rainforest experiencing regrowth from abandoned croplands and damage from Hurricane Maria, agricultural land and urban areas.
- The Project is in close vicinity to the Morne Trois Pitons National Protected Area.
- A number of threatened and endemic species to the lesser Antilles were observed in the study area, these include:
  - One frog, four birds, and one lizard.
  - Studies for the ESIA have determined that the Project area is not critical habitat for the conservation of these species.

Terrestrial Biology – Impacts

Resource	Construction Phase Impact	Operations Phase Impact
Vegetation		
Fauna		
Protected Areas		

Construction:

- Impacts to vegetation due to any vegetation clearing
- Direct injury/mortality to fauna due to vegetation removal and vehicle collisions
- Habitat loss due to construction
- Noise disturbance
- Light pollution

Operations:

- Direct injury/mortality due to vehicle collisions (increased road traffic);
- Fragmentation of habitat and reduction of ecological connectivity;
- Injury/mortality due to open geothermal brine ponds;
- Light and noise pollution;
- Air emissions might inhibit vegetation growth;
- Well blowouts - if a blowout occurs, wildlife and vegetation within the adjacent area would be displaced, injured or killed.
- Temporary degradation of habitat quality within MTPNP WHS

Terrestrial Biology – Mitigation/Management Measures

Construction:

- Avoid removal of trees/vegetation where possible
- Maintain vegetation barriers as feasible
- Revegetation and restoration of temporary laydown areas with native and endemic species
- Implement dust control procedures
- Conduct detailed surveys of flora and fauna before construction
- Rescue and/or relocate protected species (flora and fauna)
- Scare fauna away prior to vegetation clearing
- Train and educate workers on code of conduct regarding wildlife and incident reporting
- Install traffic signs and speed limits
- Best practice noise mitigation plan
- Minimize light pollution by best practice lighting mitigation procedures
- Implement the Biodiversity Management Plan

Operations:

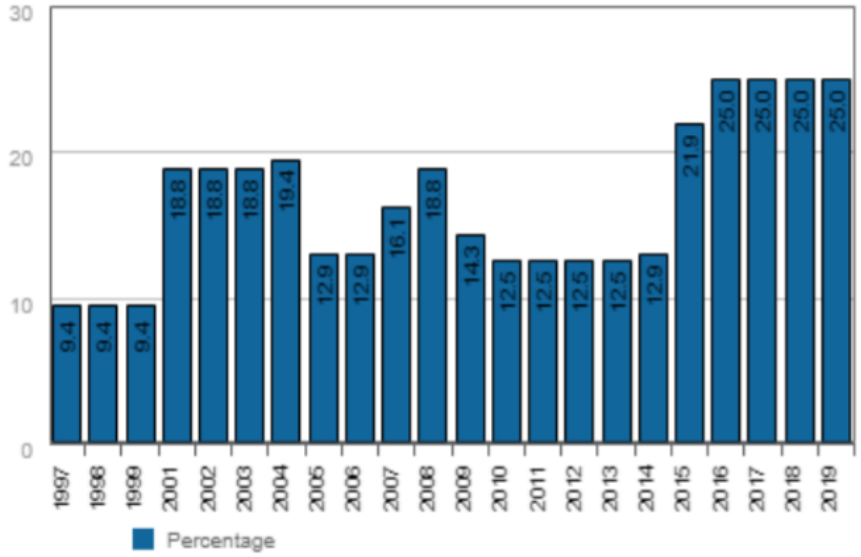
- Implement well-blowout prevention procedures
- Design and implement a Community Wildlife Management education training
- Implement the Biodiversity Management Plan

Resource	Construction Residual Significance	Operations Residual Significance
Vegetation		
Fauna		
Protected Areas		

Social Environment

Gender – Existing Conditions

- The Protocol to the Convention on the Elimination of All Forms of Discrimination against Women has not been signed or ratified in Dominica.
- The Protection against Domestic Violence Act, in 2001, and amendments to the Sexual Offences Act in 1998 and 1992 were the most recent legislation as of the writing of the Addendum.
- Secondary school enrolment for 2011/2012 was slightly higher for males (51% for males vs 49% for females). The number of women in tertiary level education is higher than the number of males (63% vs 38%).
- Dominica's Parliament has more male than female members.



Number of Women Legislators (%)

Gender – Impacts and Mitigation Measures

Construction and Operation:

- The Project will likely affect men and women differently, as the type of employment opportunities provided by the Project are more likely to be directed towards men.

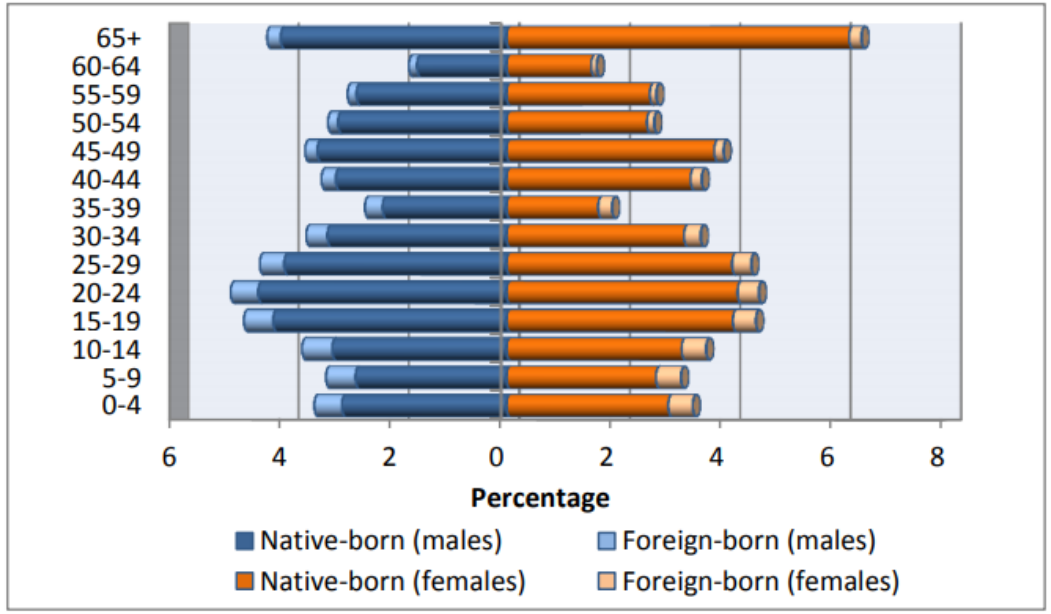
Component	Pre-Mitigation Impact	Post-Mitigation Impact
Gender		

Mitigation Measures:

- Engagement with women
- Grievance Mechanism
- Target employment goals for women
- Non-discrimination and gender-based-violence policies

Worker Influx – Existing Conditions

- Dominica has been ranked among the top five countries in the world having the highest rates of net migration, although in recent years these rates have decreased.
- The top 5 countries by origin of immigration include Guadeloupe, USA, UK, Antigua and Barbuda and Trinidad and Tobago.
- The top 5 countries by origin of migration destination include the USA, US Virgin Islands, France, UK and Antigua and Barbuda.



Population by Age, Sex and Origin (2013)

Worker Influx- Impacts and Mitigation Measures

Construction and Operations:

Up to 120 workers at power plant site, and 10-15 at the pipeline.

Mitigation Measures:

- Security Management Plan
- Community Grievance Mechanism
- Local Hiring Plan and Local Supplier Plan
- Socioeconomic and Community Health and Management Plan
- Workers' Accommodation Plan and Checklist
- Code of Conduct
- Vocational training for local communities

Component	Pre-mitigation Significance	Post-Mitigation Significance
Worker Influx		

Land Acquisition and Resettlement – Existing Conditions

- The new reinjection pipeline route will affect twelve plots.
- Eight will be partially acquired. These plots include secondary forest and abandoned agriculture.
- Four plots will be fully acquired. One has some active subsistence farming.
- There will be no physical displacement.

Properties Neighboring Reinjection Pipeline

Land Acquisition – Impacts and Mitigation Measures

Resource	Pre-Mitigation Impact	Post-Mitigation Impact
Land Acquisition		

Construction and Operations:

- Impacts will consist in the acquisition of land, resulting in some economic displacement

Mitigation Measures

- The Project's Updated Resettlement Action Plan (RAP) includes detailed steps to identify, address and mitigate impacts. The RAP also includes compensation measures for Project-Affected Persons. The RAP will be discussed in detail later in the presentation.

Potential Cumulative Impacts

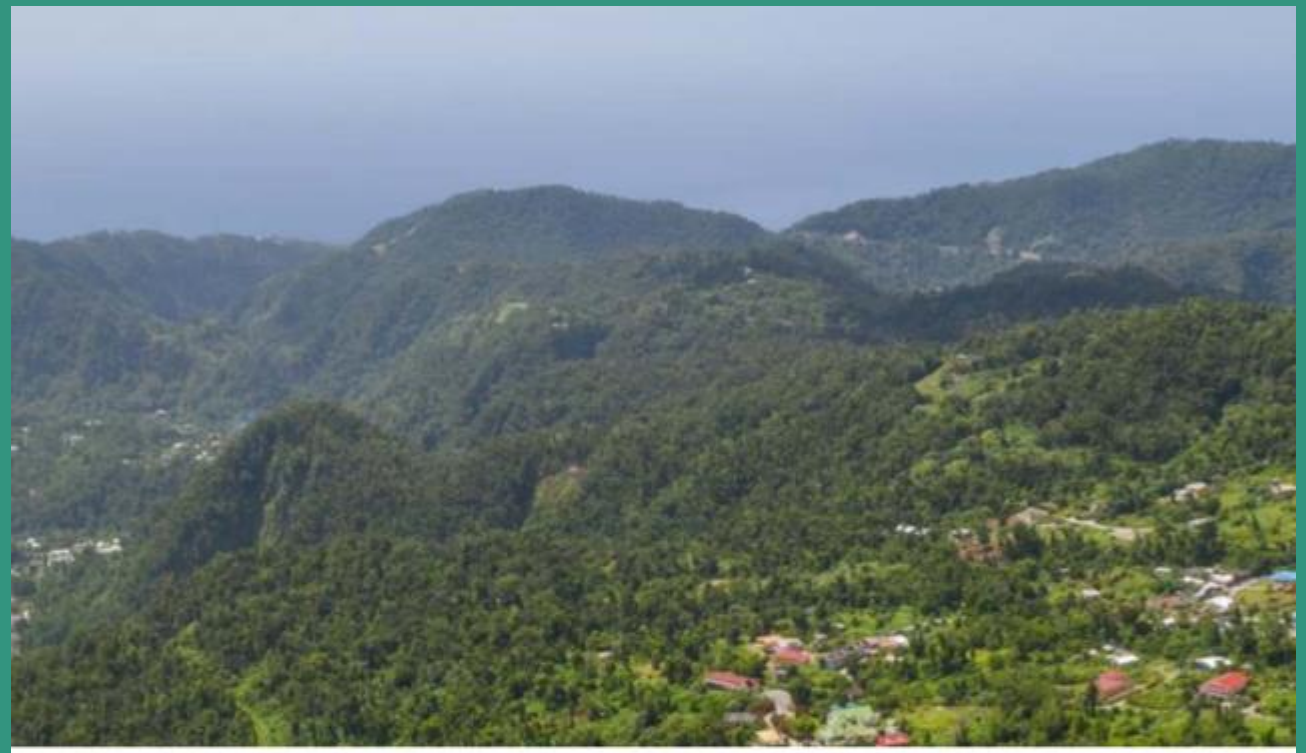
Cumulative impacts take into account other projects that might overlap temporally or spatially with the Project. The Cumulative Impact Assessment identified the main cumulative impacts as:

- Terrestrial and Aquatic Biota; and,
- Landscape Aesthetics

The development and implementation of a multi-stakeholder collaborative management framework, to the extent possible, is recommended. DGDC can foster such collaboration by participating in working groups and/or industry organizations aimed at addressing management of potential impacts.

Some examples of initiatives may be:

- Promoting the creation and maintenance of green spaces around the Project;
- Promoting the use of colors for Project components that blend into the natural surroundings;
- Promoting information-sharing related to impacts from the Project to enrich common information and identify potential synergies related to information-gathering and mitigation measures; and,
- Evaluating opportunities to use shared access roads with other projects.



Environmental and Social Impact Assessment (ESIA) Addendum – Environmental and Social Management Plans

Proposed Dominica Geothermal Development Project

February 2021

Management Plans

Environmental and Social Management Plans (ESMP)

These plans are included as Appendix A to the Addendum.

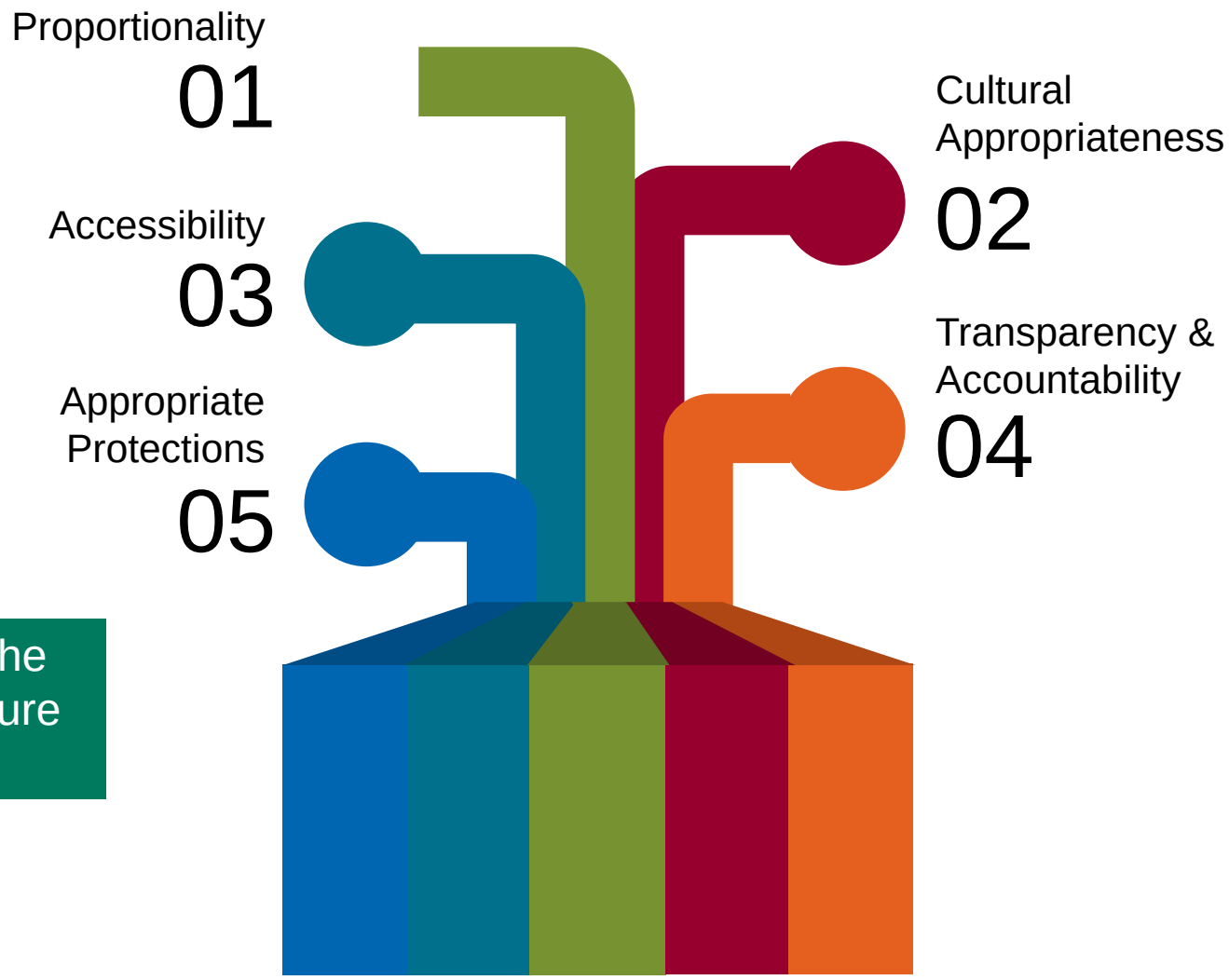
- Biodiversity Management Plan
- Erosion and Sediment Control Plan
- Waste Management Plan
- Water Management Plan
- Air Emissions Management Plan
- Noise Management Plan
- Well Blowout Prevention Plan
- Disaster Risk and Emergency Management Plan
- Emergency Response Plan
- Community Health and Safety Management Plan
- Contractors Management Plan
- COVID-19 Contingency Plan
- External Grievance Mechanism
- Internal Grievance Mechanism
- Local Hiring Plan and Local Supplier Plan
- Chance Find Plan
- Occupational Health and Safety Management Plan
- Security Management Plan
- Stakeholder Engagement Plan
- Transportation Management Plan
- Training Plan

Grievance Mechanism

Grievance Mechanism

- Community and internal workers' grievance mechanisms will be available.
- These will provide a framework through which to ask questions, raise suggestions or file complaints.
- Protection from retaliation and confidentiality are guaranteed

DGDC will ensure that the mechanisms follow the IFC's Universal Principles, as outlined in the figure to the right.



Grievance Mechanism Continued

In order to ensure the proper implementation of the Grievance Mechanisms, and the resolution of the feedback received, this mechanism is divided into four main steps.

Grievance Mechanism Continued

Questions, suggestions or complaints will be submitted through the following reception channels:

- Feedback collected by Community Liaison Officers / Managers;
- Website https://www.geodominica.dm/contact/;
- Telephone +1(767) 448-6178 /79;
- Email info@geodominica.com
- Community Relations Office
- A (or more than one) Grievances Mailbox placed within the Project's facilities. The mailbox's precise location will be shared with workers during their hiring process.
- A Grievances Mailbox placed at the Project's Community Relations Office. The mailbox's precise location will be shared with the community during public consultation and other disclosure of information events.

Dominica Geothermal Development Company Limited

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Resettlement Action Plan

February 2021

Document No.: RZ020300-002-RPT-0015| V1

Updated Resettlement Action Plan

Updated Resettlement Action Plan (RAP)

- Provides socioeconomic context for the land acquisition process and identifies Project impacts.
- 12 plots will be acquired for the reinjection well and pipeline: 8 partial acquisitions and 4 full acquisitions.
- A total of 22 plots will be acquired for the entire project (power plant and back-up production well, exploratory wells). There are instances of subsistence farming, and there will be one instance of physical displacement.
- In order to determine impacts, eligibility and entitlement are assessed. The RAP provides a structure for the valuation and compensation of land, crops, trees, livestock and assets. It also includes sections on vulnerability assistance, stakeholder engagement, resettlement sites, roles and responsibilities, grievance management, livelihood restoration, monitoring and evaluation, budget and schedule.

Sample Resettlement Site

RAP Continued

In accordance with the WBG and IFC policies, engagement and consultation on the RAP included:

- Conducting a socio-economic census survey in 2017-2018;
- Consultation with Project-Affected Parties (PAPs) and relevant government institutions such as the Department of Lands & Surveys;
- Presentation of the findings of the RAP to the affected communities in 2018;
- Consultations with new PAPs in 2020; and,
- Updated census information for those previously interviewed.

Any comments on this RAP from the community or relevant institutions will be incorporated into a final RAP. The RAP will be updated as necessary with any new information from consultations with community or relevant institutions. Concerns or grievances related to the RAP can go through the Grievance Mechanism.

A recurring concern of PAPs was that they would be fairly compensated for their lands in a timely manner. DGDC continues to present the issue of timely acquisitions and compensation to the Ministry of Lands.

Q&A

Thank you

DGDC
Website: **https://www.geodominica.dm/contact/;**
Telephone: **+1(767) 448-6178 /79;**
Email: **info@geodominica.com**

Appendix B – Registration Sheet

National Consultation on the ESIA Addendum
March 16, 2021

	First Name	Last Name	Email	Organization
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4	Kerwin	JnoBaptiste	Kerwinkjb@gmail.com	
5	Sonia	Cuesta	sonia.cuesta@erm.com	
6	Mac	Thomas	Mcdoe74@yahoo.com	
7	Jacquwline	Dupigny	Kai.kboutique@gmail.com	
8	Dewel	Yorke	dewel.yorke@gmail.com	
9	Jessica	Wisman	jhwisman@hotmail.com	
10	Galaxy Note10+		massicottjm@gmail.com	
11	Xavier	Collet	collet_xavier@yahoo.fr	Xconsult
12	Mike	McIntyre	mikiemc20@gmail.com	
13	allan	toussaint	allan.toussaint@geodominica.com	DGDC
14	Marlene	Johnson	johnsom@caribank.org	
15	Sylvester	Defoe	me@sdefoe.com	
16	Samond	David	samonddavid@gmail.com	
17	Curtis	Clarendon	citronel@yahoo.com	
18	Romualda	Hyacinth	unesco@dominica.gov.dm	UNESCO _ Dominica
19	Yahrashallam Denis	Jules	Jules.yaacov@gmail.com	DDA
20	Dave	Lloyd	davidson.lloyd@gmail.com	EcoApp Inc.
21	Sophia	Raithel	sophia.raithel@erm.com	ERM
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24	Gary	Jackson	gary@ccreee.org	
25	Joel	Lambert	joellambert32@gmail.com	
26	Milton	Lawrence	miltonlawrence@gmail.com	
27	John	George	John.george767@hotmail.com	
28	Davitia	James	davitiaj@gmail.com	
29	Esther	Lambert	lambert.esther@gmail.com	
30	Virginie	Vitiello	virginie.vitiello@stoainfraenergy.com	

31	Dana	Lawrence	dana@ccreee.org	
32	Adina	Valentine	pro@domlec.dm	DOMLEC
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38	Valerie	Isaac	isaacv@caribank.org	
39	Janet	Charles	jcharles@domhc.co.uk	
40	Ronny	Rosillette	ronnyrosillette@gmail.com	
41	Mac	Thomas	MCDOE74@GMAIL.COM	Copthall Development Committee
42	Henderson	Bruney	hb-junior5@hotmail.com	
43	Bertilia	McKenzie	bertilia.mckenzie@domlec.dm	Dominica Electricity Services Limited
44	Rawlins	Bruney	rawlins.bruney@geodominica.com	DGDC
45	Grayson	Stedman	gstedman69@gmail.com	
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47	Glynn	Morris	glynn.morris@gmail.com	
48	Herbert	Pirela	herbert.pirela@erm.com	MA03
49	Gizelle	Eloi	gizelle.simpson@gmail.com	
50	Omrie	Mondesir	pmondesir@hotmail.com	
51	Lennon	Matthew	lennmatt22@gmail.com	WAVE
52	Dexter	Newton	dxtnewton@gmail.com	
53	Albert	Watty	irving.watty@gmail.com	Entrepreneur
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56	Ela	Thomas	queenela2002@yahoo.com	WAVE
57	Dave	Hampton	dave.hampton@cadmusgroup.com	
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59	Rita	Edmund	finance@geodominica.com	DGDC
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63	Cindy	Hector-Pontoizeau	cindypontoizeau@hotmail.com	
64	Lyn	Fontenelle	lyn.fontenelle@geodominica.com	

65	Stephie	Pascal	stephiebp@gmail.com	
66	Michael	Fadelle	michaelfadelle@hotmail.com	Government
67	Gabriel E	Guevara Jr	gabriel.guevarajr@gmail.com	

Appendix C – Questions and Answers Register by IDB (Verbatim)

National Consultation on the ESIA Addendum
16th March 2021

Questions from Project Update

Question	Response
What legislative framework is the government putting in place to oversee the environmental concerns that may result from the operation of the geothermal plant once it has been implemented? From what I have seen at other sites where EIAs have been done, after a period of time, for example, the Layou River, there is pollution going on and there is no active government enforcement or implementation of the laws. I want to know what kind of legislative framework that the government is putting in place to deal with any impacts from the operation of the geothermal plant seeing that it's a new facility that's going up in the country?	The governmental aspect was deferred and a synopsis of DGDC's E&S operating environment was provided. The process was explained – from ESIA/ESMP to monitoring plans to protect the environmental and social aspects.
In the 36 consultations that you've had, what are some of concerns that may have arisen from the public and what adjustments have you made to remediate those concerns moving forward?	The top three concerns were listed. 1. Water. 'Is this going to affect our water supply, pollute our water, affect our hot springs?' 2. Safety. 'Is this safe? Should we be afraid? We live in the Valley, is this going to cause explosions?' 3. The benefits. 'Why are we doing this? Is it worth it? It was explained that the point of these consultations, is to listen to these concerns, dig into them and adjust as required. An example of the location of the reinjection well was used to illustrate. "In the last six months, in Laudat while we were relocating the reinjection well: we had several meetings about that and the community came back with concerns about water in the first proposed location as well as vibrations; we went back to the consultants, and made adjustments then we went back to the community and showed them how we had changed the proposed location to reduce the risks. Not only was the location adjusted, the technical specifications that went into the tender documents for drilling were adjusted. In drilling you can tweak multiple parameters, vibration speed, the load, so all of that went into minimizing vibrations during the

	drilling operation and to move to locations where there would be lower impact on the water system in case of flooding."
One of the things I saw in the 7MW initial plan, it was estimated to operate for 25 years and I'm asking if that is the same amount of time the 100MW plant is expected to last? You said that it's going to be cheaper, is there any idea of how much money has been spent on the geothermal exploration, how much is going to be spent on the construction of the geothermal plant and I know geothermal has costs of operation and maintenance so how is that going to factor into the price of electricity so that you can recover your costs plus make a profit, in addition to all the other costs that are going on? How is that going to affect the price of geothermal as compared to what we see electricity is going for today?	The time line for development was explained – from exploratory drilling. Information on the progression of this project was provided – with the de-risking using grant funding (approximately 20 million US) highlighted and the government's contribution of lands and operating costs for the DGDC. It was explained that the costs moving forward for the major capital expenditure are not yet concrete given that contracts and financing agreements are still being negotiated, However, the point was made that concessionary funding is being negotiated which would necessarily be lower than commercial rates. It was explained that the financial models have been done and given that the cost of financing is better than projected, DGDC is on track to deliver a lower wholesale price of generation to DOMLEC.
You just mentioned that geothermal may be cheaper than use of diesel however in the development of any new energy it is prudent to compare it to other sources of renewable energy. So how does that compare and did you do any cost analysis for solar, wind, and other sources of energy that may have been cheaper and faster to develop. You said we have been working on this for a decade already and every year that goes by there is cost and there is inflation. Have we looked at other alternative sources of energy and did any cost comparison to geothermal?	The other sources of RE mentioned are intermittent and cannot be used to displace diesel for baseload. Geothermal is a 24/7 operation except for shutdowns for maintenance and is independent of weather conditions. The upfront time and costs are significant if done correctly. Dominica has an extremely good resource in the Roseau Valley. It is characterized by high pressure, high temperature, it is permeable and relatively close to the surface. The resource comfortably surpasses any of the alternatives. In a bid to displace diesel at a national level, Dominica is fortunate to be able to do it with geothermal.
I know there are similar projects across the Caribbean, St. Kitts & Nevis for example. Are there any lessons that have come out of those that you have incorporated in this project?	In many cases, Dominica is ahead of them. Given that we have been at this for a while, we have both the test wells and production well successfully drilled. So, in many cases it is the other way around.
I thought Nevis was actually advanced and at the production stage but that might not be the case. I thought they were ahead of us.	We are ahead and given the resource we have, we've been advised that we are one of the best in the world in terms of the resource. That's why the export part of this is so unique and so exciting. The investments we are making now, all of the studies over the last 10 years, they are really just not about a 10MW plant for Dominica - they are about Dominica being an exporter of energy as well.

One of my concerns is any issues with the Roseau Valley in the event of any sort of mistakes or emergencies. I'm wondering whether you have an emergency plan already in place. I listened to the conversation between the Prime Minister and the Ambassador recently where the Ambassador seemed to acknowledge that concerns raised by certain citizens by the planned digging of a production well and then extending pipelines down to Wotten Waven. He said that when these concerns were raised, you all went back to the experts and got a review, and the result was that the plans were changed. So, in light of that fact that these concerns raised seem to have been justified, will there be an effort to include concerned citizens in discussions with regard to progress of the project? And how can you allay our fears in addition to possibilities of accidents and responses that may be in place in the event that something was to happen?	The Wotten Waven pipeline was clarified in the context of the existing wells in Wotten Waven and Trafalgar which could have been used for reinjection. The approach was abandoned mostly for commercial reasons – the rough terrain and multiple expensive bridges which were to be built. In terms of something happening in the Valley as a result of the geothermal, we do not want to downplay that at all. While it is a very well proven technology, It's a major industrial operation and for it to be done right you have to be prepared for contingencies and emergencies. There are multiple response plans in place. October 2019 was the most recent time we tested our production well in Laudat and there was a full rehearsal for that including all the emergency services. So, there are plans in place and those plans are only going to get more detailed and more widespread as we move from where we have been so far, pure exploration mode, to actual commercial operation of a facility in the Valley. This is something we talk about all the time when we come to the Valley and we are going to be doing a lot more of it now that we have moved into a more serious phase of operation. But let's go back one step and say that the best way to deal with an emergency is to prevent it as far as possible. That's where you design safety into your systems: the way this is being done, the advisors that we have, the scrutiny that this entire process has to go through with international financiers and experts - safety is designed into this and monitoring as well. Drilling is a well understood activity, and the process of selecting a contractor is very thorough; we've done it successfully 5 times so far so that's an area that we are very comfortable with. Monitoring for any accidents in terms of gases are going to be all over the Roseau Valley. And then you have the possibility of a pipeline leaking. The reinjection pipeline is not high pressure, not high temperature and there are sensors at the plant to shut down the system in the event of even the slightest leak. It is not a new process by any means and we are doing our best to make sure that we do it to the highest standards possible.

Questions from ESIA presentation

Sonia just mentioned acquisition of properties and she is suggesting that some of these properties acquired will be for exploratory wells as well. I'm wondering are there going to be more exploratory wells drilled? If so, how many are they planning to drill? And if we are still drilling exploratory wells, does it indicate at this point that we don't have adequate resource for operation? I also would like the question of employees to be addressed because I believe she indicated that the persons employed for the main operations is 120 persons and would be employed from outside of Dominica. I'm wondering whether the company or government or whoever is responsible has any intention of putting means by which to train Dominicans to be able to operate this system?	We currently have five wells drilled in the Roseau Valley; if you know DOMLEC's balancing tank in Laudat, across the street from that are two wells. One is the main production well and one is an exploratory well which was drilled years ago. They're on the same pad right next to each other. They are both very good wells and steam from both will be used in the 10 MW plant. The production well was tested in 2019 and it has been confirmed to be able to produce more than the 10MW we need. So, we already have in place the steam needed for the 10MW. There are no additional exploratory wells required for the domestic plant. The second part to that is the resource itself, the reservoir, what can it support? And that is a question with two parts to the answer. The first one is because of all the studies which have been done over the last decade and the three exploratory wells which we have drilled, we have confirmed that, as the scientists say, with over 90% confidence that the reservoir can produce today over 26MW of electricity. This year we are going to be doing more of those studies, just surface measurements, no drilling for that, to broaden the confidence because 26 is the minimum confirmed to date, but they have all with lower confidence put the number much higher which is why there is an export phase to the project. To the question of employees, it was heard that we are going to house 50 workers on site. I think that meant maybe office facilities for 50 workers on site, but we do not plan any residential camps in Laudat. In fact, you will see some activity from DGDC where we are asking people who have housing facilities to register with us; that information will be provided to those who are asking about available accommodation. There is no residential accommodation planned on the site. And the comment of 120 workers sourced from outside, that needs to be corrected, that is not the case. The technical expertise which we don't have here will be brought in. We do not

	control who the EPC contractor brings in but it's in their interest, and by interest, I mean economic interest, to hire local workers. And that is the intention of everyone who is involved in this process. They have been in touch with local contractors so the 120 workers (at peak) will not all be "imported".
I asked the question earlier on about the two wells which they are going to drill and the response I got in the that is that one is a reinjection well and one is a backup production well. Could you elaborate on that?	The two wells I mentioned which are right opposite to the balancing tank, those are going to feed to the turbines. When the steam and the brine leave the turbines, it's going to flow from the power plant 1km down to the reinjection well. That well needs to get drilled now. The reinjection well is a must for the project. The backup production well is something we're doing with the future in mind. And it's really an economic decision right now because to bring a drilling rig to Dominica is extremely expensive so we've worked with our financing partners to do this backup production well while the rig is here. This will save us millions of dollars of costs in the future.
Was any baseline done in terms of the available skills that exist now? What training is being done by the State College and is there any relationship between the company and the state college to ensure that they produce or at least that they have the capacity to produce the type of personnel that you could probably use on the project in the future?	Discussions have been had with the College in terms of the skills availability on the island; that is the part two of what is going on right now along with the accommodation. We actually have a signup sheet that's available where people can register their interest to work on the project, especially in the months ahead when we are going to be doing a lot of construction work. So, both of those are in progress right now. Anyone can register but DGDC is not the one going to be hiring these people but the contractors who are going to do the work are actually looking for skills in Dominica. If there is any interest, contact us and we will pass on that information.
Just a point of clarification in terms of the scope of the ESIA. Did it just take into account the construction impact? Was any attention given to operation impact as well?	It covers construction and operation of the plant. Both impacts are taken into account.
Do we have any information in terms of who the partners are in this project or who the intended partners will be? Because we seem to have no information on that.	I think that's deliberate. Not for any nefarious reasons but simply because negotiations are in progress and the partners themselves do not wish to make any public announcements at this time. So, part of the agreements with them is no public announcements without their consent. Apart from the international banks the development partners are a consortium of French companies; very well-known, very large, basically they fit the

	criteria we mentioned where we said that we were doing this with experts. In terms of names, we are sort of constrained for now.
And you are sure that there will be French partners?	Those are the ones that we are working with right now. There is also some synergy to it; some strategic reasons for that as well because this project is not just about 10MW.
In light of the revelations in relation to for example the questions asked of you in relation to the State College, I would assume that the State College would not have the technical know how to train persons up to standards that are necessary to run such a plant. Would it not be prudent for the authorities to have persons trained in that sort of technology as part of scholarships? Is there any intention of going that way so as to ensure that our locals who wish to have that opportunity can get that opportunity?	Training of Dominicans in the geothermal field has been going on for years. The DGDC team has several persons who benefited from this training.