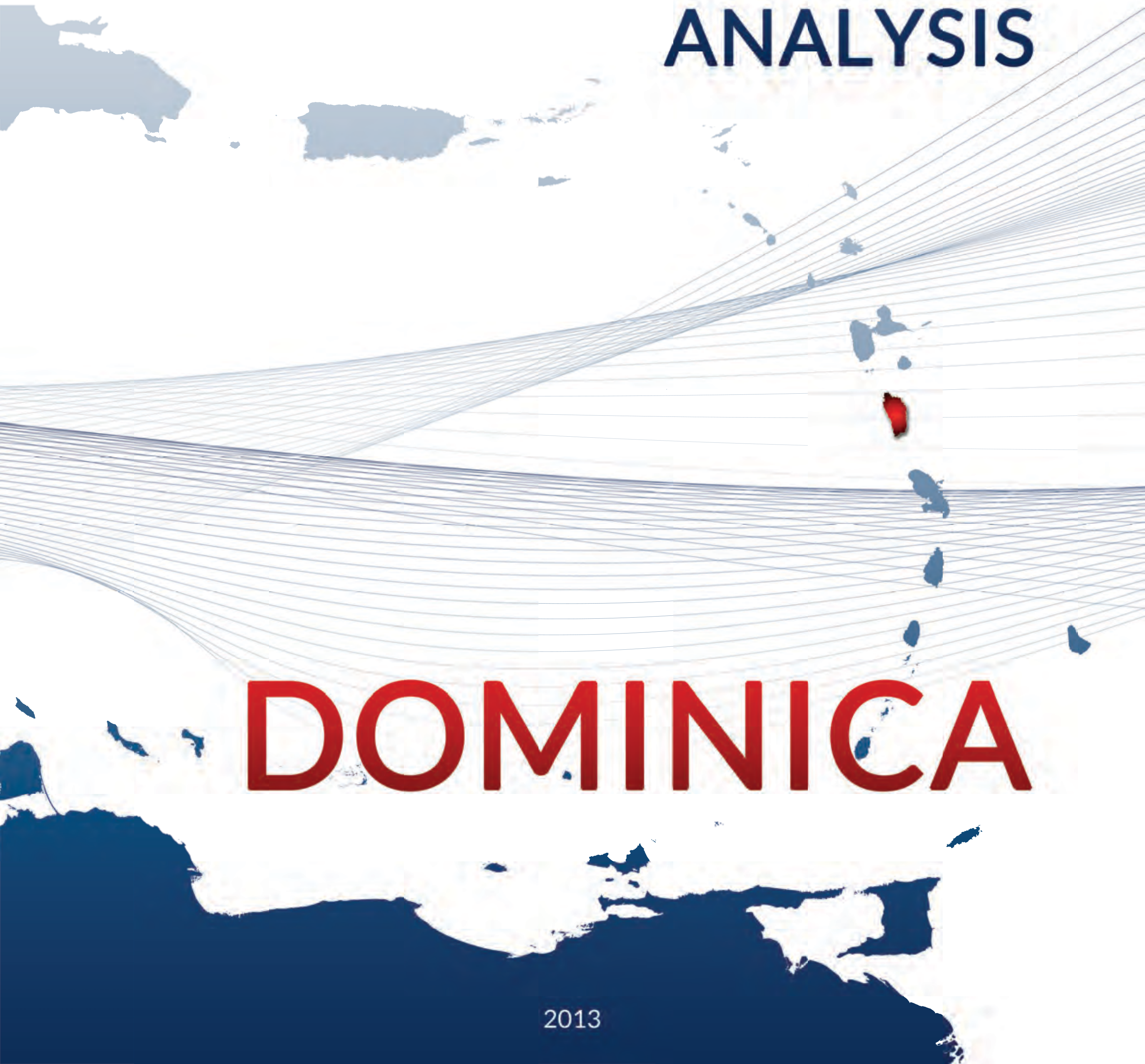
CREDP Caribbean Renewable Energy Development Programme

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of: Federal Ministry for Economic Cooperation and Development

GEOMINDS geo-solutions and consulting

HYDROPOWER POTENTIAL ANALYSIS



DOMINICA

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Executive Summary

The purpose of this analysis is to assess the hydropower potential of the rivers on the island of Dominica. To locate sites suitable for hydroelectric power generation, preliminary studies and sufficient knowledge of the topography, the stream network and its flow regime are required. This kind of data is only insufficiently available for the present study. Therefore, an innovative method using globally available satellite data, local rainfall data and terrestrial support data has been developed. The stream network of the island and the topography of the catchments were synthetically developed and the runoff processes modeled applying a hydrological model taking into account regional climate conditions.

Within this study, 29 primary rivers with a catchment size of at least about 10 km² were detected and analyzed for their hydropower potential.

Due to the mountainous conditions and high rainfall, the highest theoretical technical hydropower potential was detected for rivers in the southern parts of the island with the highest potential being located at the Roseau River.

To evaluate the hydropower potential of the island, virtual projects were considered at all analyzed rivers and the technical and financial viability was assessed. As not every virtual project is eventually economically viable, only virtual projects with a positive net value after a considered operation time of 25 years have been filtered and ranked according to their respective internal rate of return. As all economically related parameters are very sensitive and may lead to skew results of the analysis, the parameters and assumptions have been determined very carefully according to local pricing conditions.

The economic viability of the virtual projects strongly depends on the remuneration for feeding-in electricity to the public grid. To allow for assessment of the sensitivities, five scenarios have been developed including feed-in tariffs of US$ 0.10, 0.125, 0.15, 0.175 and 0.20 per kWh.

Applying a feed-in tariff of US$ 0.10, several economically viable virtual projects were identified. The most promising virtual projects were located in the catchments of Roseau River, White River, Layou River, Belfast River and Rosalie River. The locations of the currently operating hydropower plants at the Roseau River were also identified in this economic analysis, even though the routing of the penstock following the course of the river as assumed by the applied model results in slightly diviating hydropower potentials compared to the installed plant schemes.

The results of this report are to be understood as a reliable data basis and allow concentrating time-consuming and cost-intensive further studies at the located river sections.

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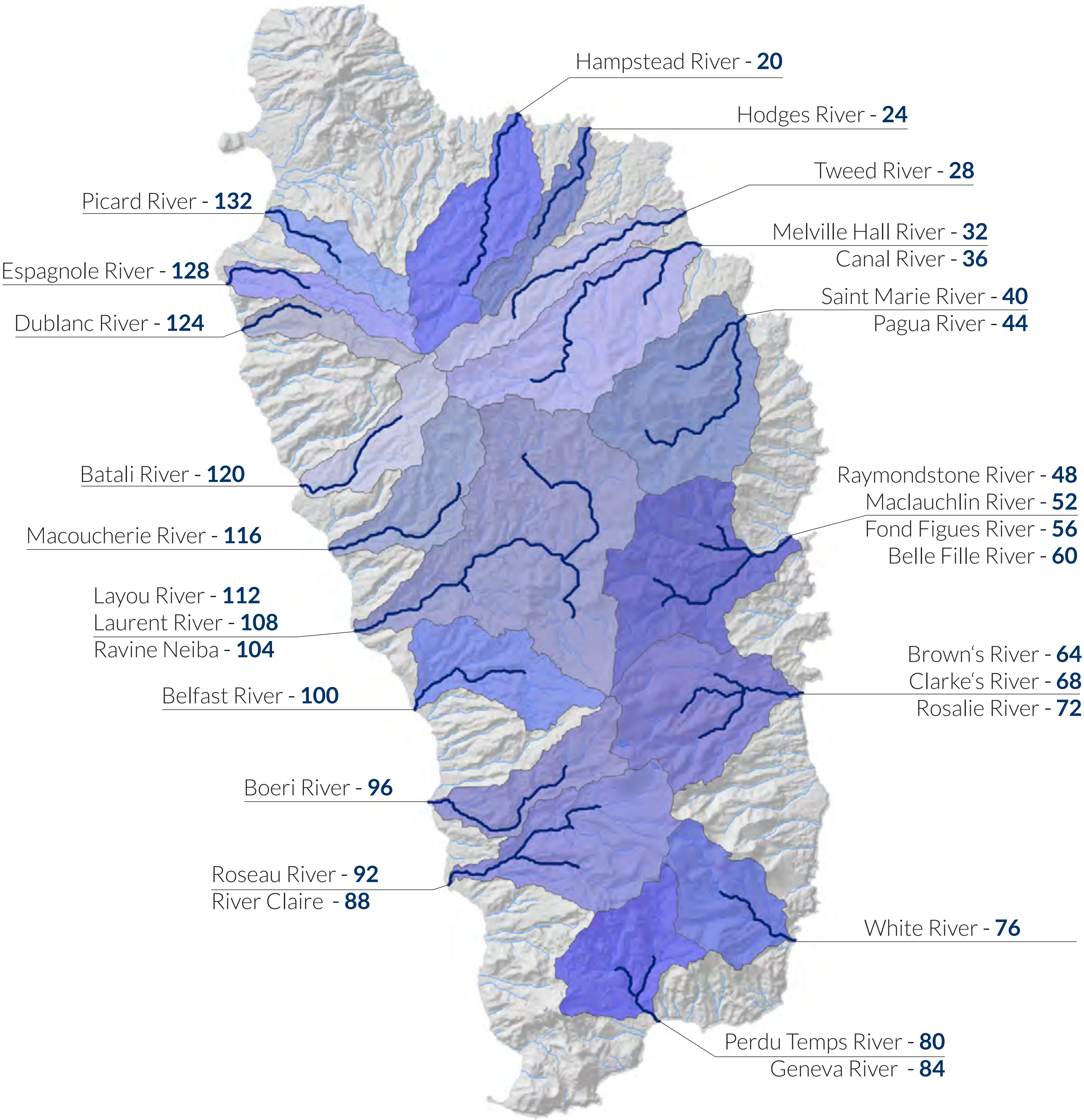
Table of Contents

Dominican River Directory

[River Name] - **[Page Number]**



Accronyms and Abbreviations

ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit (German Federal Ministry of Economic Cooperation and Development)
CARICOM	Caribbean Community Secretariat
CEHI	Caribbean Environmental Health Institute
CIMH	Caribbean Institute for Meteorology and Hydrology
CN	Curve Number
CREDP	Caribbean Renewable Energy Development Programme
D8	Deterministic 8 Algorithm
DEM	Digital Elevation Model
ERSDAC	Earth Remote Sensing Data Analysis Center
EuDASM	European Digital Archieve on Soil Maps
FAO	Food and Agriculture Organization
FiT	Feed-in Tariff
GDEM	Global digital Elevation Model
GODOM	Government of the Commonwealth of Dominica
GFRP	Glass Fiber Reinforced Polymer
GIS	Geographic Information System
GIZ	Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
GTZ	Gesellschaft für technische Zusammenarbeit (German Agency for technical Cooperation)
HSG	Hydrologic Soil Group
IEA	International Energy Agency
IRR	Internal Rate of Return
IRENA	International Renewable Energy Agency
kW	Kilowatt
kWh	Kilowatt hours
METI	Ministry of Economy, Trade and Industry (Japan)
NASA	National Aeronautics and Space Administration (USA)
NPV	Net Present Value
OECD	Organization of Economic Co-operation and Development
PTB	Physikalisch-Technische Bundesanstalt (Physical Technical Federal Institute; Germany)
SCS-CN	Soil Conservation Service Curve Number (USA)
US$	United States Dollar

[PART 1]

BACKGROUND INFORMATION

1. Introduction

The island of Dominica, like many other Caribbean Islands, has favourable topographic conditions and high rainfall to allow an economically viable use of hydropower generation. For many decades now, hydropower plants used the water from the Roseau River as a source of energy. Today, three of them still generate about a third of the country's electricity production. This suggests that other streams on the island may also have potential for an economically viable electricity generation with hydropower plants.

The Caribbean Renewable Energy Development Programme (CREDP-GIZ), upon request of the Government of the Commonwealth of Dominica, has been analyzing the hydropower potential in Dominica in a systematic manner.

To locate sites suitable for hydroelectric power generation, preliminary studies and sufficient knowledge of the topography, the stream network and its flow regime are required. This kind of data is only insufficiently available for the study of Dominica's hydropower potential. However, an innovative method using globally available satellite data, local rainfall data and terrestrial support data allows a rough assessment of the island's hydropower potential.

Purpose and Scope

This report covers the analysis of the theoretical technical and economically viable hydropower potential of all major streams of Dominica. For this purpose, a computer-based analysis and decision-making tool was developed taking into account Dominica's regional climatic conditions and relief structure. In this report, background information is given regarding the method and procedure of the analysis as well as all key parameters.

Several field visits were undertaken to obtain all available relevant local data from the responsible governmental institutions and agencies as well as to collect calibration and validation data. Any relevant but not available data was compensated for through information derived from several remote sensing data products.

The results of this up-to-date hydropower potential analysis are meant to support governments, policy-makers, investors and utilities to make informed decisions regarding the hydropower opportunities in Dominica. This analysis was conducted under the Caribbean Renewable Energy Development Programme CREDP-GIZ.

2. Project Region: Dominica

Situated in the northern middle of the arch of the Lesser Antilles, the island of Dominica has a landmass area of 746 km². Guadeloupe is located 30 km north and Martinique 25 km south of the island. The largest distance in the north-south direction is about 46 km; about 25 km in the east-western direction. Dominica has 72,500 inhabitants (World Bank 2011:2). Beside the capital Roseau, there are the major cities of Portsmouth, Berekua and Marigot.

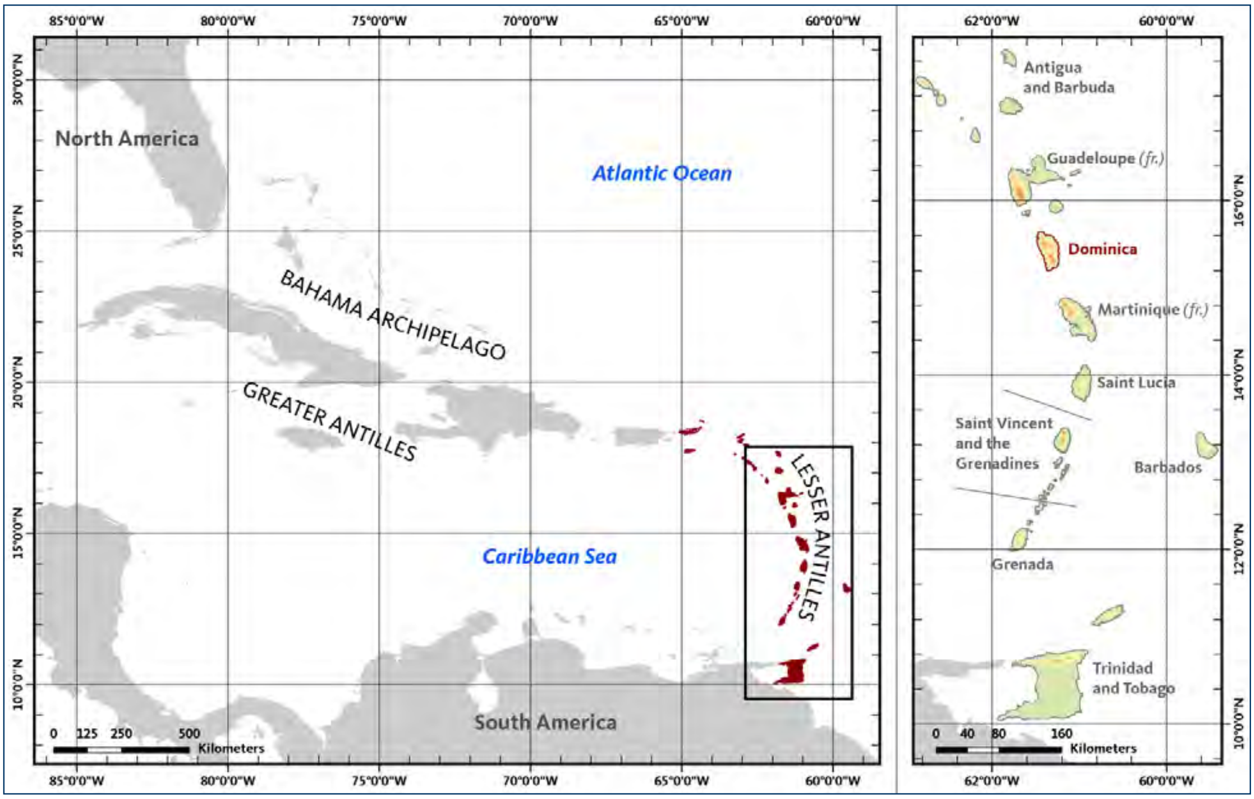
Due to volcanism, Dominica has a mountainous topography. A central ridge ranges from north to south almost across the entire length of the island. At 1,447 m Morne Diablotins is the highest peak of Dominica's central highlands, located in the north-western part of the island. A chain of mountains extends from the island's center to the south and the topography is characterized by a number of ridges and steep river valleys with flatter lands being restricted to narrow coastal strips. The coasts often show nearly vertical cliffs with a small strip of sandy beach (GODOM 2004:4).

The tropical-maritime climate with relatively uniform temperatures dominates throughout the year with two distinct seasons. The dry season with mostly sunny and warm weather is from December to May and the rainy season with heavy rainfall starts in June and ends in late November. The west coast is in the rain shadow of the central mountain ranges and average rainfall is significantly less than in interior locations. The island's rugged topography and the north-easterly trade winds result in a considerable amount of orographic rainfall (GODOM 2004:5).

The hottest period is from May to October, the coldest is from December to March, resulting in an annual average temperature of 26°C at sea level.

Dominica contains 52,000 ha of natural forest, woodland and bush. The natural vegetation on the island consists of Swamp Forests, Dry Scrub Land, Littoral Woodland, Deciduous Forest, Rain Forest, Montane Forest and Elfin Woodland. The total forest area accounts for 2/3 of the total land area (FAO 1995:6).

Geographic Overview
of the Caribbean Region



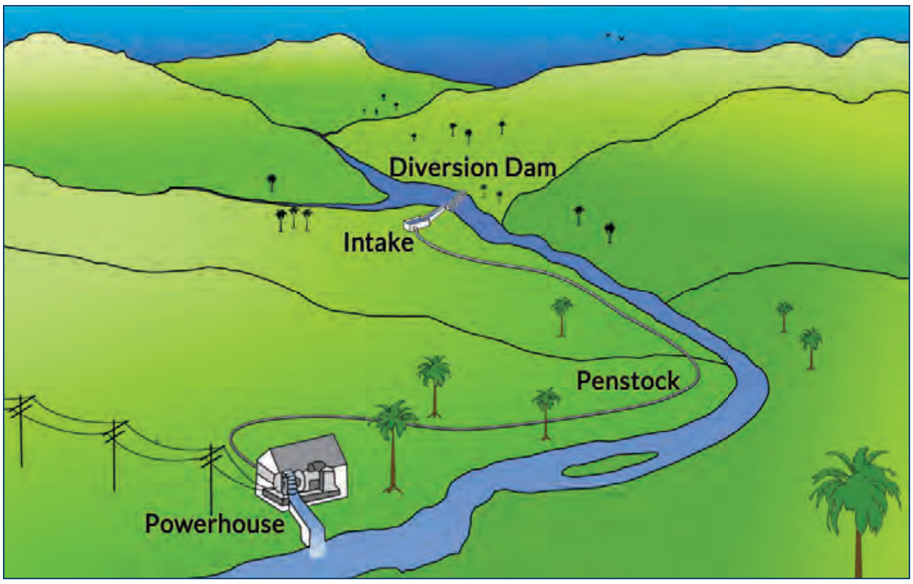
3. Hydroelectric Power Generation

Hydropower is a renewable energy source based on the natural water cycle and the most mature, reliable and cost-effective renewable power generation technology currently available (OECD/IEA 2011:27). Today, around 16% of the world's electricity and over 80% of the world's renewable electricity is produced by hydropower plants (IRENA 2012:4; IPCC 2011:441). Being one of the most flexible sources of electricity generation available, hydroelectric power plants are capable of responding to demand fluctuations in minutes and even seconds, delivering base-load power and, when a reservoir is present, storing energy (OECD/IEA 2011:27; IPCC 2011:442). Hydroelectric generating units are able to start up quickly and operate efficiently almost instantly, even when used only for a short time or at partial loads (OECD/IEA 2011:27). Hydropower can serve as a power source for large and small, centralized and isolated grids.

Small hydropower can be a cost-competitive option for rural electrification of remote communities in developed and developing countries and can displace a significant proportion of diesel-fired generation. In developing countries, another advantage of hydropower technology is that it can have important multiplier effects by providing both energy and water supply services (e.g. flood control and irrigation when used as a storage reservoir), thus bringing social and economic benefits (IRENA 2012:4).

Hydropower generating units are able to transform the potential energy of a mass of water flowing downhill in a river or stream into electricity. This is done by converting the energy potential of the water to turn a turbine, which, in turn, provides the mechanical energy required to drive a generator and produce electricity (IRENA 2012:6).

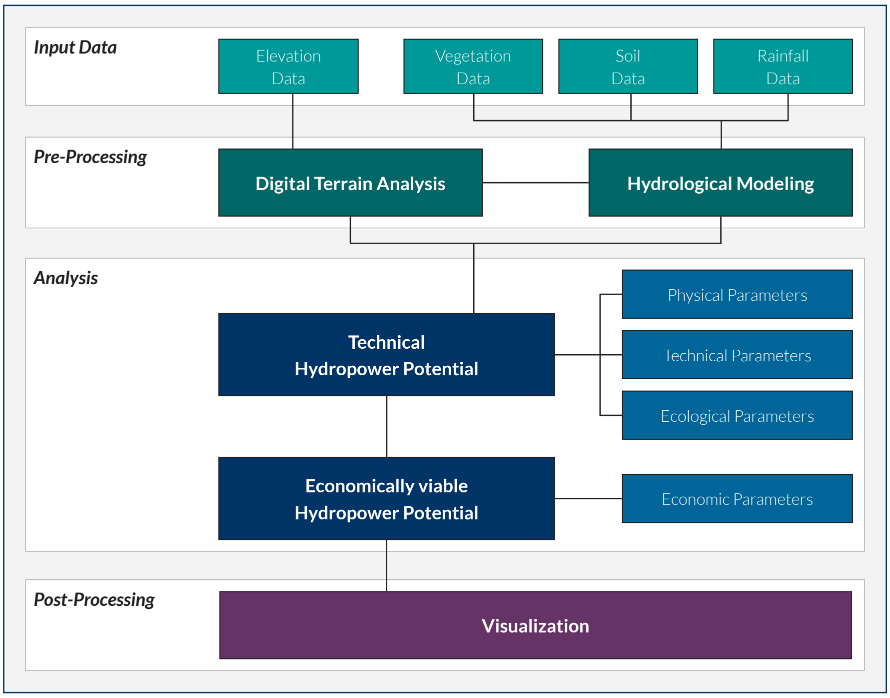
In run-of-river hydropower systems, electricity production is driven by two main parameters: the water flow in the river and the elevation drop of a river. These hydroelectric power generating systems have little or no storage, although even run-of-river hydropower schemes without storage will sometimes have a small diversion dam. This allows very short-term water storage (hourly or daily) and diverts a portion of the stream flow to a channel or penstock to convey the water to the turbine. Turbines and generators convert potential energy into electricity before the water returns to the stream (Giesecke a. Mosonyi 2006:29). Water courses suitable for hydropower generation ideally have sustainable and high flow rates as well as steep gradients between a virtual intake and a virtual powerhouse creating the necessary head.



Main Components of Run-of-River Hydropower Systems

4. Method and Proceedings

To locate sites that are suitable for hydroelectric power generation on Dominica, an analysis of the hydropower potential of the stream network was carried out. However, a reliable and accurate analysis of a stream network requires detailed and accurate data on elevation/head and available discharge of the stream network.



Flow Chart
of the developed approach analyzing the hydropower potential of Dominica

For Dominica, only few long-term hydrological data records on the stream network were available. For this reason, a new GIS-based approach was developed that is able to cope with the limited data availabililty to allow first assumptions about the hydropower potential of the Dominican stream network. Globally available satellite-based data products were obtained to compensate for any missing yet relevant input data.

Catchment boundaries and the stream network of Dominica were derived from a digital elevation model. Based on vegetation, soil and rainfall data, the available discharge for the entire stream network was modeled applying a hydrologic Model suitable for the regional climate conditions on the island.

All spatial topographic and hydrological data was stored in a comprehensive SQL-database. Based on this database it was possible to estimate the technical hydropower potential of all streams according to physical, technical and ecological limitations. Taking into account local economic parameters allowed the location of river sections suitable for implementing economically viable virtual hydropower projects.

The GIS-based approach requires the following spatial data products as input data:

- **Elevation Data**
  [raster-based digital elevation data]
- **Vegetation Data**
  [raster-based data on vegetation structures]
- **Soil Data**
  [raster-based data on soil classification]
- **Rainfall Data**
  [point-based records of daily rainfall data]

4.1 Methodology

As all calculations of the hydropower potential analysis of Dominica are referred to spatial information, a Geographic Information System (GIS) was established. For all calculations and data storage, a point grid layer of the study area was developed referring to the spatial resolution of the raster-based digital elevation model (DEM). The grid points represent cells with a square shape with the grid point being located in the center of the cell. All relevant spatial information was joined to the grid points according to its spatial location. The attribute data of all grid points was transferred to the database serving the computer-based analysis and decision-making tool to estimate the technically and economically viable hydropower potential. The GIS-based analysis can be divided into the Digital Terrain Analysis and the Hydrological Modeling.

Digital Terrain Analysis

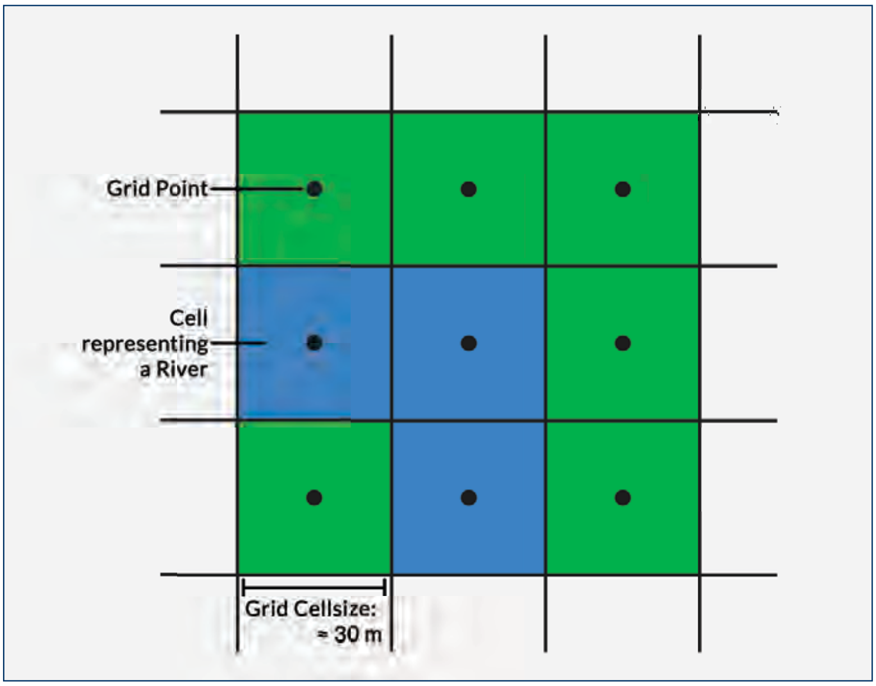
The objective of the Digital Terrain Analysis is to identify catchment boundaries and to model the topographic characteristics of the catchment as well as the resulting stream network.

The GIS-based terrain analysis was subject to the presumption that the direct runoff of any given cell flows downhill in the direction of the greatest slope. To allow all cells of the input DEM-data draining downhill, the elevation model was cleared of errors such as surface depressions, which would act as water sinks. To calculate the flow direction for each grid point, the deterministic 8 (D8) algorithm was applied (Jenson, Domingue 1988:326). According to the flow direction of all cells, each grid point was assigned a value corresponding to the number of cumulated cells flowing to it (O'Callaghan, Mark 1984:1594). Cells with no inflow correspond to the pattern of ridges and form catchment boundaries.

To introduce a lower boundary for the calculation of the hydropower potential, a minimum hydraulic head and a minimum area to accumulate runoff water were defined. The minimum size of the hydrologic catchments was set to 4.5 km² which allows a sensible minimum flow accumulation. The data processing routine recognizes only those grid points as "river" that are connected to at least the minimum catchment size. All "river" grid points of each catchment were joined to form the primary river of the respective catchment.

All other grid points which were not defined as water courses are assigned information about elevation, vegetation, soil and rainfall according to their spatial location, and were linked to the river data point they drain into. This allows the calculation of the discharge for every point in the river.

Schematic Illustration of the Grid Point-Raster Analysis



Hydrological Modeling

The objective of the Hydrological Modeling is to estimate the runoff of all catchments based on rainfall, vegetation and soil parameters as well as topographic characteristics. The hydrologic model used in this analysis uses a modified version of the US Soil Conservation Service Curve Number (SCS-CN) method to model the rainfall-runoff processes. The original SCS-CN method is an empirical approach based on simplified, experimentally derived relationships. The combination of land-use, land-cover, hydrologic soil type and the antecedent moisture condition of a grid cell are reflected in regionally defined curve number values (USDA NRCS 2004:10-2).

According to the modified version of the method applied in this study, the direct runoff of each grid point was calculated under consideration of variable runoff coefficients depending on the CN value, the 21-day prior rainfall-index as well as regional climatic conditions (Zaiss 1989:3; Sartor 1999:3).

CN values suitable for Dominica were transferred from a study on runoff processes of small watersheds on Saint Lucia from 2003 (Cox 2003:193). All available data on vegetation structure and soil type was pre-processed and re-classified to feed into the applied modified SCS-CN model. For every grid point of the study area this allowed determining CN values according to the spatial distribution of the vegetation and soil type.

Regional experts and hydrologists from the Caribbean Institute for Meteorology and Hydrology (CIMH) in Barbados confirmed the use of the modified SCS-CN approach to model the runoff processes on Eastern Caribbean Islands.

Verifications of the derived stream network have been made by optical comparison of the simulation results with the official topographic maps. The simulated discharges were verified by spot-wise measurements.

	Hydrologic Soil Group			
Land Use	A	B	C	D
Wet Forest	45	50	55	60
Dry Forest	70	75	86	90
Low Vegetation and Agriculture	78	85	90	97
Urban Area	79	86	91	98

CN Values
for Dominica of the four SCS
Hydrological Soil Groups
(Cox 2003:193)

4.2 Base Maps and Data

For the Hydropower Potential Analysis of all major rivers of the Dominican stream network the following data products were obtained and pre-processed to serve as input data:

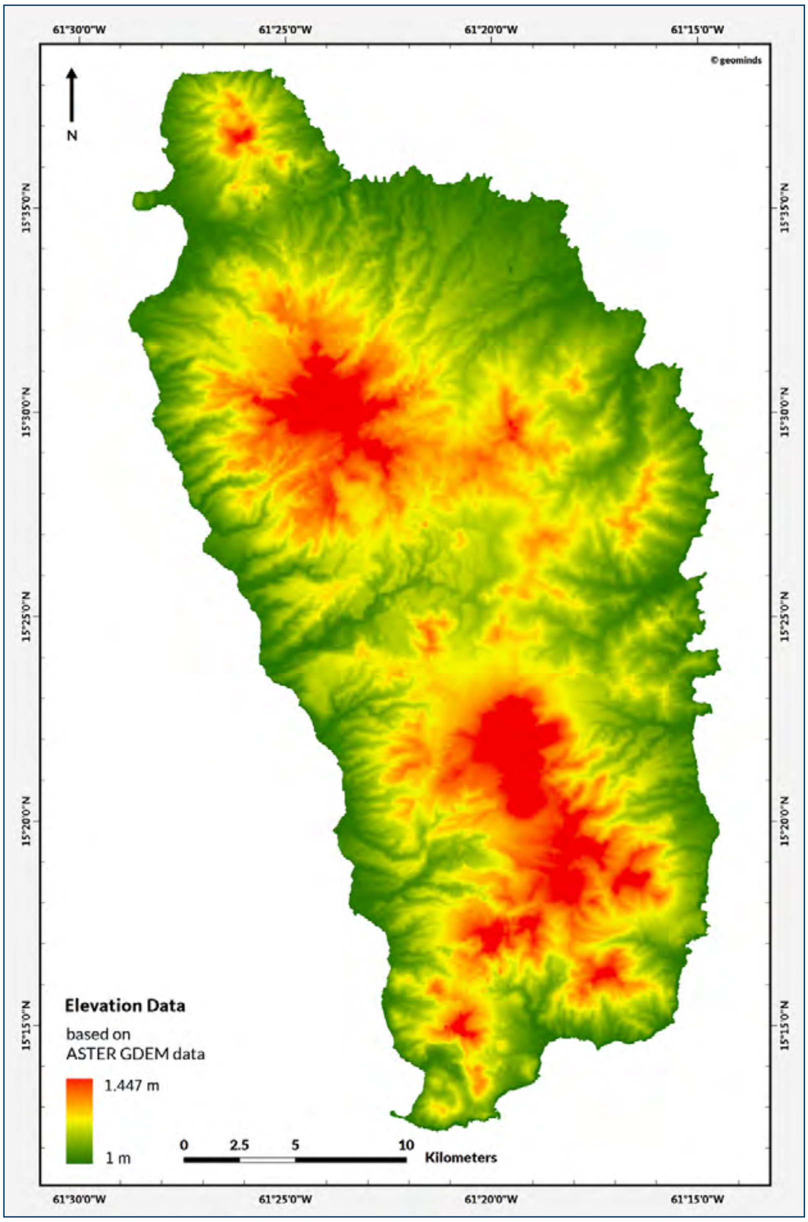
Elevation Data

The ASTER-GDEM V2 model was selected as elevation input data, which is a global digital elevation model that is able to represent the strong relief structure of the island of Dominica. The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model (GDEM) was developed jointly by the Ministry of Economy, Trade, and Industry (METI) of Japan and the United States National Aeronautics and Space Administration (NASA) (ERSDAC 2009:1).

The ASTER instrument was built by METI and launched on-board NASA's Terra satellite platform in December 1999. The sensor system has an along-track stereoscopic capability using its near infrared spectral band and its nadir-viewing and backward-viewing telescopes to acquire stereo image data. From this recorded stereo image data it is possible to calculate a digital elevation model using sophisticated spatial modeling software. The spatial resolution of the ASTER-GDEM is about 30 m x 30 m and covers land surfaces between 83°N and 83°S. An automated cloud masking and statistical approach reduces anomalies caused by clouds and allows the use of the data even in tropical regions.

Estimated accuracies for the ASTER-GDEM data is 17 m at 95% confidence for vertical data and 30 m at 95% confidence for horizontal data which offers the best resolution according to the currently available digital elevation models on a world wide scale at no charge (ERSDAC 2009:1; Tachikawa et al. 2011:2).

The digital elevation data for Dominica was corrected from DEM errors and overlaid with the latest topographic maps of the island and no major differences between both data sets were detected.



Digital Elevation Model of Dominica
derived from ASTER-GDEM satellite data

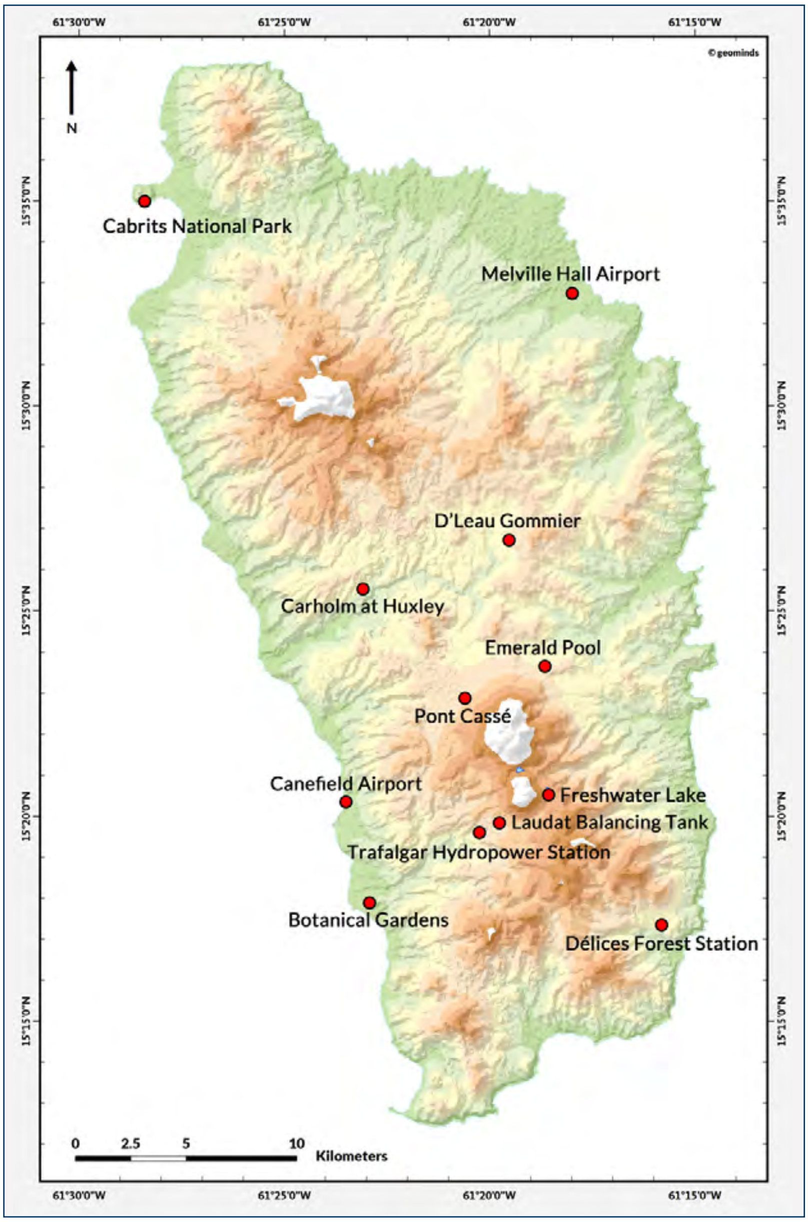
Rainfall Data

Information on rainfall was obtained spot-wise from rainfall gauging stations. An interpolation method was used to transfer the spot-wise measured information from the gauging station network to produce countrywide rain maps.

For this study, rain maps are based on rainfall information of 12 gauging stations. Although the majority of the gauging station are located in the south of the island, two stations provide input data for the northern shores. The stations record data on a daily basis. Some recordings of the rainfall gauging stations network date back to 1893. Daily records of all stations covering a period of at least 10 years were provided by the Dominica Meteorological Service and the Dominica Forestry, Wildlife and Parks Division. The data for each station was pre-processed for the use as control points with the Natural Neighbor Interpolation method, a local interpolation method suitable to model spatial rainfall when having control points for all areas of the study area.

As a consequence of the strong relief structure and the prevailing trade winds from the northeast, rainfall is highest on Dominica on steep, north-easterly facing mountain slopes. These local orographic conditions were taken into account according to the named influencing factors in a post-processing assessment of the spatially modeled rainfall.

Rainfall Gauging Stations of Dominica
Base map derived from ASTER-GDEM satellite data

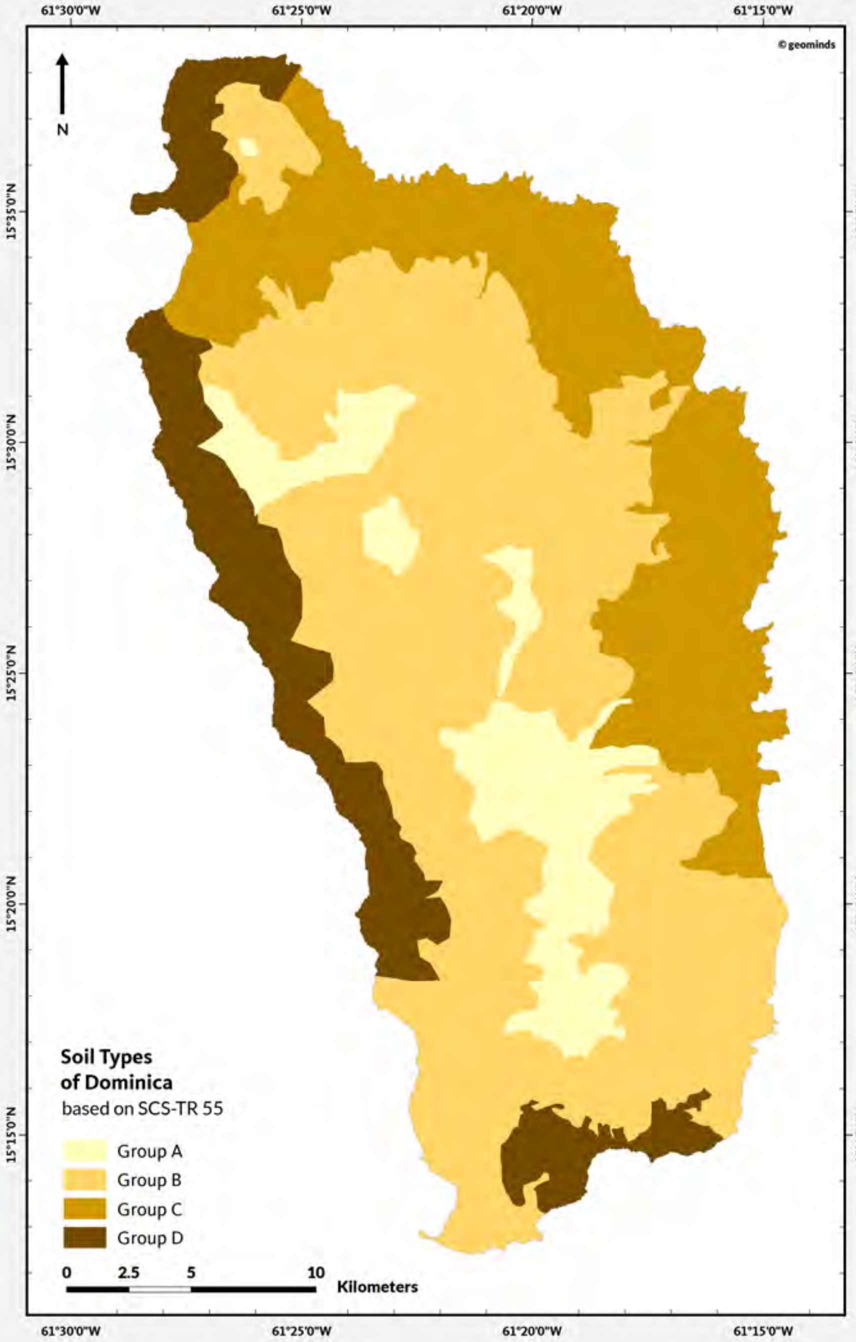


Soil Data

The amount of surface runoff is greatly dependent on the catchment's relief, vegetation structure and the soil conditions. A detailed soil map from 1967 was obtained from the European Digital Archive on Soil Maps (EuDASM).

The soil data was re-classified according to four well-defined soil classes suitable to feed into the applied hydrologic model of the United States Soil Conservation Service (SCS).

The SCS classifies soils into four hydrologic soil groups according to minimum infiltration rates, controlled by the surface conditions, as well as transmission rates, controlled by the soil profile (USDA/NRCS 1986:A-1). The classification scheme according to the hydrologic soil groups is one element used in determining CN values.



Group A

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist of deep, well to excessively drained sands or gravels and have a high rate of water transmission.

Group B

Group B soils have moderate infiltration rates when thoroughly wetted and consist of moderately deep, moderately well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

Group C

Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission.

Group D

Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission.

(Hydrologic Soil Group definitions based on USDA / NRCS 1986:A-1)

Soil Map of Dominica
Re-classification of soil data obtained from EuDASM

Vegetation Data

The spatial data on the vegetation structure of Dominica was obtained from Coan et al. (2007) and is based on a spectral analysis of a set of SPOT and Landsat satellite imagery and local expertise.

All available data sets of the vegetation structure of the island were overlaid as of their spatial location and transferred into one single data set. From the information on the vegetation structure, four well-defined vegetation structure classes were developed. The center of the island is dominated by wet forest whereas dry forest is mainly present at the west coast. The north coast is dominated by low vegetation and agricultural land.

This vegetation structure classification is the other element used in determining CN values for each grid point.

Wet Forest Class

The wet forest class consists of seasonal evergreen and evergreen forest like sierra palm, transitional and tall cloud forest which can be found in the center of the island. This class also consists of forested wetland like mangroves as well as coastal sand and rock.

Dry Forest Class

Tropical and subtropical deciduous forests have developed in seasonal rainfall patterns. On Dominica drought deciduous and coastal evergreen forest, mixed forest and shrubland with and without succulents are the main types of vegetation dominating the westerly shores of the island.

Low Vegetation and Agriculture Class

Grassland and shrubland dominate this vegetation class. Trees are more restricted to the floodplains of streams and occur scattered at the transitions to the more humid vegetation classes. The south east coast and the lowlands in the northern part of Dominica mainly make up this class. This vegetation class also includes agricultural farmland in the valleys of the central island.

Built-Up Area Class

Built-up areas are characterized by a mainly sealed surface and an artificial nearly 100% runoff. All sealed land and urban area of the island is comprised in this class generally covering the more populated north-western part of the island around Prince Rupert Bay and the coastal strip around the capital Roseau.

4.3 Hydropower Potential

With the attributed data of all grid points being added to the SQL-database the computer-based analysis and decision-making tool calculated the available stream flow discharge for all points of the analyzed primary rivers. Secondly, the technical hydropower potential of the entire stream network was estimated as well as river sections identified, suitable for realizing virtual, economically viable hydropower projects.

Estimating the Technical Hydropower Potential

The potential energy of downhill flowing water of a stream regardless of any physical, technical or economic limitations is defined as the gross theoretical hydropower potential. According to physical and technical reasons hydropower plants aren't able to fully use the gross theoretical hydropower potential. The technical potential of hydropower describes the energy capacity that is actually useable when technical, infrastructural, ecological and other conditions are taken into consideration (Horlacher 2003:9).

In this study, the technical hydropower potential was calculated for each grid point representing a river. Thus, each assessed river point forms the virtual powerhouse location. The virtual intake for the respective virtual project is defined being 1,000 m upstream. This assumption creates a series of virtual hydropower projects along the considered river to ensure compatibility.

The technical hydropower potential for every possible virtual project combination was calculated according to the following equation:

$$P = (h_{geo} - h_{loss}) \cdot (Q - Q_{eco}) \cdot g \cdot \rho \cdot \eta$$

h_{geo} = geodetic head between virtual intake and virtual powerhouse [m]

h_{loss} = friction loss from penstock [m]

Q = long-term mean stream flow at virtual intake [m³/s]

Q_{eco} = minimum amount of water remaining in the river for ecological reasons [m³/s]

g = gravity [9.78 m/s²; constant]

ρ = density of water [1,000kg/m³; constant]

η = plant efficiency [%]

In the case of the present analysis, the following technical, physical and ecological influences reducing the gross theoretical hydropower potential have been accounted for:

- Any friction losses, that occur from water flowing through hydraulic conduits such as the intake, the trash-rack, canals and penstock including valves and other installations, are taken into account by reducing the actual available gross head relative to the flow in the conduits. Thus, the net head is the geodetic elevation difference between virtual intake and virtual powerhouse (h_{geo}) minus hydraulic losses (h_{loss}) resulting from friction in the water conduit. For the purpose of this analysis, the friction losses are proportional to the penstock length and defined as 0.5 m loss of height per 100 m penstock length.

- The predicted discharge amount used for hydropower calculations is expected to be available statistically at 30% of days per year. To estimate the discharge with an exceedance probability of 30%, a flow duration curve was synthetically generated.

- The amount of discharge usable for hydropower in an ecologically sustainable way is set to 75% of the available discharge at any point of time, while 25% of the remains in the rivers as ecological flow (Q_{eco}) preserving the local aquatic ecosystem.

- The "plant efficiency" as used in this report summarizes all energy conversion losses occurring in the process of electricity generation using turbines, generators and related equipment and is assumed to be $\eta = 0.80$.

- The density of water is set to be $\rho = 1{,}000$ kg/m³.

- The strength of the gravitational field for the Caribbean region is set to be $g = 9.78$ m/s² (PTB 2013).

Estimating the Economically Viable Hydropower Potential

With extending the penstock of a virtual project a higher elevation difference may be utilized resulting in a higher hydroelectric production capacity, but also increasing investment costs. Thus, a filter routine was implemented, taking into account economic parameters such as investment costs of a virtual hydropower generation plant, average annual power production, project lifetime expectancy as well as the feed-in tariff for selling electricity, calculating the net value of the virtual project. The virtual projects that have a negative net value were excluded from further analysis. The Internal Rate of Return (IRR)-method was applied to identify the top economically viable hydropower projects.

As all economically related parameters are very sensitive and may lead to skew results of the analysis, the parameters and assumptions were determined very carefully according to local pricing conditions. For the purpose of this analysis, local experts, government agencies, manufactures and suppliers were consulted to provide input data. All received information was carefully evaluated and used to create mean values for the calculations of the computer based decision-making tool.

For every virtual project combination the net values were calculated using the following formula and assumptions:

NET VALUE* = *(Project Lifetime · Annual Profit) – Total Project Development Costs

PROJECT LIFETIME

The project lifetime is assumed to be 25 years of operation.

ANNUAL PROFIT

The annual profit is calculated by subtracting the annual operation and maintenance costs from the annual revenue resulting from electricity sales relative to the design capacity of the project, capacity factor and the feed-in tariff. The calculation factors are estimated as follows:

ANNUAL PROFIT* = *(Installed Capacity · Capacity Factor · Feed-in Tariff) – O&M Costs

- ***Installed Capacity***
  The installed capacity is the capacity corresponding to a discharge with an exceedance probability of 30% minus ecological minimum flow, and the head and the overall plant efficiency as used to estimate the technical hydropower potential.

- ***Capacity Factor***
  The capacity factor is the ratio of the annual hours the virtual hydropower plant is operated at full design capacity in relation to the plant operating at full capacity full time (8,760 hours per year). The capacity factor as used in this analysis is defined as 0.5.

- ***Feed-in Tariff***
  The feed-in tariff is the amount of money per unit that a generator of electricity is remunerated for feeding-in electricity to the public grid. The feed-in tariff is often used as a policy mechanism designed to promote renewable energies. For the purpose of this analysis, the feed-in tariff is assumed to be US$ 0.10 per kWh. However, there is no fixed feed-in tariff in Dominica as yet.

- ***Operation and Maintenance Costs (O&M)***
  O&M costs are defined as a percentage of the investment cost of each individual virtual project. This includes the repair of mechanical and electrical equipment like turbine overhaul, reinvestments in auxiliary equipment such as communication and control systems. However, it does not cover the replacement of major electro-mechanical equipment or refurbishment of penstocks, tailraces, etc. The O&M costs are assumed to be 5% of the total investment cost.

TOTAL PROJECT DEVELOPMENT COSTS

The total project development costs are calculated by adding general base costs of a virtual project to the costs for electro-mechanical equipment and the costs for the penstock. The calculation factors are estimated as follows:

PROJECT DEVELOPMENT COSTS *= Base Costs of Virtual Project + Costs for electro-mechanical Equipment + Costs for Penstock*

- ***Base Costs of Virtual Project***
  The base costs are assumed to be a fixed amount of US$ 30,000 which is assumed to be the same for all virtual projects. These costs cover preliminary studies, designs and all costs that occur in any event when developing a project.

- ***Costs for electro-mechanical Equipment***
  The costs for the entire electro-mechanical equipment, site access infrastructure, grid connection and the construction of the powerhouse (excluding costs for the penstock) correlates with the installed design capacity of the hydropower plant and is assumed as US$ 3,333 per installed kW.

- ***Costs for the Penstock***
  The costs of the penstock are dependent on its length, the material used and its diameter. In addition to the material costs there are costs for construction, site preparation as well as shipment and transportation costs.

  Penstock Material Costs
  Corresponding to the design discharge, which was estimated for each river point, different diameters of the penstock are selected based on the rule of limiting the flow velocity in the penstock to 1.5 to 2.5 m/s.
  It is assumed that the penstock follows the course of the river. Therefore, bends and special penstock elements are required for curves exceeding a certain radius. These extra costs are reflected in 10% higher penstock material costs.
  It is assumed that all penstocks are made of glass fiber reinforced polymer (GFRP).

The following design criteria and related penstock costs are taken into account calculating the individually penstock costs:

Discharge Ranges [m³/s]	Diameter [mm]	Costs [US$/m]
0.106-0.177	300	103.73
0.188-0.314	400	122.55
0.295-0.491	500	144.79
0.424-0.707	600	171.54
0.577-0.962	700	201.73
0.954-1.590	900	281.36
1.696-2.827	1,200	465.81
2.651-4.418	1,500	768.87

Penstock Construction Costs

The penstock construction costs are based on local wage levels according to skill level and working time of personnel as well as foundation material costs according to local prices for concrete and steel. Each penstock segment is assumed to be installed over ground on reinforced concrete foundations. Its volume varies according to the diameter of the penstock. The overall penstock construction costs per meter vary from US$ 77.76 to US$ 85.39 according to the individual foundation material costs.

Overseas Shipment Costs

As no penstock manufacturer is available on the island of Dominica, all materials have to be shipped. According to the penstock diameters, a different amount of segments fit into a 20' container. The cost for a shipped container is assumed to be US$ 1,355.88, including land transport.

For all virtual projects with a positive net value the Internal Rate of Return (IRR) was calculated to determine the interest rate that is equivalent to the returns expected from the project. The IRR is computed using an iterative calculation process, using different discount rates to get the discount rate that refers to a Net Present Value (NPV) = 0. The NPV of a virtual project is equal to the present value of future returns, discounted at the marginal cost of capital, minus the present value of the cost of the investment.

$$NPV = \sum_{t=4}^{28} \frac{R_t - (O\&M)_t}{(1+r)^t} - \sum_{t=0}^{3} \frac{I_t}{(1+r)^t} = 0$$

R = Electrictiy Revenues
O&M = Operation and Maintencance
I = Investment Costs
t = Year of Operation
r = Discount Rate

In this study it is assumed that every single virtual project will be developed and built in four years. In the first year expenses for the feasibility study, project design and management are incurred which is assumed to be 1/60 of the total project development costs. Costs for civil works and all electro-mechanical equipment are spread almost evenly over the remaining three years. At the end of the fourth year the whole development is finished and all funds disbursed. The project lifetime is assumed to be 25 years of operation.

For every river the computer-based decision-making tool identified the virtual project with the highest IRR of all possible combinations. This river section was blocked from further screening in order to avoid double selection of the same project. The virtual project with the next highest IRR is selected from the remaining non-blocked river sections. The maximum of 8 economically viable virtual hydropower projects per river were selected by the tool.

5. Presentation of Results

Each river was analyzed individually and the results are presented in several maps, charts and table format to allow comparison of all rivers in Dominica.

Overview Map

A large topographic overview map illustrating the major rivers, streets and settlements introduces every analyzed river providing the reader with a first impression of the catchment and its characteristics. The locations of the rain gauging station network on the island are given. Detailed climate charts for all stations are compiled in the appendix.

A comprehensive key legend shows the specific characteristics and symbols as well as the major key facts about the catchment and its analyzed river:

- Size of Catchment
- Length of Primary River
- Elevation Difference
- Long-term Mean Stream Flow Discharge at River Mouth

Key Findings of the Analysis

A short introductory text pointing out the key findings of the analyzed catchment and its river as well as its geographic location and characteristics provides the reader with a brief overview of the results of each river's hydropower potential analysis.

A country-wide rating provides the reader with a clear and conclusive comparison of the river, its catchment and its economically viable hydropower potential. The scoring system indicates the rank of the considered river in relation to the highest ranked river in Dominica. An index value of 100 for the respective categories refers to the values of the rivers/catchments presented in the table at the bottom of the page. The category "Econ. Potential FiT US$ 0.20" refers to the cummulative hydropower potential of all located economically viable virtual projects for the respective river applying a feed-in tariff of US$ 0.20.

Stream Flow Discharge Analysis

The "River Analysis Chart" provides an elevation profile along the course of the primary river from its highest elevation to its river mouth at sea level. The three blue curves in the chart represent the available long-term mean stream flow discharge for every point of the river as well as synthetically simulated daily flows with an exceedance of 110 and 255 days per year, respectively.

Analysis of the Normalized Technical Hydropower Potential

The map of the normalized technical hydropower potential provides the reader with a detailed individual analysis of the respective river. To locate the best hydroelectric power opportunities of a river, the hydropower potential of the entire river is set in relation to the river's maximum value, which represents 100%. Regardless of the absolute hydropower potential, these maps allow the reader to locate the most promising sections of the river for hydropower generation.

Category	River Name	Relating Value
Catchment Size	Layou	76.35 km²
Mean Stream Flow at RM	Layou	6.436 m³/s
Highest Elevation	Batali	570 m
Length of River	Layou	16.33 km
Econ. Potential (FiT US$ 0.20)	Roseau	3,385 kW

Analysis of the Economically Viable Hydropower Potential

This section shows the results of the river analysis identifying economically viable virtual hydropower project locations. This was done taking into account several physical, technical and ecological parameters as well as carefully evaluated and selected economic parameters according to local pricing conditions. The calculation method, assumptions and parameters are described in detail in chapter 4.3.

The river sections of the top ranked virtual projects according to the applied IRR-method are highlighted on the map. A corresponding table provides the reader with all relevant information about the physical, technical and economic data of the respective virtual project. River sections where no economically viable virtual project was identified remain white.

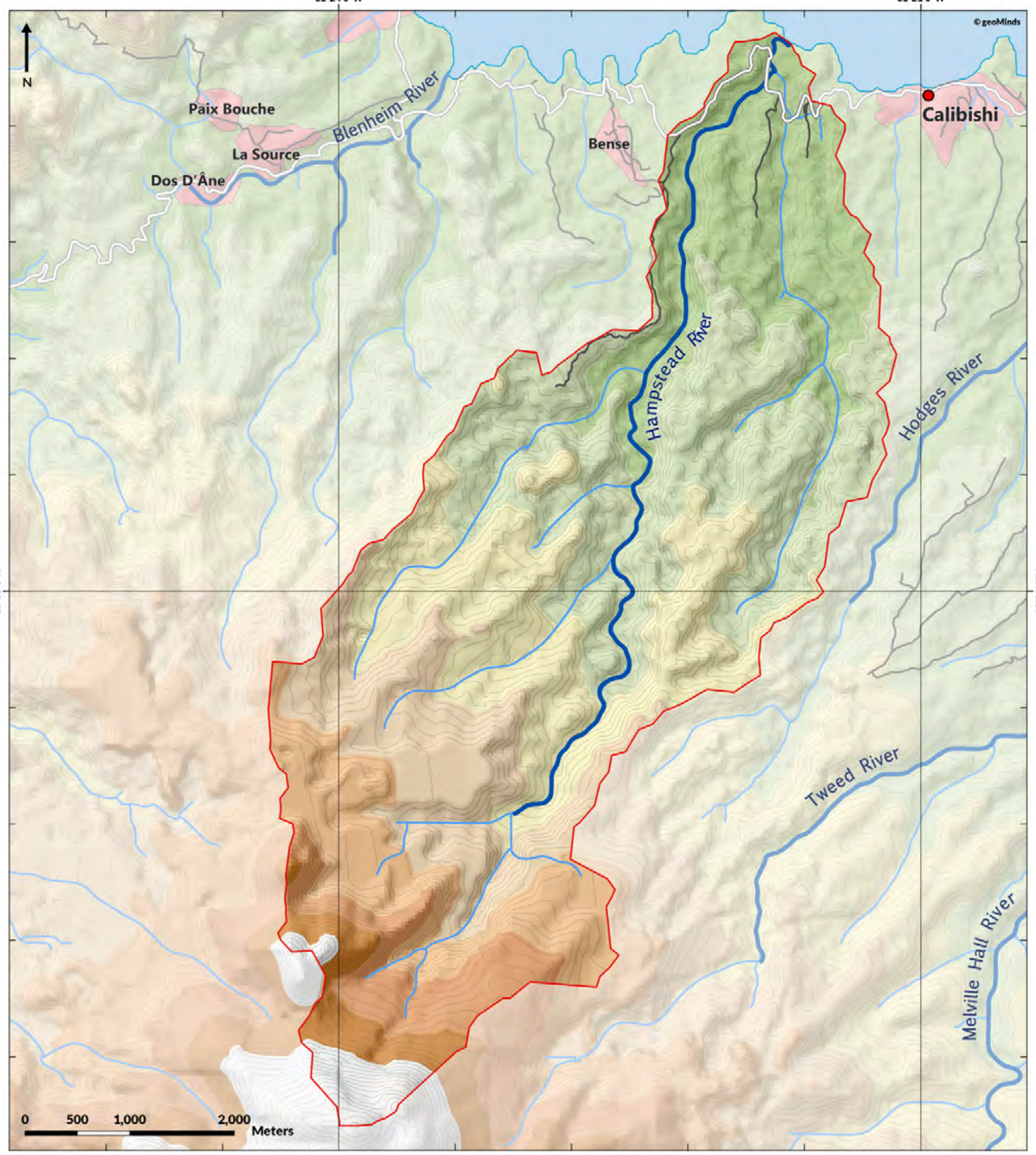
The economic viability of the virtual projects is strongly dependent on the feed-in tariff. To allow for assessment of the sensitivities, five scenarios were developed including feed-in tariffs of US$ 0.10, 0.125, 0.15, 0.175 and 0.20 per kWh.

[PART 2]

INDIVIDUAL RIVER ANALYSIS

1. HAMPSTEAD RIVER

1.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

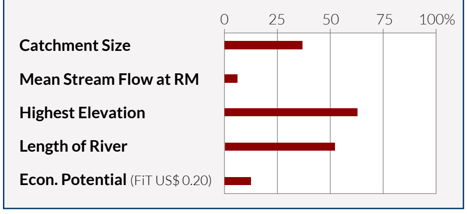
Facts about Catchment

Catchment Size:	28.12 km²
Length of Primary River:	8.51 km
Highest Elevation of Primary River:	359 m
Long-term Mean Stream Flow at River Mouth:	0.395 m³/s

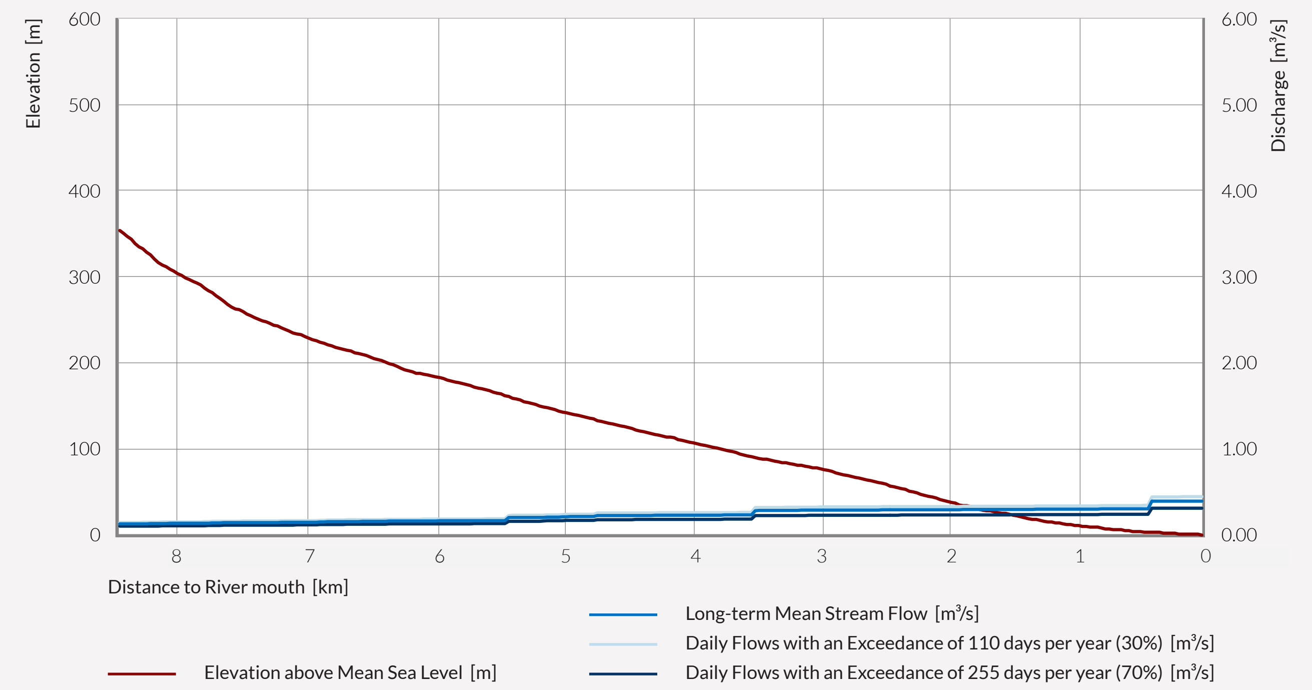
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Hampstead River has a total length of 8.51 km and a catchment size of about 28.12 km². The annual mean discharge available for generating hydropower in an ecologically sustainable way only reaches 0.395 m³/s at its river mouth. However, the high elevation drop of 359 m of the river may allow the implementation of smaller projects for hydroelectric power production. Economically viable virtual hydropower projects were located applying a feed-in tariff of US$ 0.125 and more.

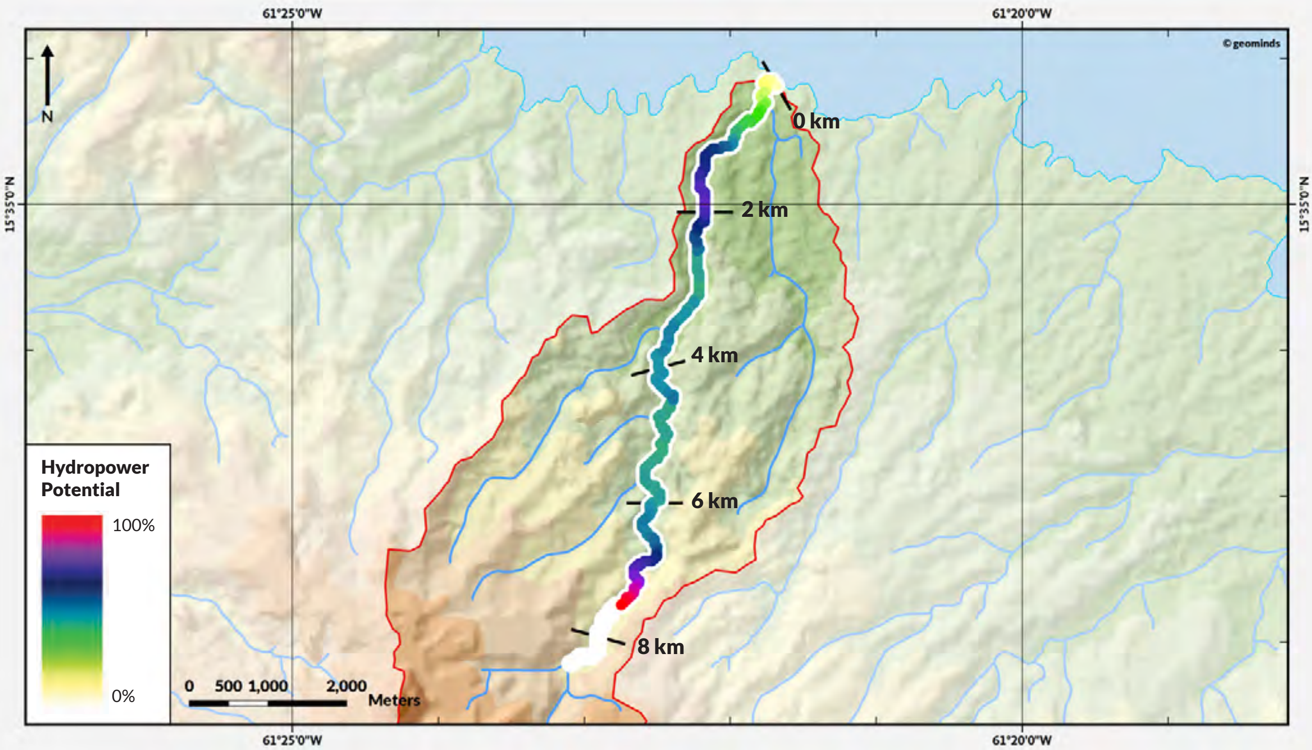
COUNTRY-WIDE RIVER RATING



1.2 • STREAM FLOW DISCHARGE ANALYSIS OF HAMPSTEAD RIVER

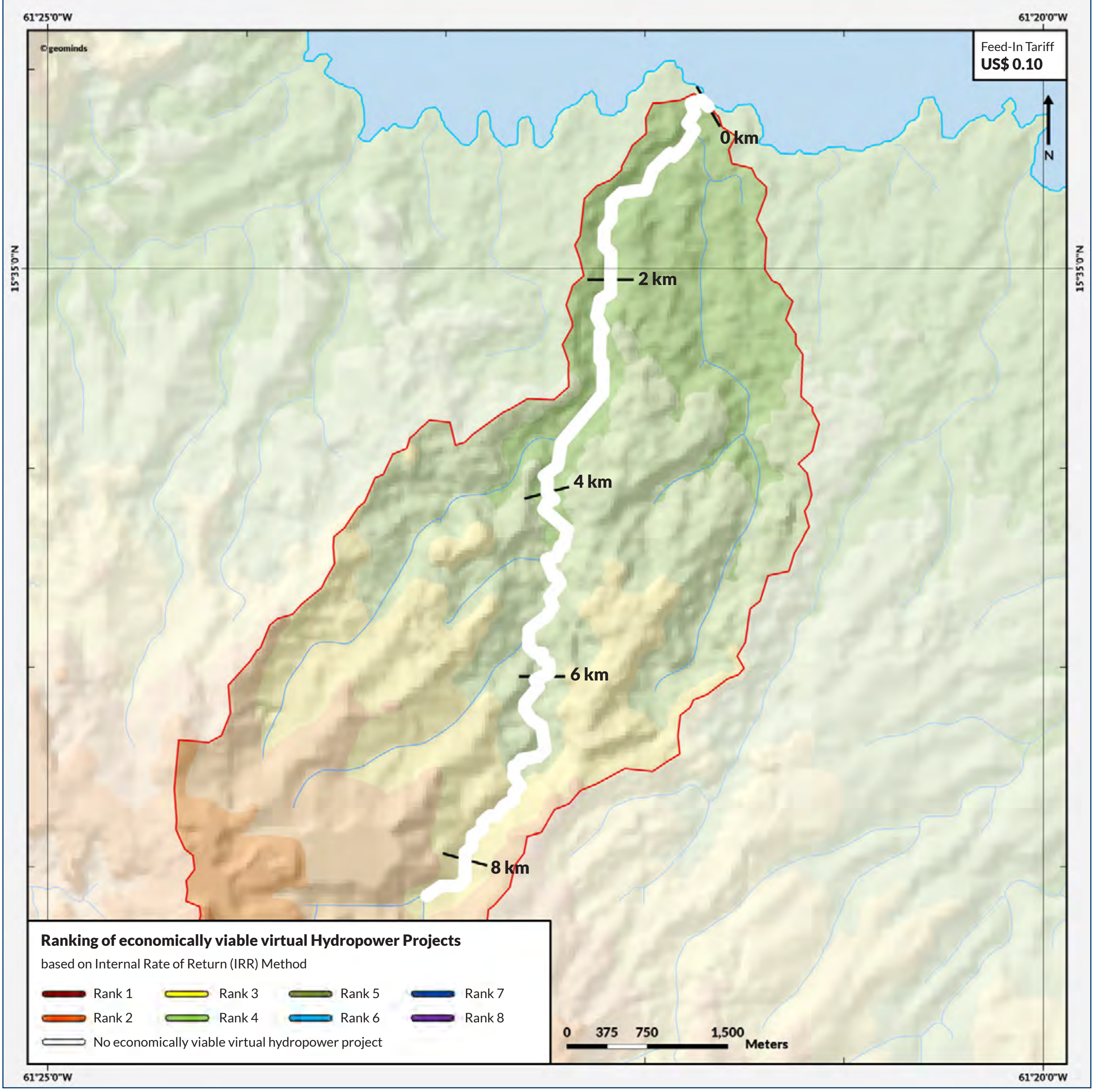


1.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

1.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

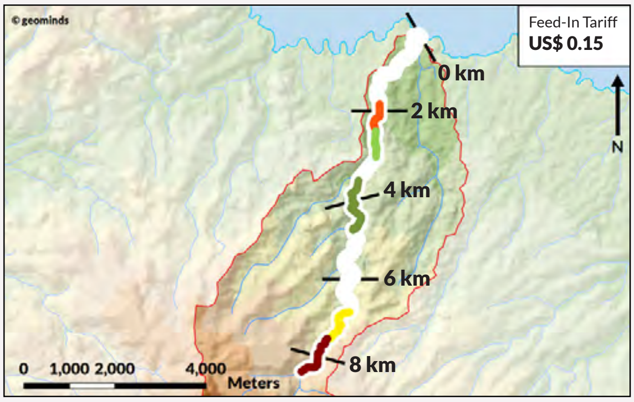
No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

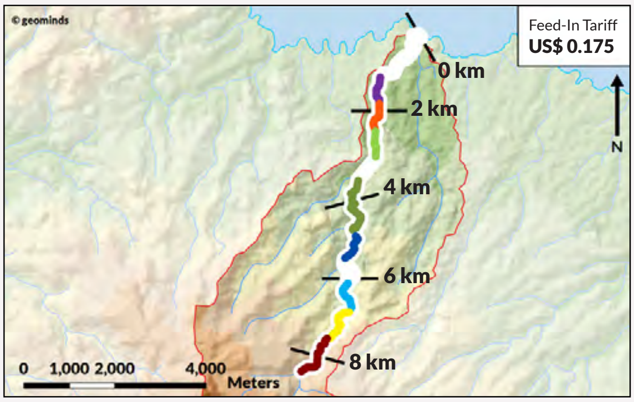
The information and statistical data with this report have not been independently verified and Geominds makes no representations or warranty as to its accuracy, completeness or correctness. This publication is for information purposes only and is not intended to provide professional, investment or any type of advice or recommendation. Geominds does not accept any responsibility and cannot be held liable for any person's use of or reliance on the information and opinions contained herein.

1.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF

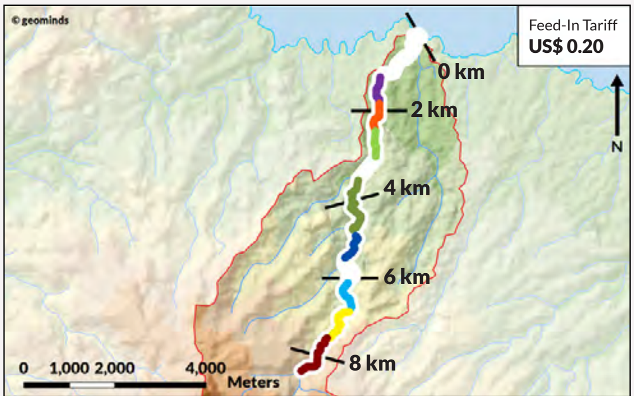
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	2.04%	100.70 kW	7.56 km	8.46 km
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	4.81%	100.70 kW	7.56 km	8.46 km
2	1.97%	54.42 kW	1.89 km	2.46 km
3	1.19%	50.64 kW	6.75 km	7.50 km
4	0.10%	39.25 kW	2.49 km	3.00 km
5	0.09%	73.49 kW	3.54 km	4.74 km
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.16%	100.70 kW	7.56 km	8.46 km
2	4.31%	54.42 kW	1.89 km	2.46 km
3	3.54%	50.64 kW	6.75 km	7.50 km
4	2.50%	39.25 kW	2.49 km	3.00 km
5	2.49%	73.49 kW	3.54 km	4.74 km
6	2.39%	32.20 kW	6.12 km	6.63 km
7	1.82%	31.32 kW	4.92 km	5.40 km
8	1.53%	35.01 kW	1.32 km	1.83 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.26%	100.70 kW	7.56 km	8.46 km
2	6.34%	54.42 kW	1.89 km	2.46 km
3	5.57%	50.64 kW	6.75 km	7.50 km
4	4.52%	39.25 kW	2.49 km	3.00 km
5	4.51%	73.49 kW	3.54 km	4.74 km
6	4.41%	32.20 kW	6.12 km	6.63 km
7	3.85%	31.32 kW	4.92 km	5.40 km
8	3.57%	35.01 kW	1.32 km	1.83 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

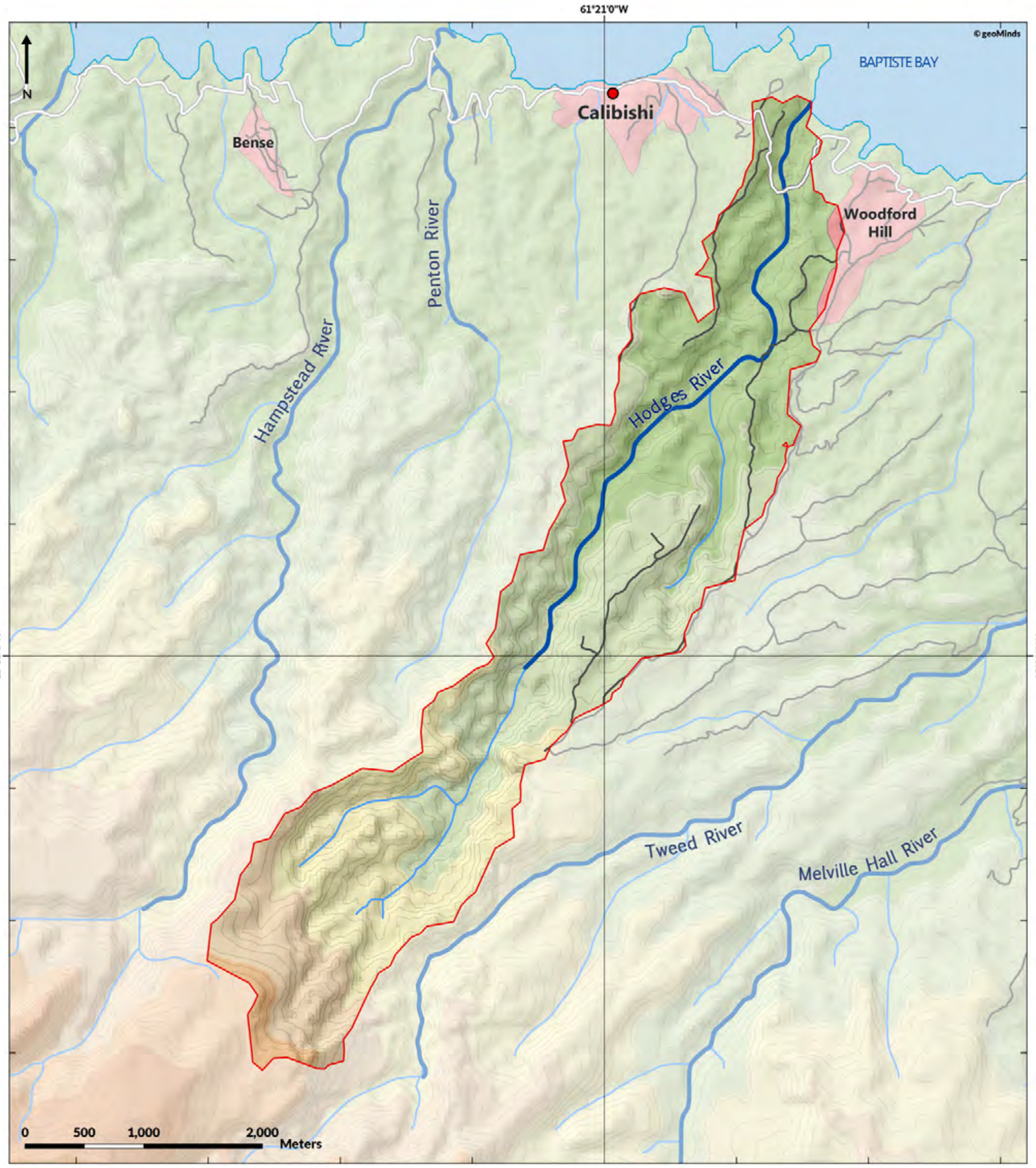
Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

2. HODGES RIVER

2.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

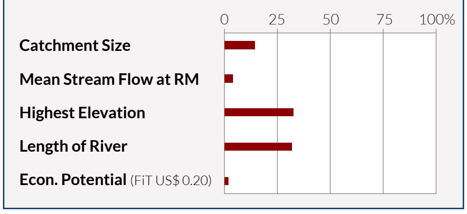
Facts about Catchment

Catchment Size:	10.95 km²
Length of Primary River:	5.19 km
Highest Elevation of Primary River:	186 m
Long-term Mean Stream Flow at River Mouth:	0.168 m³/s

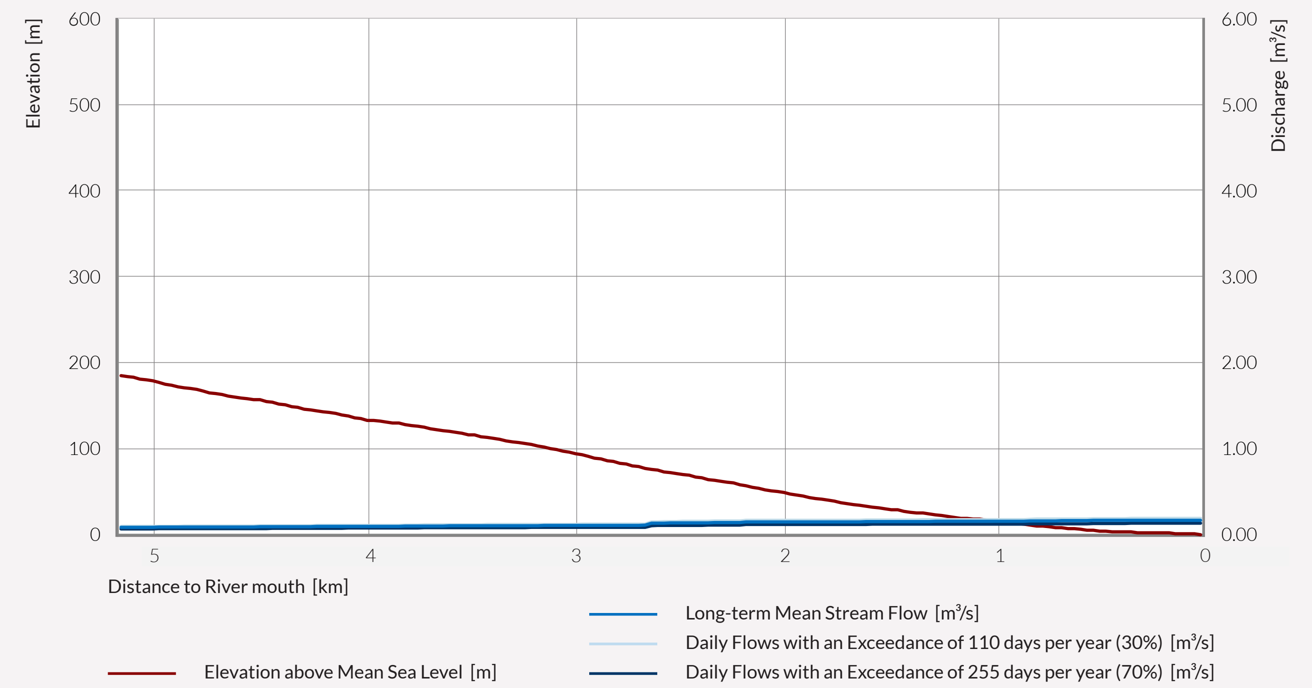
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Hodges River is situated in the north-east of the island and has an analyzed river section of 5.19 km. With a catchment size of 10.95 km² the river accumulates a mean annual discharge of just 0.168 m³/s at its river mouth at Baptiste Bay. With an elevation drop of only 186 m the Hodges River is the stream with the lowest potential for hydroelectric power production of all analyzed rivers in Dominica. Economically viable virtual hydropower projects were located only applying a feed-in tariff of at least US$ 0.175.

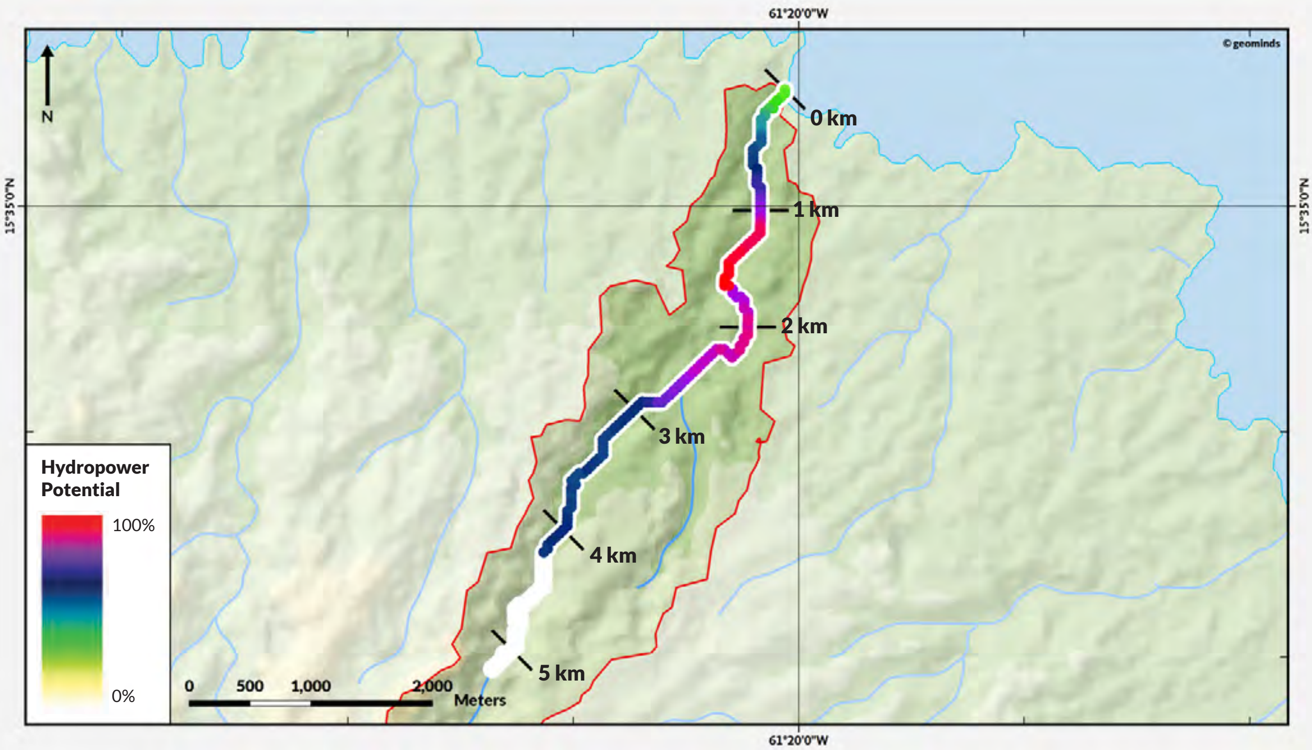
COUNTRY-WIDE RIVER RATING



2.2 • STREAM FLOW DISCHARGE ANALYSIS OF HODGES RIVER

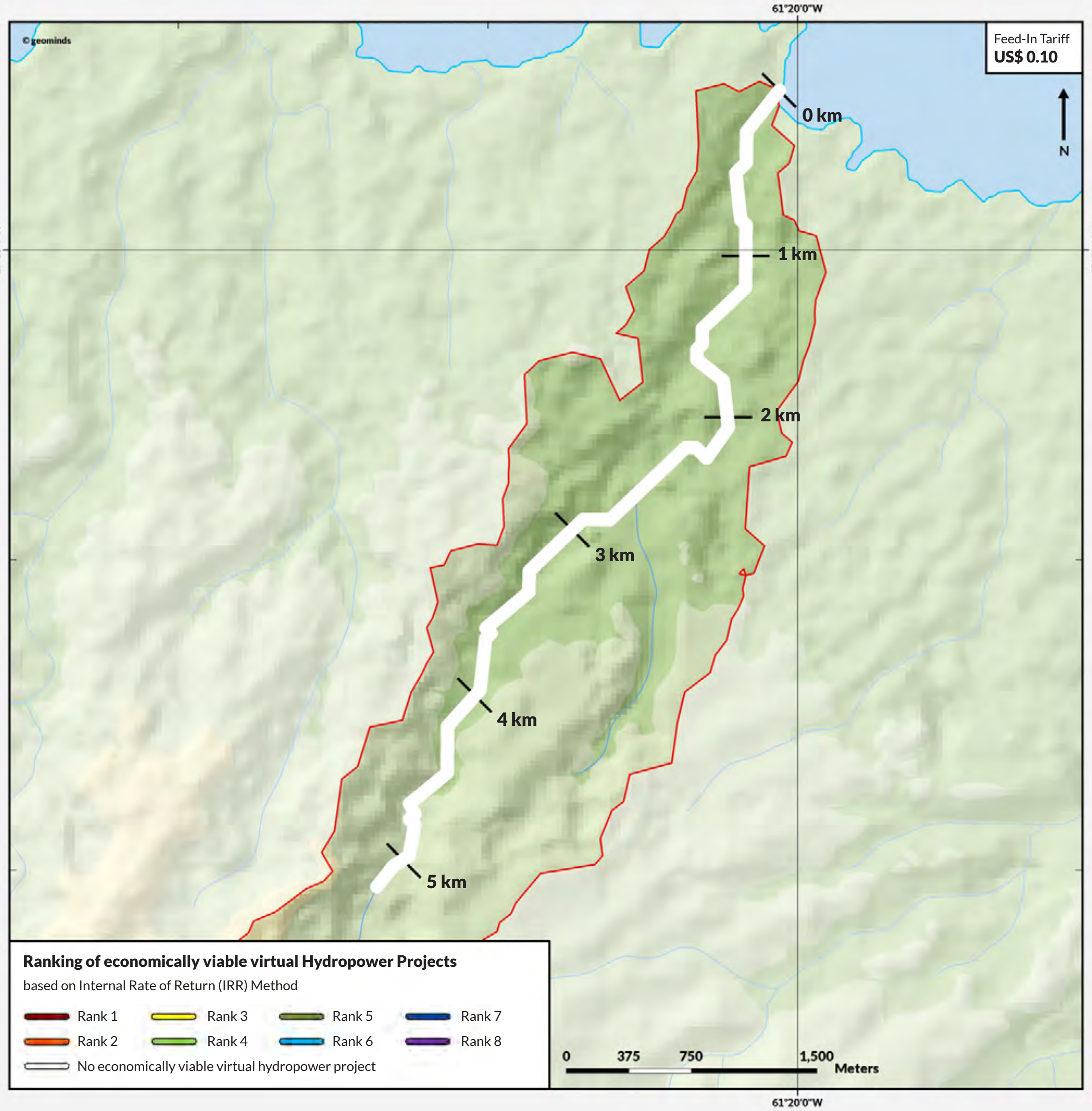


2.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

2.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



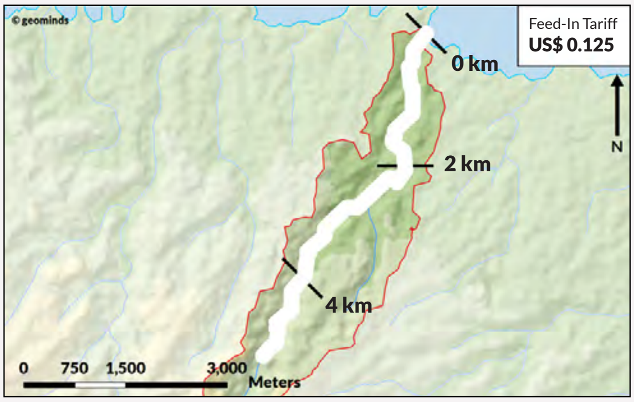
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

2.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

No economically viable virtual hydropower project was located!

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

No economically viable virtual hydropower project was located!

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	0.47%	34.11 kW	1.71 km	2.43 km
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	2.54%	34.11 kW	1.71 km	2.43 km
2	1.12%	26.47 kW	2.55 km	3.18 km
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

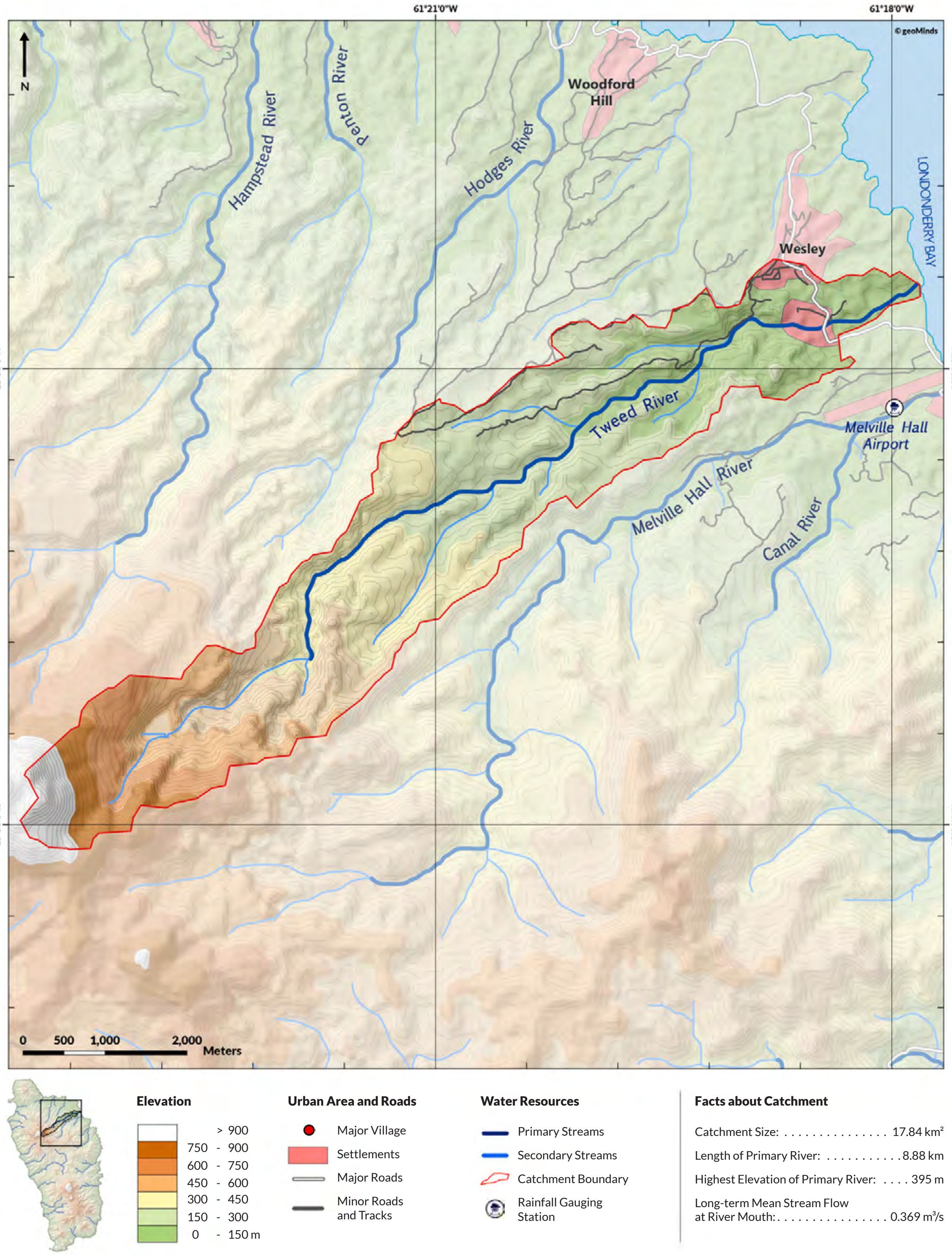
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

3. TWEED RIVER

3.1 • OVERVIEW MAP



Facts about Catchment

Catchment Size: . . . . 17.84 km²

Length of Primary River: . . . . 8.88 km

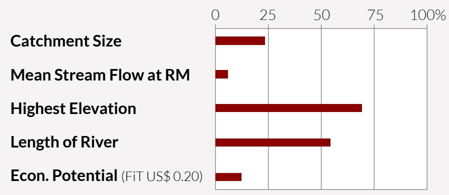
Highest Elevation of Primary River: . . . . 395 m

Long-term Mean Stream Flow at River Mouth: . . . . 0.369 m³/s

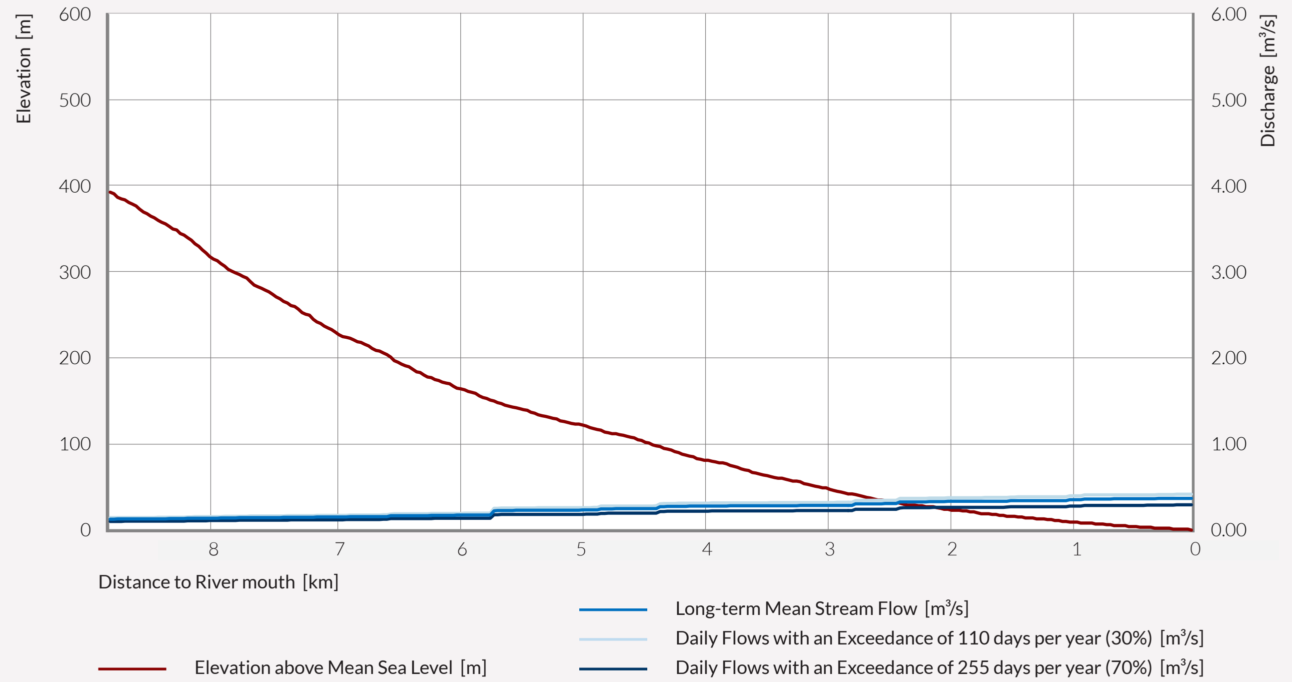
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Tweed River accumulates its waters from the central highlands around Morne Diablotins north of the Melville Hall catchment and flows into the Londonderry Bay on the north-east coast of Dominica. With 8.88 km in length and an elevation drop of 395 m the Tweed River is one of the longest of all analyzed rivers. However, it has only a small catchment (17.84 km²) and a mean annual discharge available for generating hydroelectric power in an ecologically sustainable way of only 0.369 m³/s, economically viable virtual hydropower projects were located only applying feed-in tariffs of at least US$ 0.125.

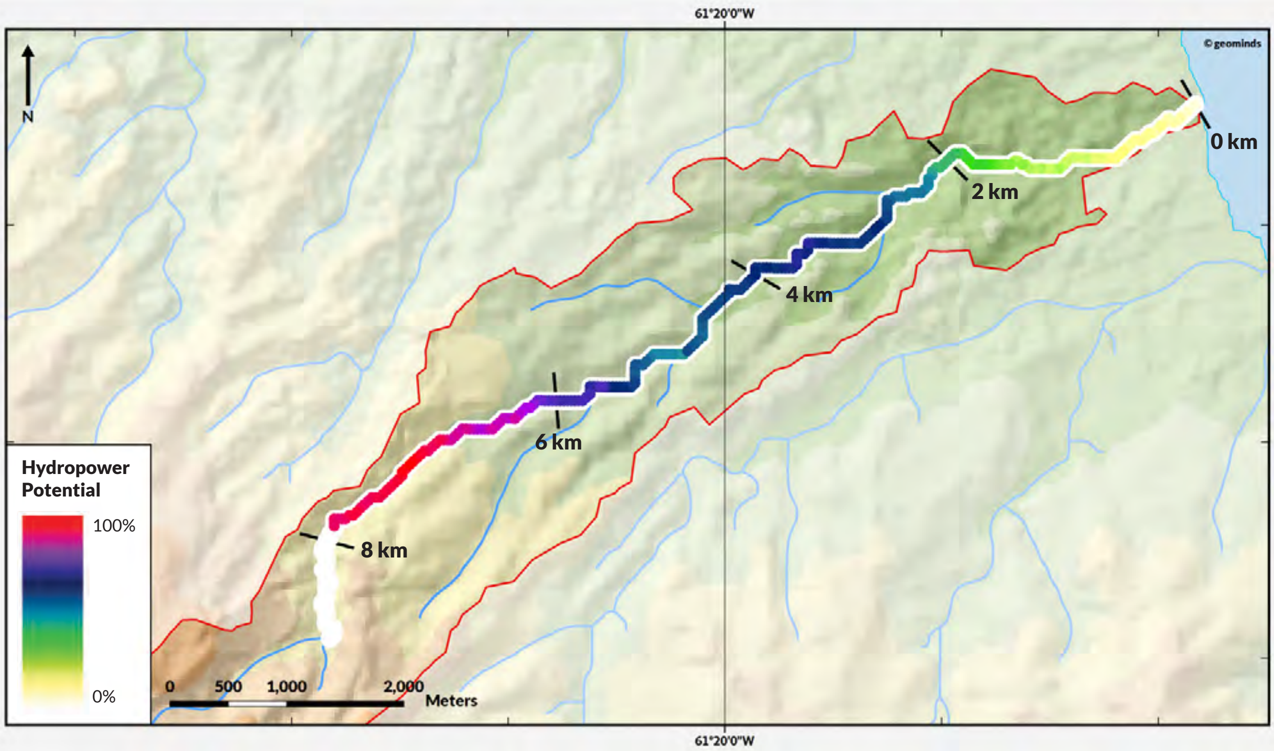
COUNTRY-WIDE RIVER RATING



3.2 • STREAM FLOW DISCHARGE ANALYSIS OF TWEED RIVER

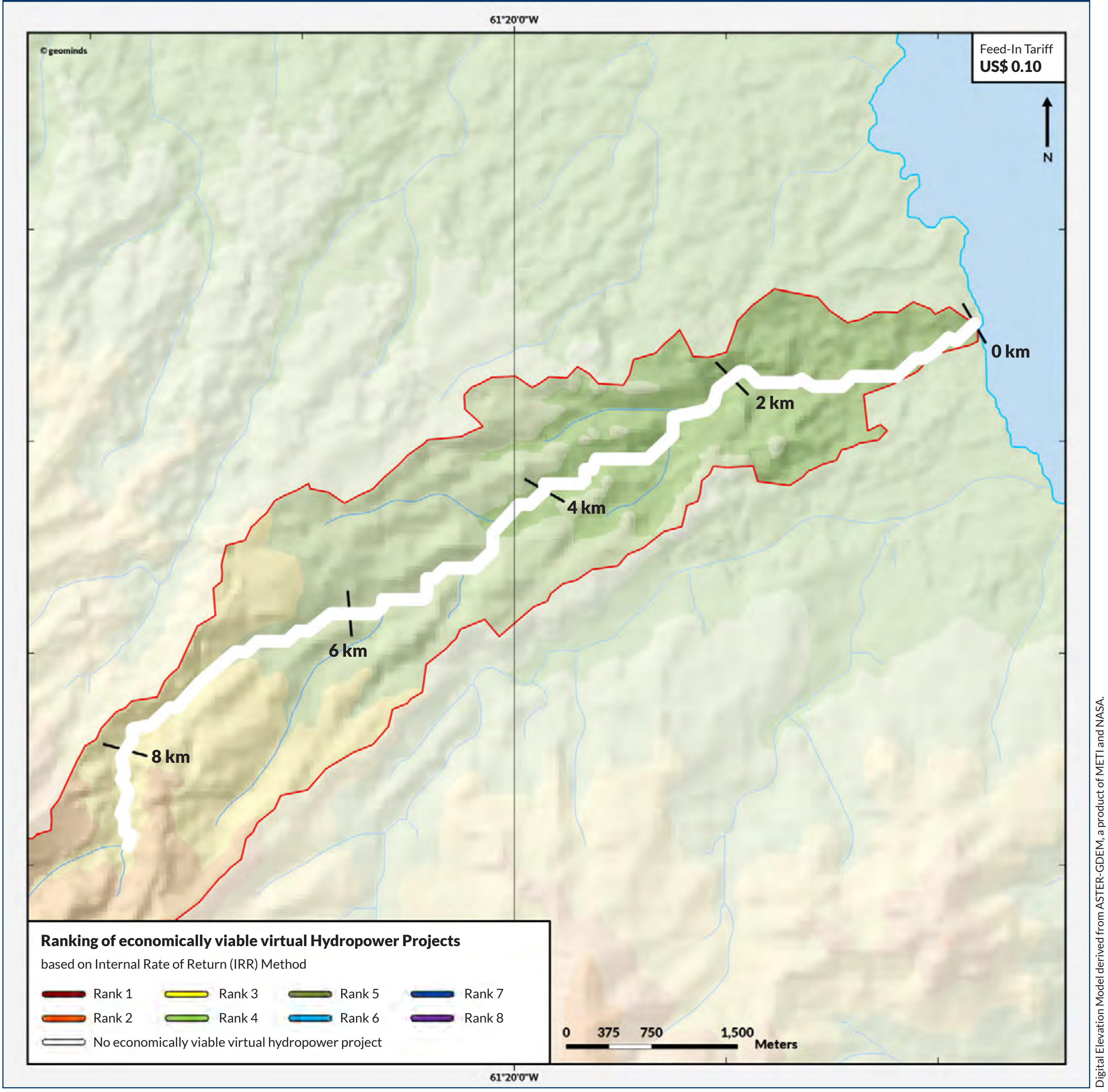


3.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

3.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

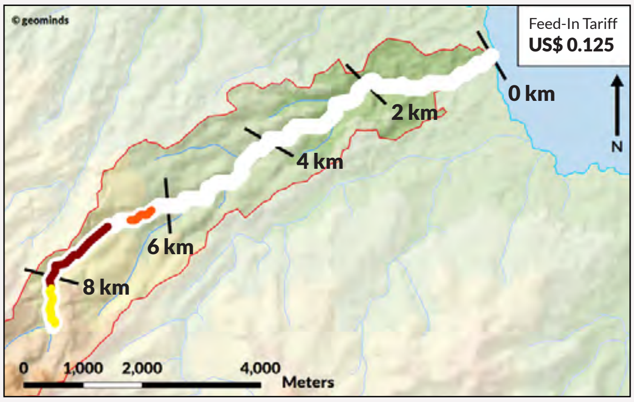


Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

3.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	1.84%	124.77 kW	6.93 km	8.13 km
2	0.23%	32.79 kW	6.24 km	6.54 km
3	0.14%	53.64 kW	8.16 km	8.76 km
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	4.61%	124.77 kW	6.93 km	8.13 km
2	3.05%	32.79 kW	6.24 km	6.54 km
3	2.96%	53.64 kW	8.16 km	8.76 km
4	1.54%	46.78 kW	4.02 km	4.53 km
5	0.83%	36.67 kW	3.36 km	3.78 km
6	0.79%	62.00 kW	4.77 km	5.67 km
7	0.44%	35.31 kW	5.70 km	6.18 km
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.95%	124.77 kW	6.93 km	8.13 km
2	5.39%	32.79 kW	6.24 km	6.54 km
3	5.30%	53.64 kW	8.16 km	8.76 km
4	3.89%	46.78 kW	4.02 km	4.53 km
5	3.20%	36.67 kW	3.36 km	3.78 km
6	3.16%	62.00 kW	4.77 km	5.67 km
7	2.82%	35.31 kW	5.70 km	6.18 km
8	2.59%	21.08 kW	6.57 km	6.84 km

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.05%	124.77 kW	6.93 km	8.13 km
2	7.43%	32.79 kW	6.24 km	6.54 km
3	7.34%	53.64 kW	8.16 km	8.76 km
4	5.91%	46.78 kW	4.02 km	4.53 km
5	5.22%	36.67 kW	3.36 km	3.78 km
6	5.18%	62.00 kW	4.77 km	5.67 km
7	4.84%	35.31 kW	5.70 km	6.18 km
8	4.61%	21.08 kW	6.57 km	6.84 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

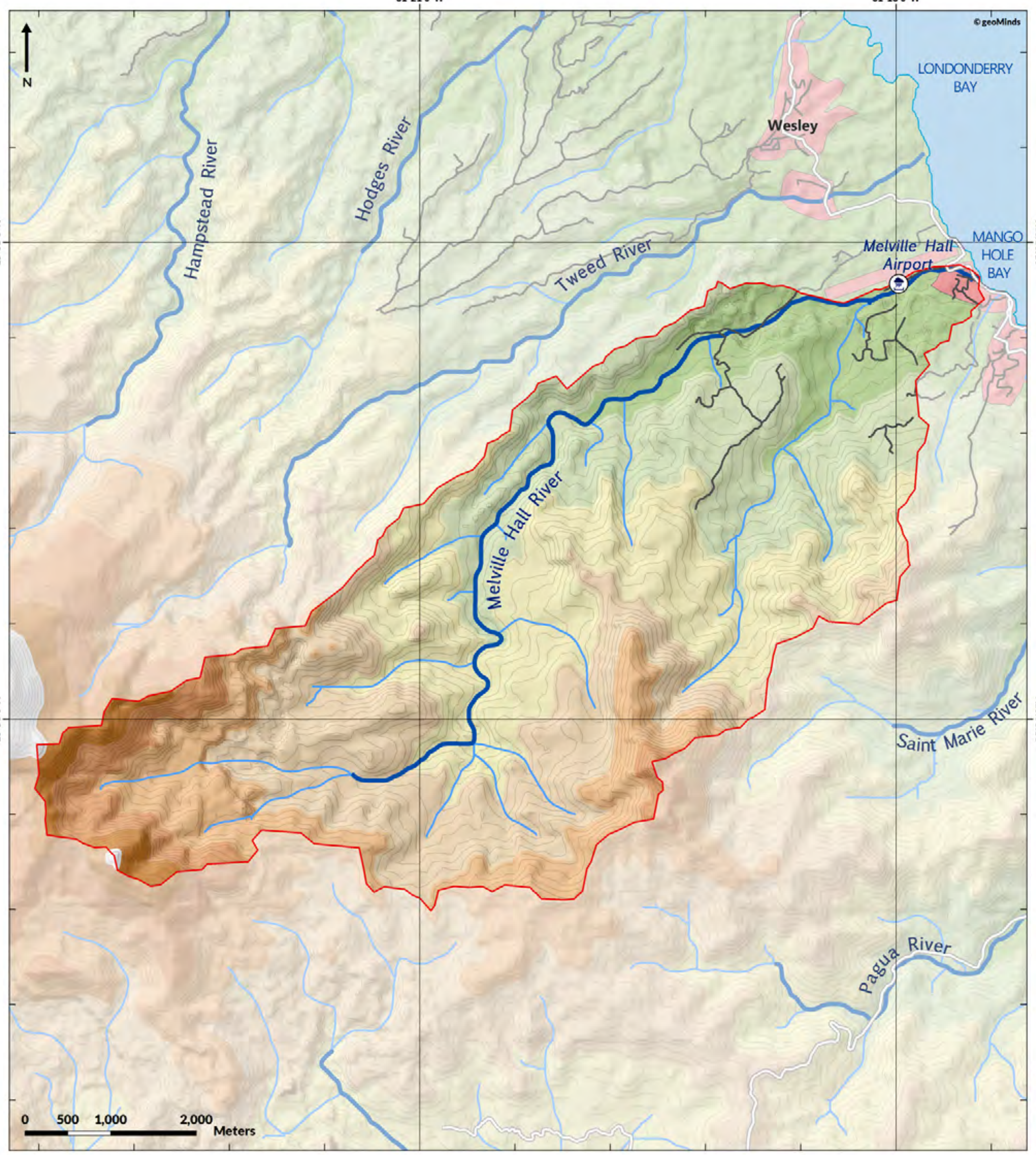
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

4. MELVILLE HALL RIVER

4.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

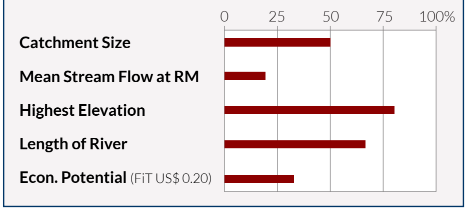
Facts about Catchment

Catchment Size:	38.25 km²
Length of Primary River:	10.90 km
Highest Elevation of Primary River:	459 m
Long-term Mean Stream Flow at River Mouth:	1.247 m³/s

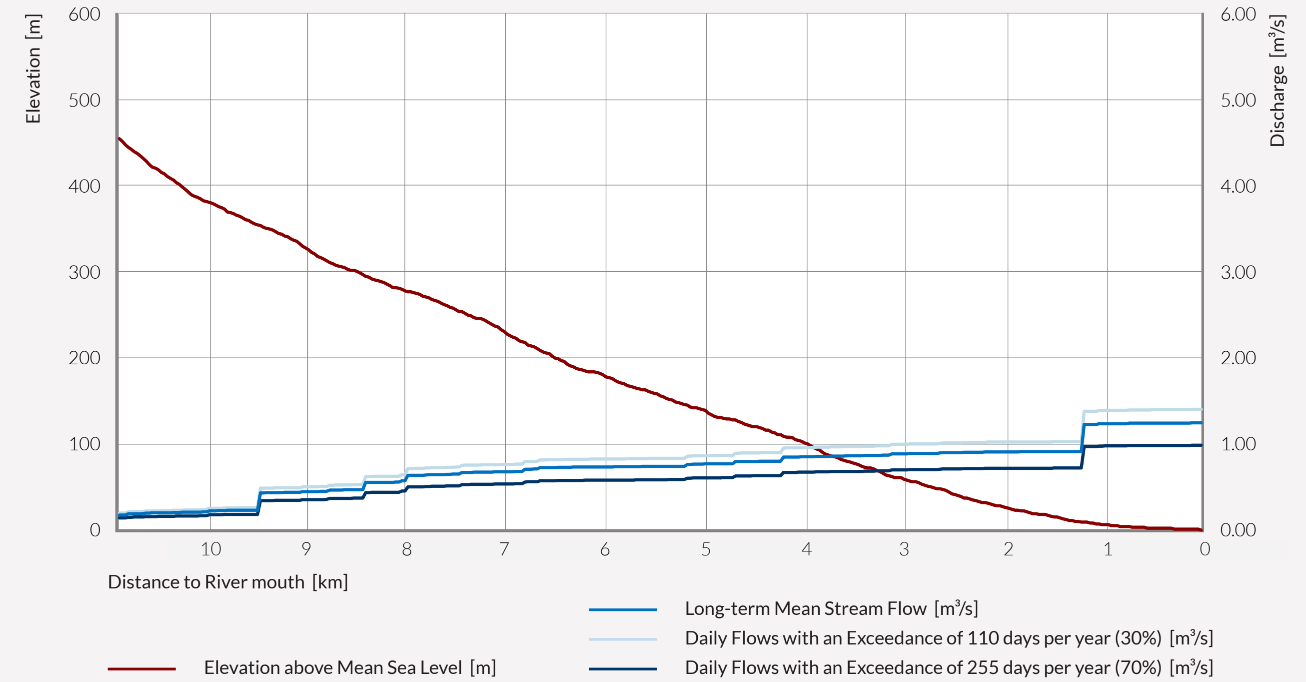
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Melville Hall River and the Canal River form a joint-catchment of about 38.25 km² flowing into the Atlantic Ocean north of Marigot Village on the northeast coast of Dominica. The highest elevation of the 10.9 km long river is at 459 m above sea level east of Morne Diablotins. The mean annual discharge available for generating hydroelectric power in an ecologically sustainable way is about 1.247 m³/s at the river mouth at Mango Hole Bay, next to the Melville Hall Airport. Economically viable virtual small hydropower projects were located applying a feed-in tariff of US$ 0.10.

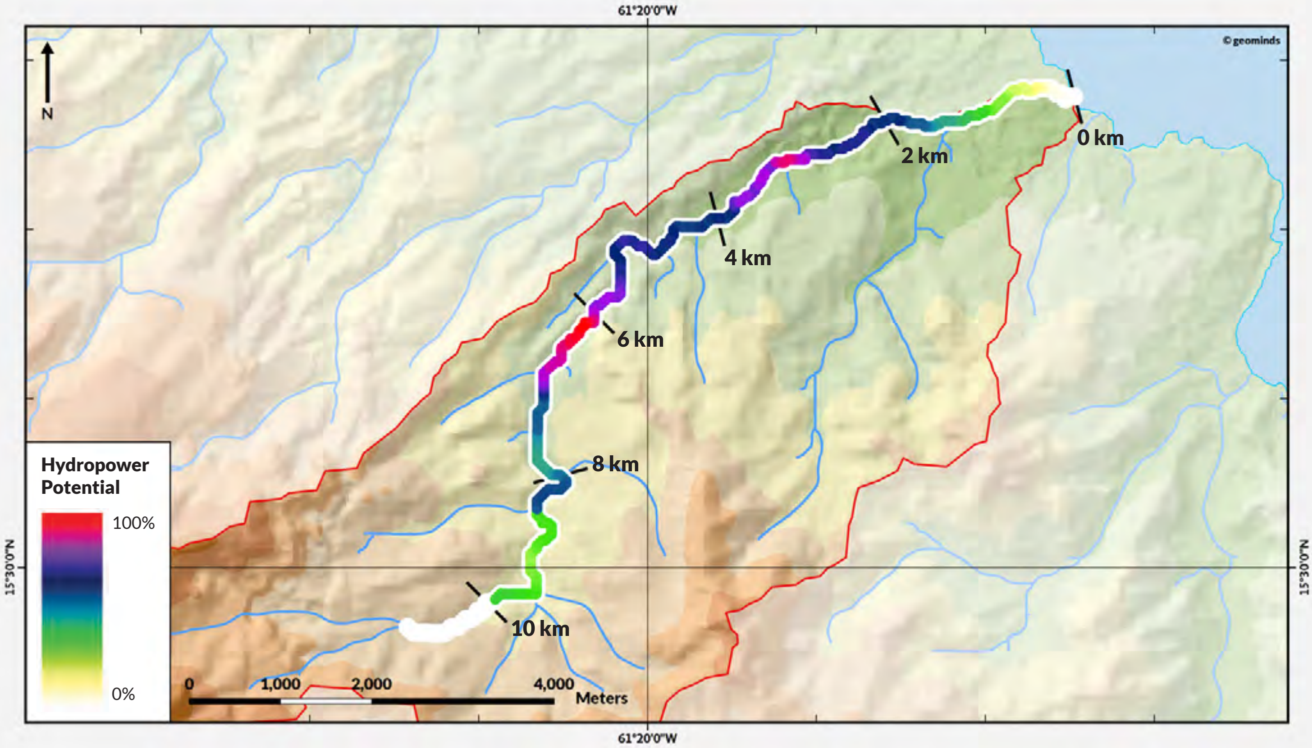
COUNTRY-WIDE RIVER RATING



4.2 • STREAM FLOW DISCHARGE ANALYSIS OF MELVILLE HALL RIVER

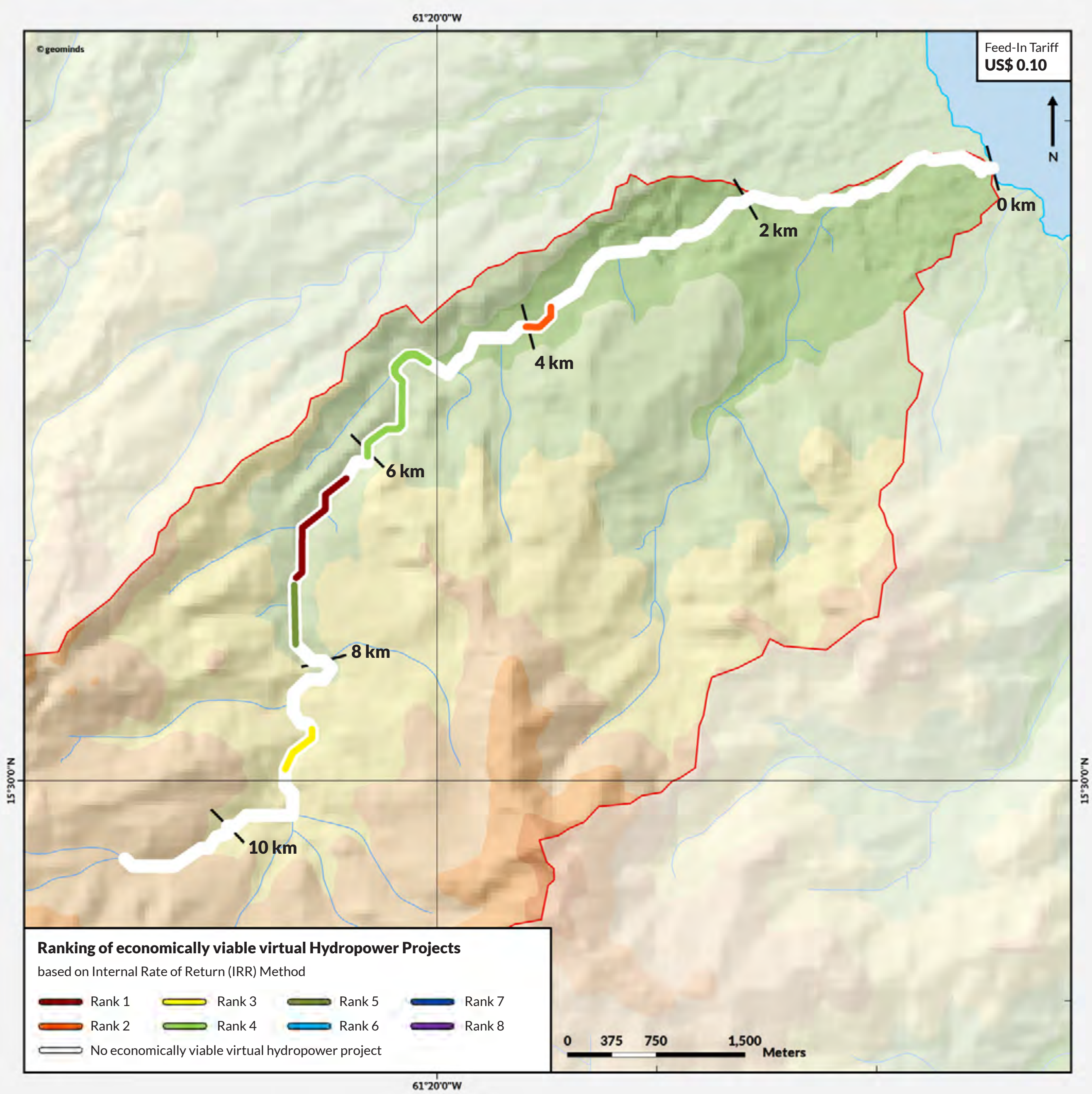


4.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

4.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

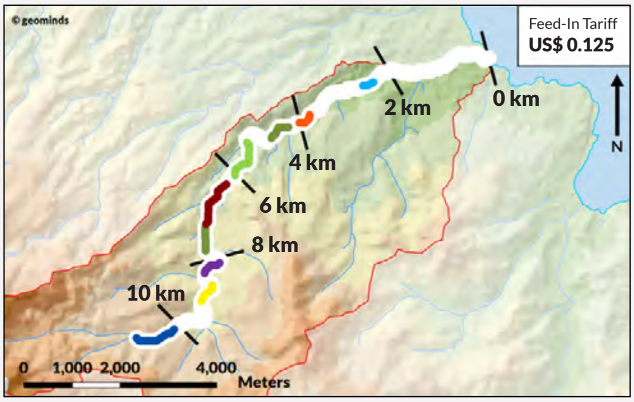


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

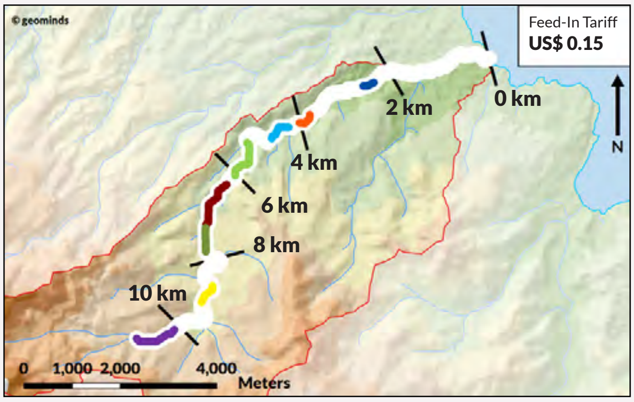
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	1.62%	293.88 kW	6.30 km	7.17 km	0.87 km	54 m	0.757 m³/s
2	0.93%	103.40 kW	3.75 km	3.99 km	0.24 km	15 m	0.958 m³/s
3	0.64%	89.85 kW	8.70 km	9.03 km	0.33 km	25 m	0.492 m³/s
4	0.47%	286.00 kW	4.86 km	6.00 km	1.14 km	50 m	0.825 m³/s
5	0.13%	117.42 kW	7.26 km	7.71 km	0.45 km	23 m	0.723 m³/s
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

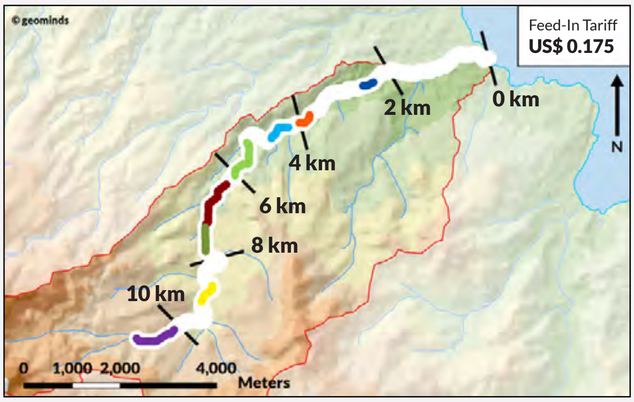
4.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



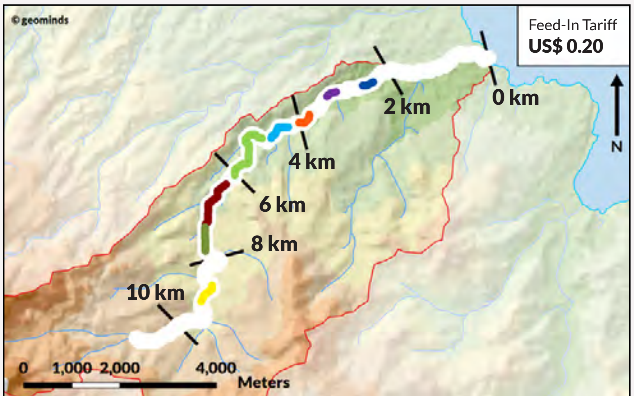
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.02%	293.88 kW	6.30 km	7.17 km
2	4.34%	103.40 kW	3.75 km	3.99 km
3	4.06%	89.85 kW	8.70 km	9.03 km
4	3.90%	286.00 kW	4.86 km	6.00 km
5	3.58%	117.42 kW	7.26 km	7.71 km
6	3.29%	104.24 kW	4.23 km	4.65 km
7	3.13%	64.06 kW	2.37 km	2.55 km
8	3.03%	55.40 kW	3.12 km	3.27 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.81%	293.88 kW	6.30 km	7.17 km
2	7.11%	103.40 kW	3.75 km	3.99 km
3	6.84%	89.85 kW	8.70 km	9.03 km
4	6.67%	286.00 kW	4.86 km	6.00 km
5	6.34%	117.42 kW	7.26 km	7.71 km
6	6.06%	104.24 kW	4.23 km	4.65 km
7	5.89%	64.06 kW	2.37 km	2.55 km
8	5.79%	55.40 kW	3.12 km	3.27 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.27%	293.88 kW	6.30 km	7.17 km
2	9.54%	103.40 kW	3.75 km	3.99 km
3	9.25%	89.85 kW	8.70 km	9.03 km
4	9.08%	286.00 kW	4.86 km	6.00 km
5	8.74%	117.42 kW	7.26 km	7.71 km
6	8.44%	104.24 kW	4.23 km	4.65 km
7	8.27%	64.06 kW	2.37 km	2.55 km
8	8.17%	55.40 kW	3.12 km	3.27 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.51%	293.88 kW	6.30 km	7.17 km
2	11.74%	103.40 kW	3.75 km	3.99 km
3	11.44%	89.85 kW	8.70 km	9.03 km
4	11.26%	286.00 kW	4.86 km	6.00 km
5	10.91%	117.42 kW	7.26 km	7.71 km
6	10.59%	104.24 kW	4.23 km	4.65 km
7	10.41%	64.06 kW	2.37 km	2.55 km
8	10.31%	55.40 kW	3.12 km	3.27 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

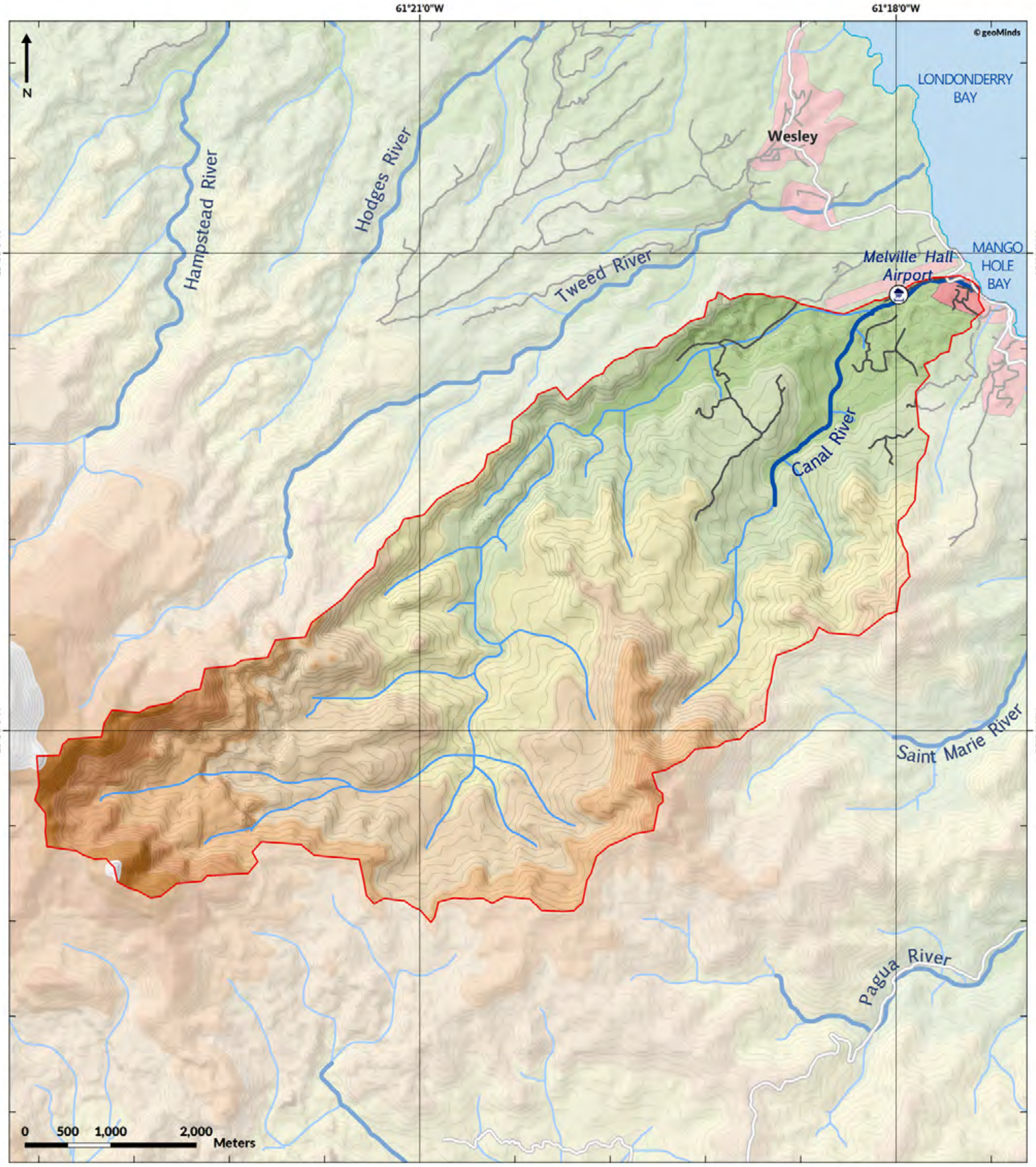
Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

5. CANAL RIVER

5.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 38.25 km²

Length of Primary River: . . . . 3.74 km

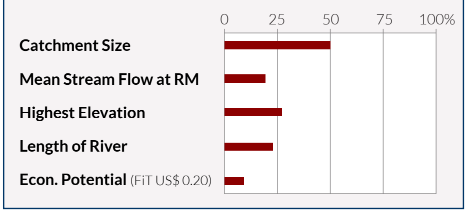
Highest Elevation of Primary River: . . . . 155 m

Long-term Mean Stream Flow at River Mouth: . . . . 1.247 m³/s

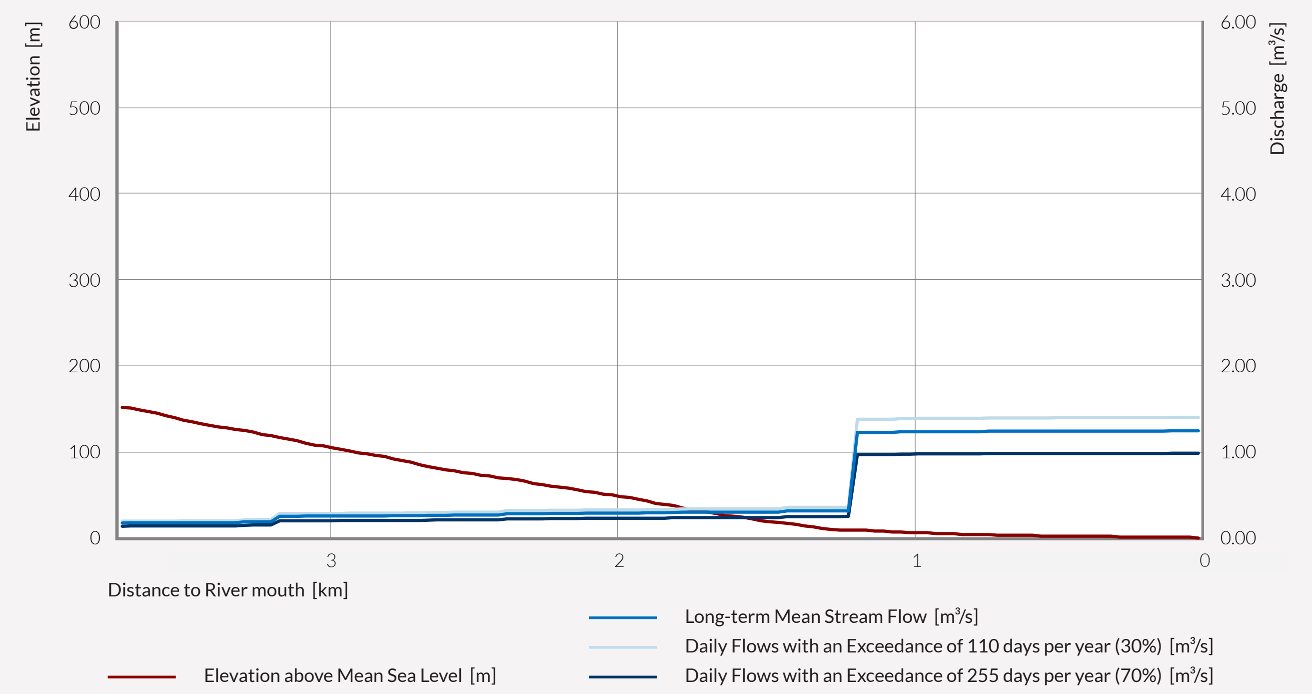
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Canal River and the much larger Melville Hall River form a joint-catchment of about 38.25 km² flowing into the Atlantic Ocean north of Marigot Village on the northeast coast of Dominica. The mean annual discharge available for generating hydroelectric power in an ecologically sustainable way of the joint-catchment is about 1.247 m³/s at the river mouth at Mango Hole Bay, next to the Melville Hall Airport. The highest elevation of the 3.74 km short river is only at 155 m above sea level. Thus, economically viable virtual hydropower projects were located applying a feed-in tariff of at least US$ 0.125.

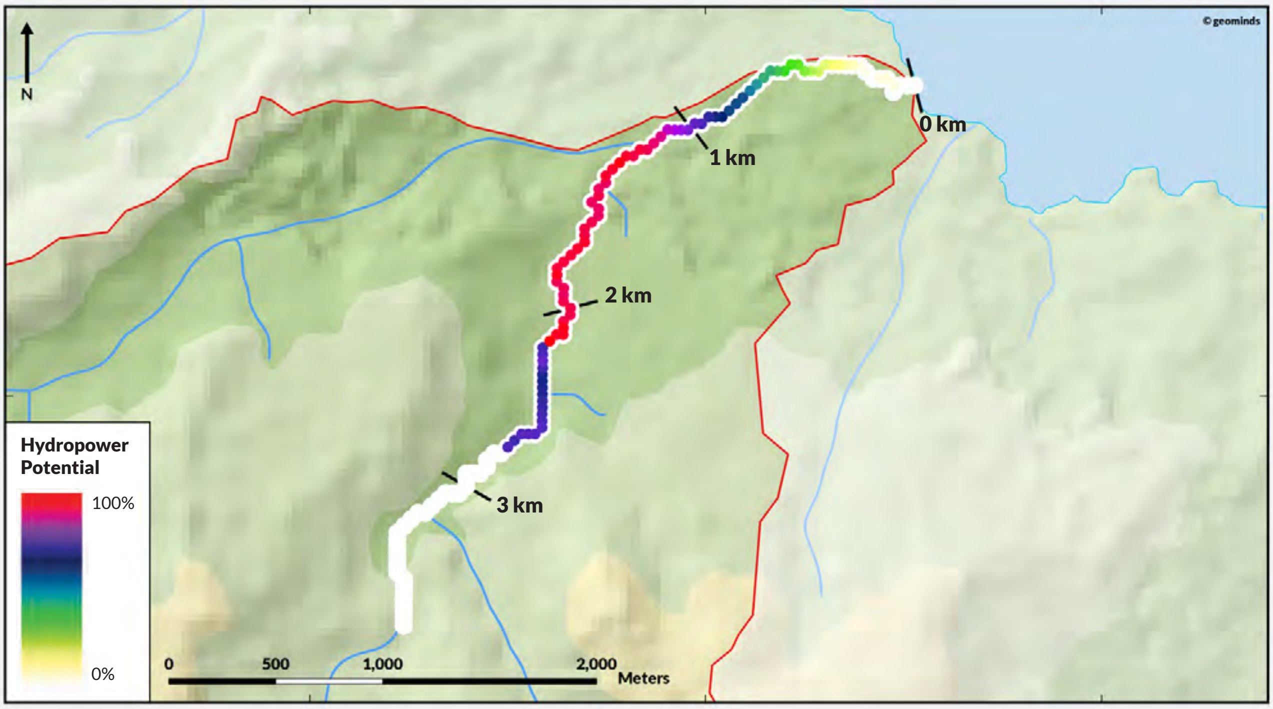
COUNTRY-WIDE RIVER RATING



5.2 • STREAM FLOW DISCHARGE ANALYSIS OF CANAL RIVER

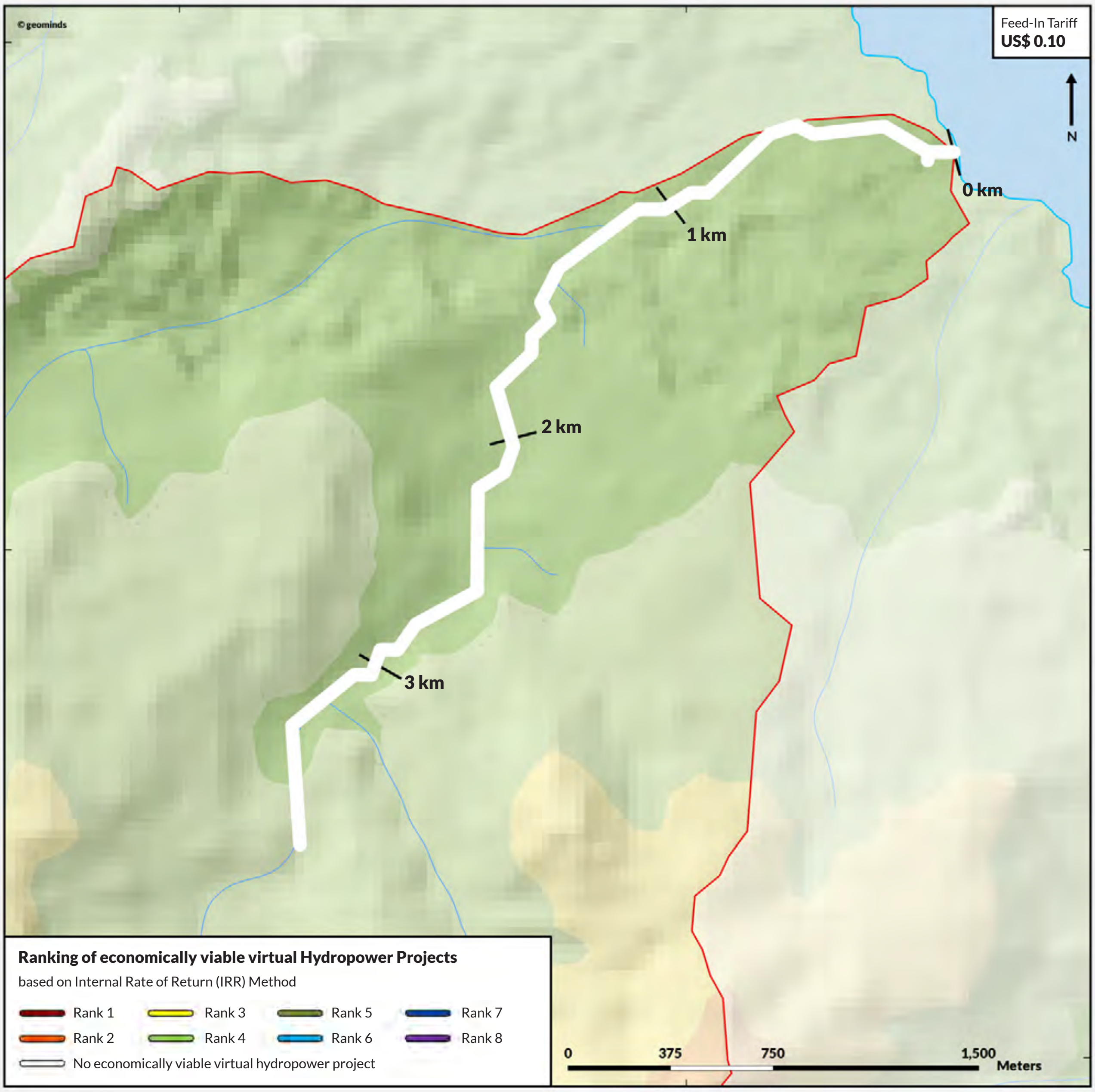


5.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

5.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



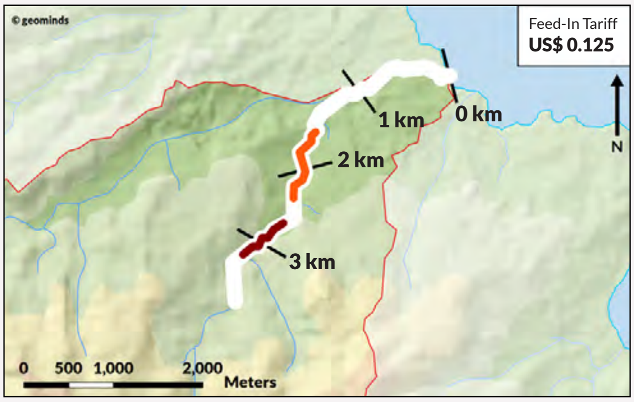
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

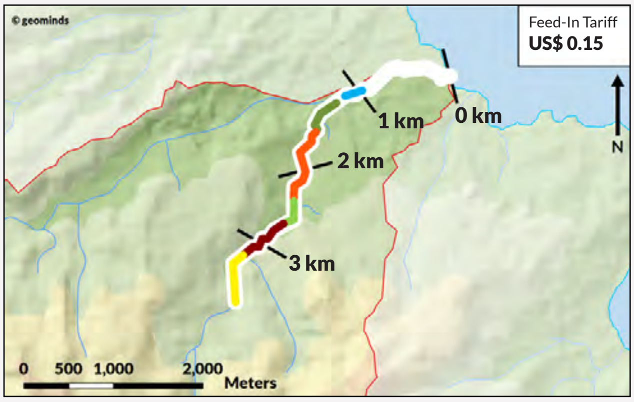
No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

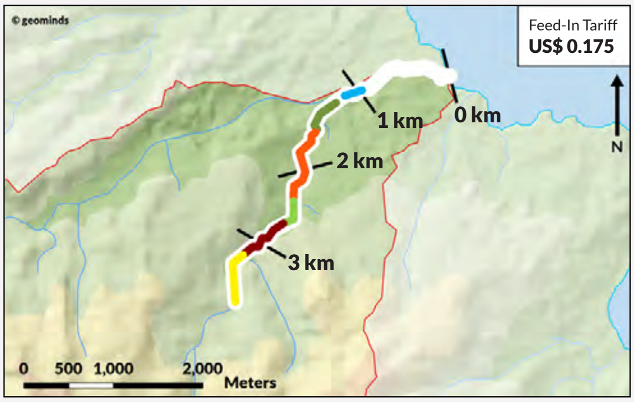
5.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	1.79%	63.57 kW	2.70 km	3.18 km
2	1.65%	95.58 kW	1.62 km	2.34 km
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	4.56%	63.57 kW	2.70 km	3.18 km
2	4.43%	95.58 kW	1.62 km	2.34 km
3	2.64%	49.81 kW	3.21 km	3.72 km
4	2.15%	31.72 kW	2.40 km	2.67 km
5	1.93%	33.00 kW	1.26 km	1.56 km
6	0.36%	24.33 kW	0.99 km	1.14 km
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.91%	63.57 kW	2.70 km	3.18 km
2	6.77%	95.58 kW	1.62 km	2.34 km
3	4.98%	49.81 kW	3.21 km	3.72 km
4	4.48%	31.72 kW	2.40 km	2.67 km
5	4.28%	33.00 kW	1.26 km	1.56 km
6	2.75%	24.33 kW	0.99 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.00%	63.57 kW	2.70 km	3.18 km
2	8.86%	95.58 kW	1.62 km	2.34 km
3	7.02%	49.81 kW	3.21 km	3.72 km
4	6.51%	31.72 kW	2.40 km	2.67 km
5	6.30%	33.00 kW	1.26 km	1.56 km
6	4.77%	24.33 kW	0.99 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

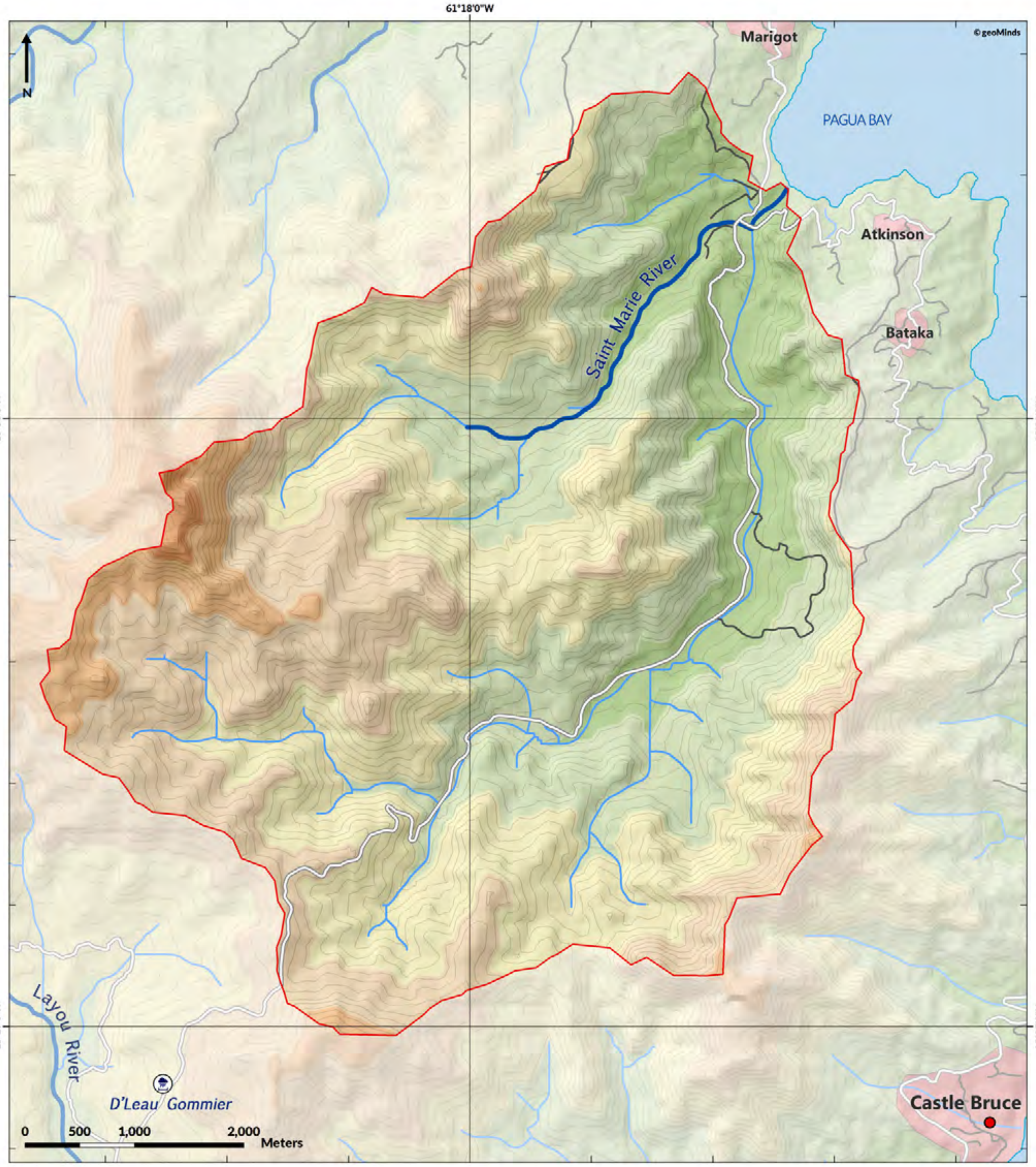
Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

6. SAINT MARIE RIVER

6.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

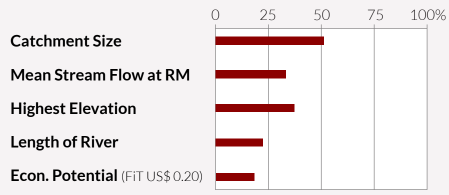
Facts about Catchment

Catchment Size:	39.19 km²
Length of Primary River:	3.65 km
Highest Elevation of Primary River:	213 m
Long-term Mean Stream Flow at River Mouth:	2.148 m³/s

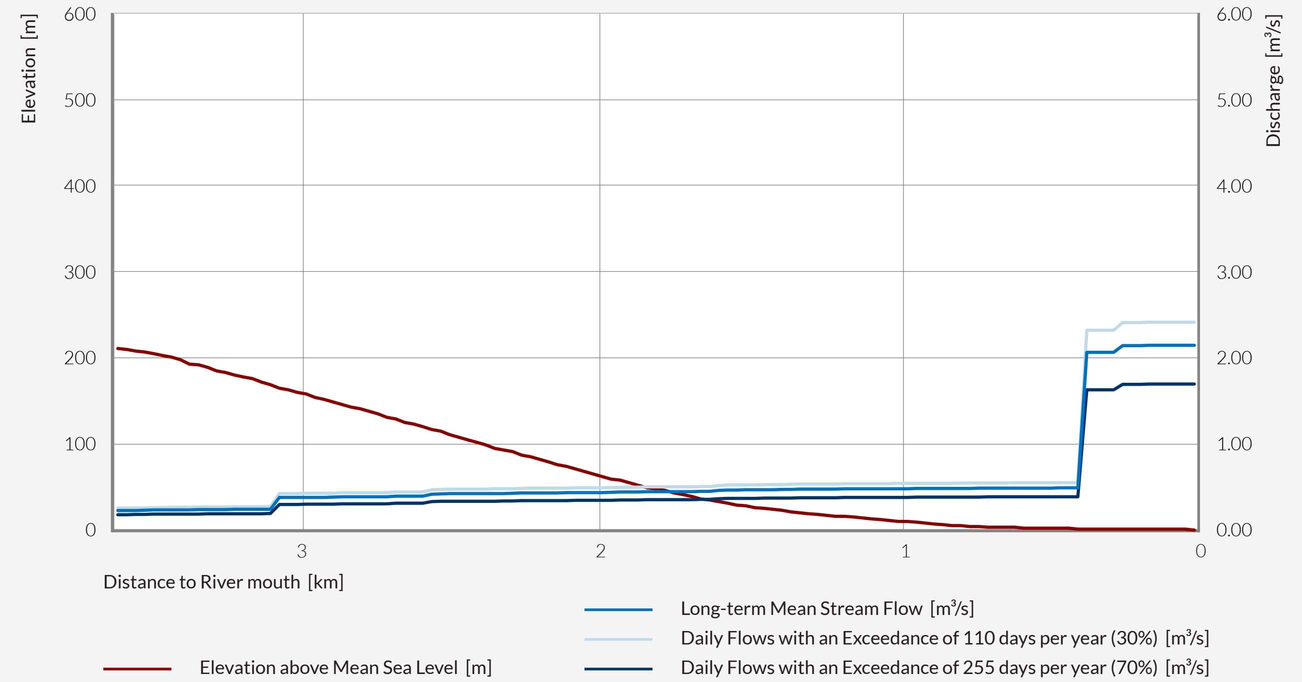
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Saint Marie and the much larger Pagua River form a joint-catchment of about 39.19 km² south of the Melville Hall catchment. The two rivers have a joint-river section of just 500 m and accumulate 2.148 m³/s of mean annual discharge at the river mouth at Pagua Bay. The Saint Marie River has a total length of 3.65 km and its highest elevation is at about 213 m above sea level. When applying a feed-in tariff of US$ 0.10, three economically viable virtual hydropower projects were located in the upper catchment.

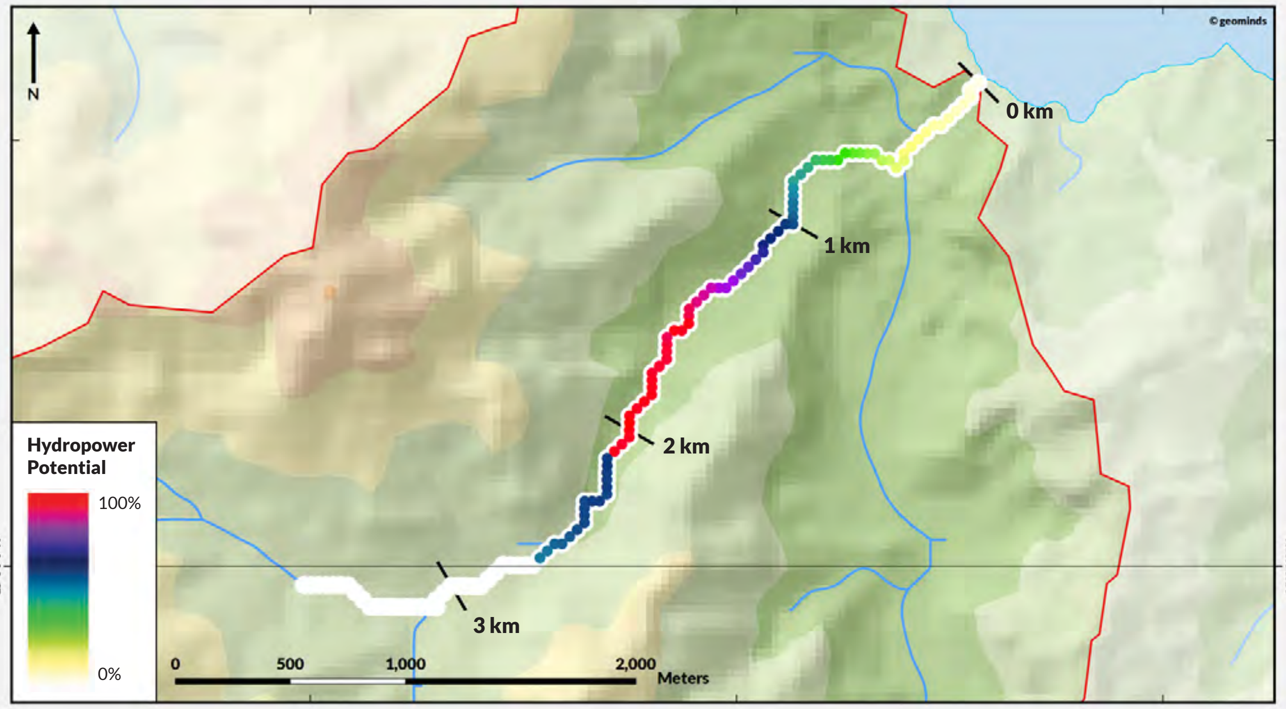
COUNTRY-WIDE RIVER RATING



6.2 • STREAM FLOW DISCHARGE ANALYSIS OF SAINT MARIE RIVER

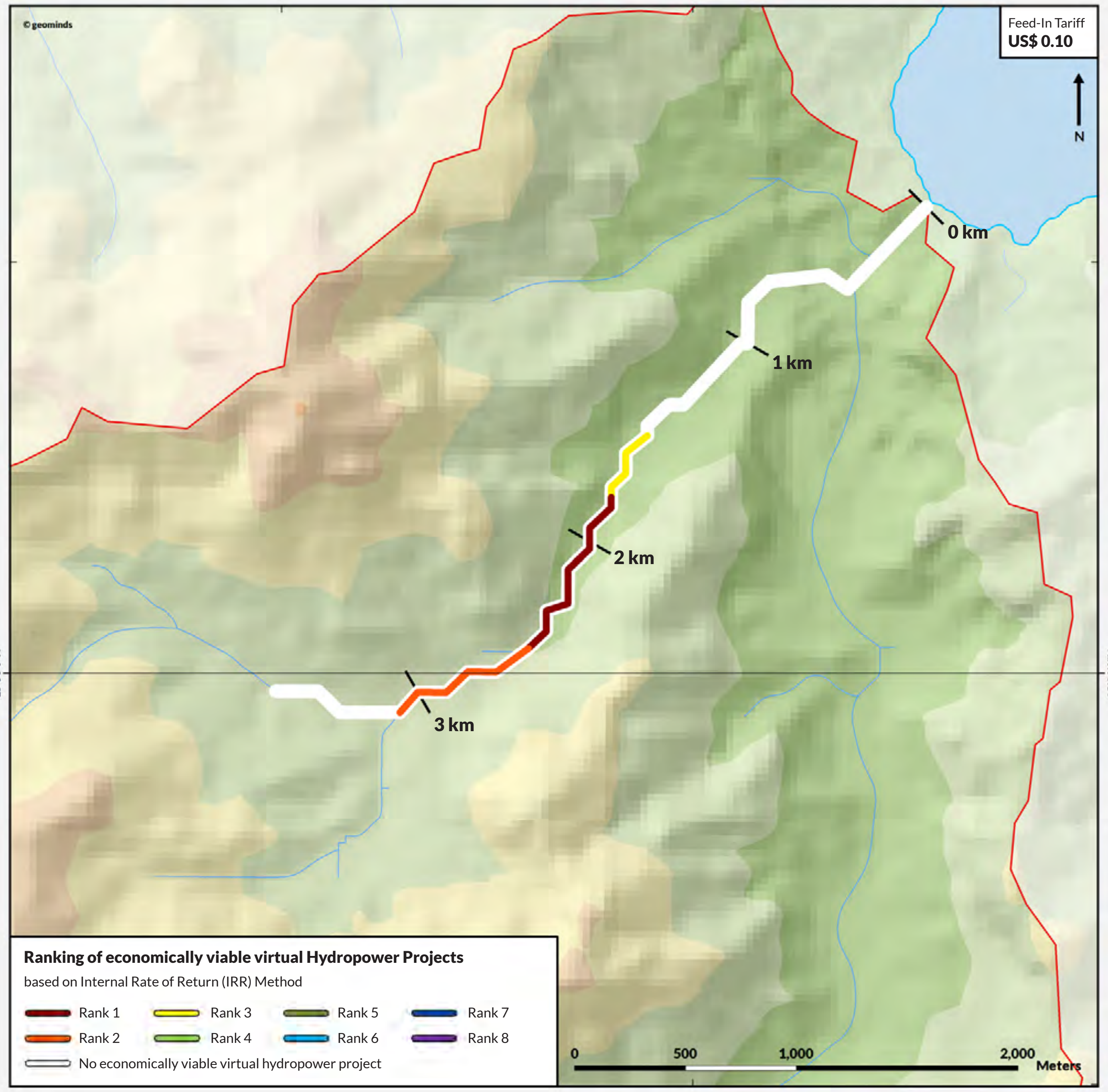


6.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

6.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

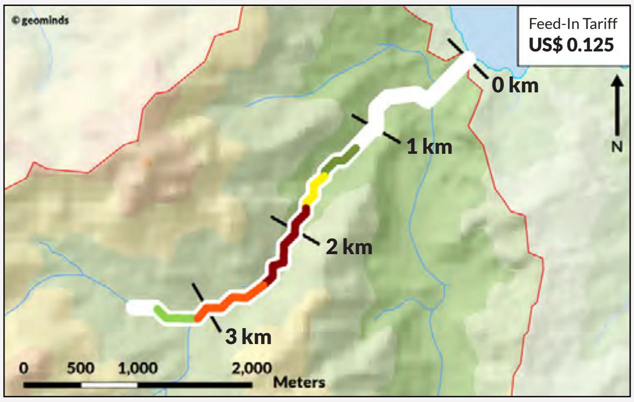


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.03%	232.06 kW	1.83 km	2.52 km	0.69 km	66 m	0.474 m³/s
2	1.53%	163.52 kW	2.55 km	3.09 km	0.54 km	52 m	0.424 m³/s
3	0.13%	69.22 kW	1.53 km	1.80 km	0.27 km	19 m	0.501 m³/s
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

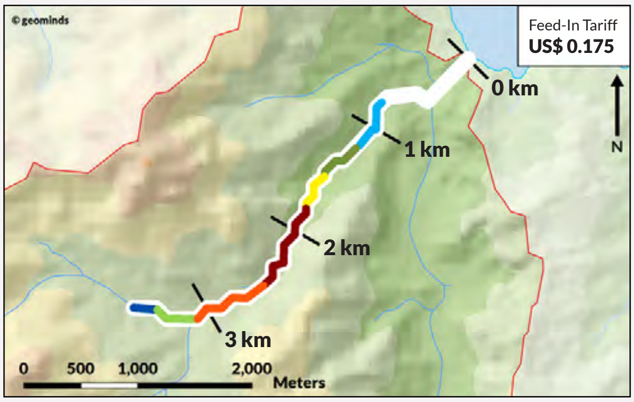
For more information and all setting parameters used for this calculation, see page 12.

6.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF

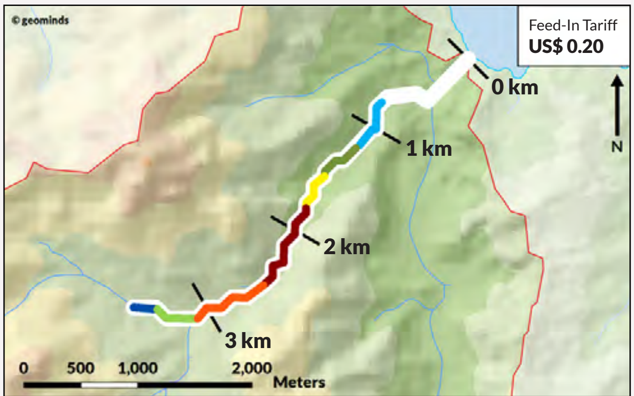


Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.42%	232.06 kW	1.83 km	2.52 km
2	4.92%	163.52 kW	2.55 km	3.09 km
3	3.57%	69.22 kW	1.53 km	1.80 km
4	2.99%	56.18 kW	3.12 km	3.42 km
5	0.37%	39.61 kW	1.23 km	1.50 km
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.23%	232.06 kW	1.83 km	2.52 km
2	7.71%	163.52 kW	2.55 km	3.09 km
3	6.32%	69.22 kW	1.53 km	1.80 km
4	5.75%	56.18 kW	3.12 km	3.42 km
5	3.18%	39.61 kW	1.23 km	1.50 km
6	1.50%	38.75 kW	0.81 km	1.17 km
7	0.22%	18.09 kW	3.45 km	3.63 km
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.71%	232.06 kW	1.83 km	2.52 km
2	10.17%	163.52 kW	2.55 km	3.09 km
3	8.74%	69.22 kW	1.53 km	1.80 km
4	8.12%	56.18 kW	3.12 km	3.42 km
5	5.51%	39.61 kW	1.23 km	1.50 km
6	3.85%	38.75 kW	0.81 km	1.17 km
7	2.61%	18.09 kW	3.45 km	3.63 km
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.97%	232.06 kW	1.83 km	2.52 km
2	12.40%	163.52 kW	2.55 km	3.09 km
3	10.90%	69.22 kW	1.53 km	1.80 km
4	10.26%	56.18 kW	3.12 km	3.42 km
5	7.56%	39.61 kW	1.23 km	1.50 km
6	5.87%	38.75 kW	0.81 km	1.17 km
7	4.64%	18.09 kW	3.45 km	3.63 km
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

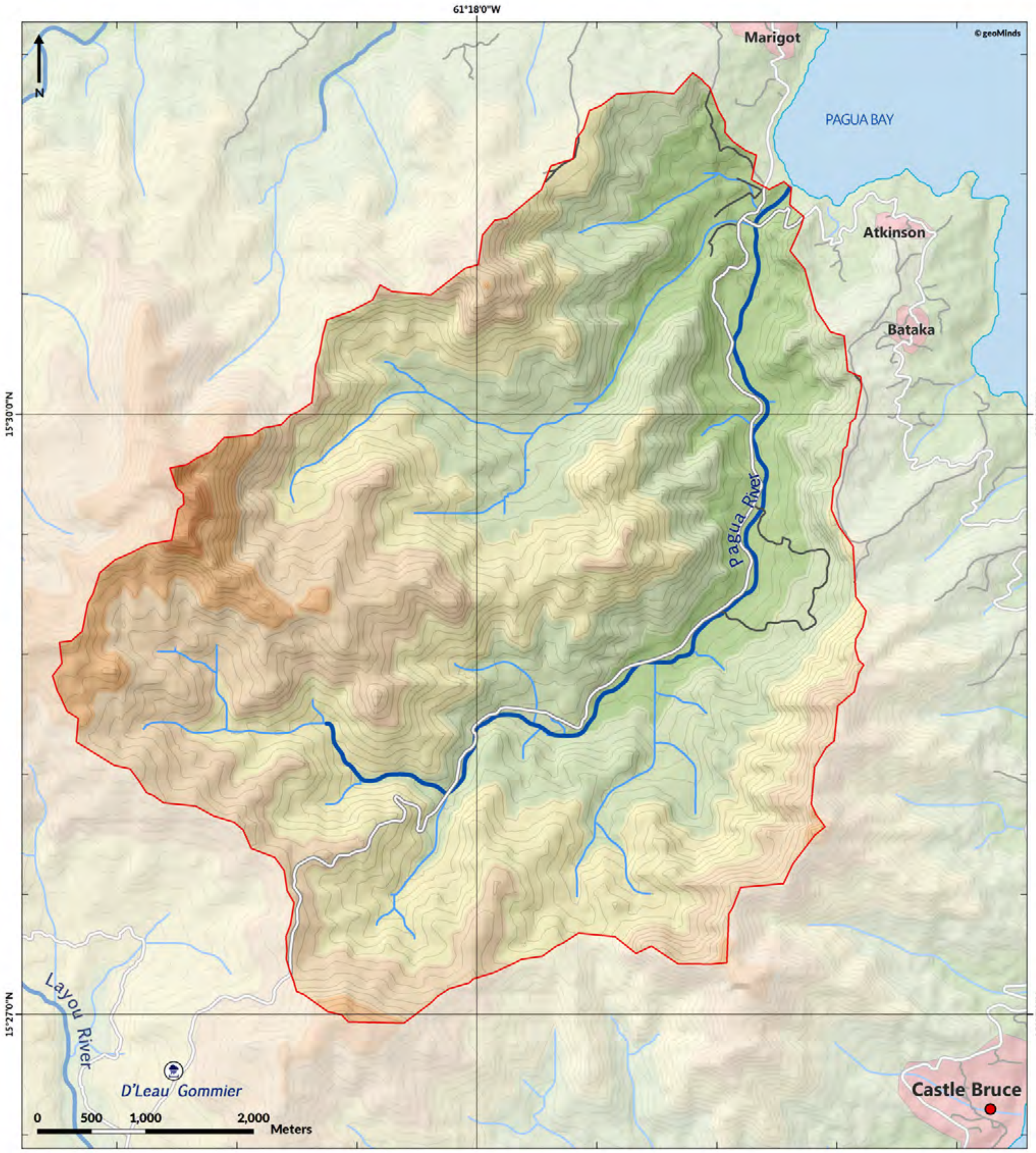
Rank 1 | Rank 3 | Rank 5 | Rank 7
Rank 2 | Rank 4 | Rank 6 | Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

7. PAGUA RIVER

7.1 • OVERVIEW MAP



Elevation

	> 900
	750 - 900
	600 - 750
	450 - 600
	300 - 450
	150 - 300
	0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

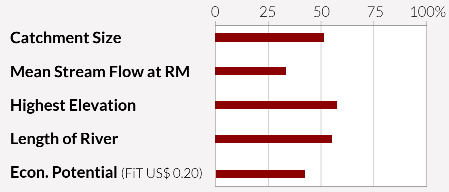
Facts about Catchment

Catchment Size:	39.19 km²
Length of Primary River:	9.00 km
Highest Elevation of Primary River:	329 m
Long-term Mean Stream Flow at River Mouth:	2.148 m³/s

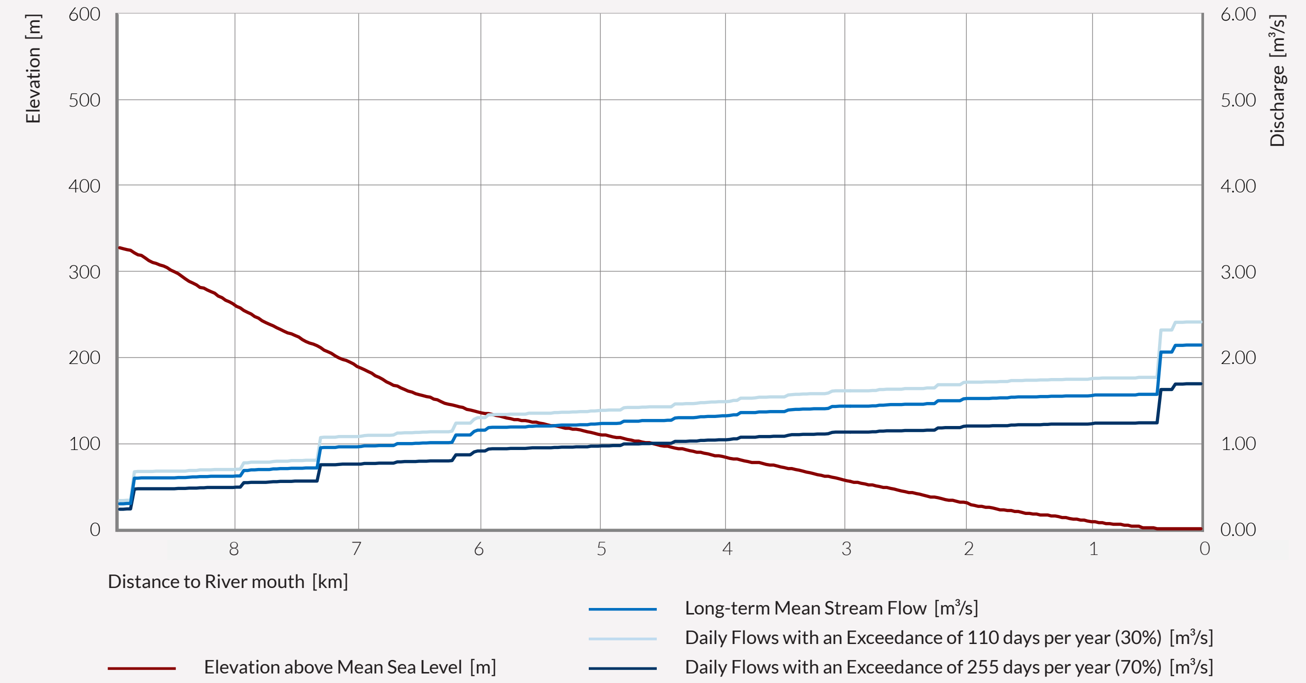
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Pagua and the Saint Marie River form a joint-catchment of about 39.19 km² south of the Melville Hall catchment. The two rivers have a joint-river section of just 500 m and accumulate 2.148 m³/s of mean annual discharge at the river mouth at Pagua Bay. The Pagua River has a total length of 9.00 km and its highest elevation is about 329 m above sea level. As of the steep conditions of the Pagua River, several economically viable virtual hydropower projects were located in the upper river section when applying a feed-in tariff of US$ 0.10.

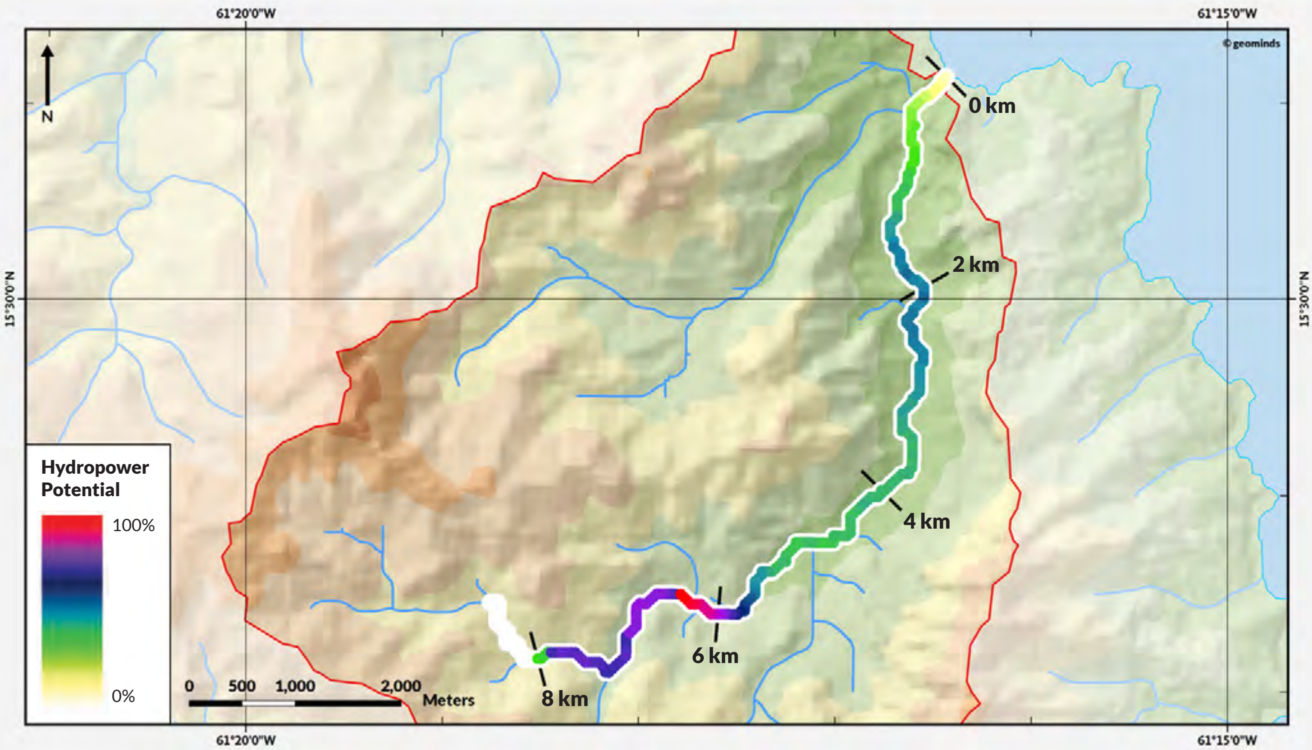
COUNTRY-WIDE RIVER RATING



7.2 • STREAM FLOW DISCHARGE ANALYSIS OF PAGUA RIVER

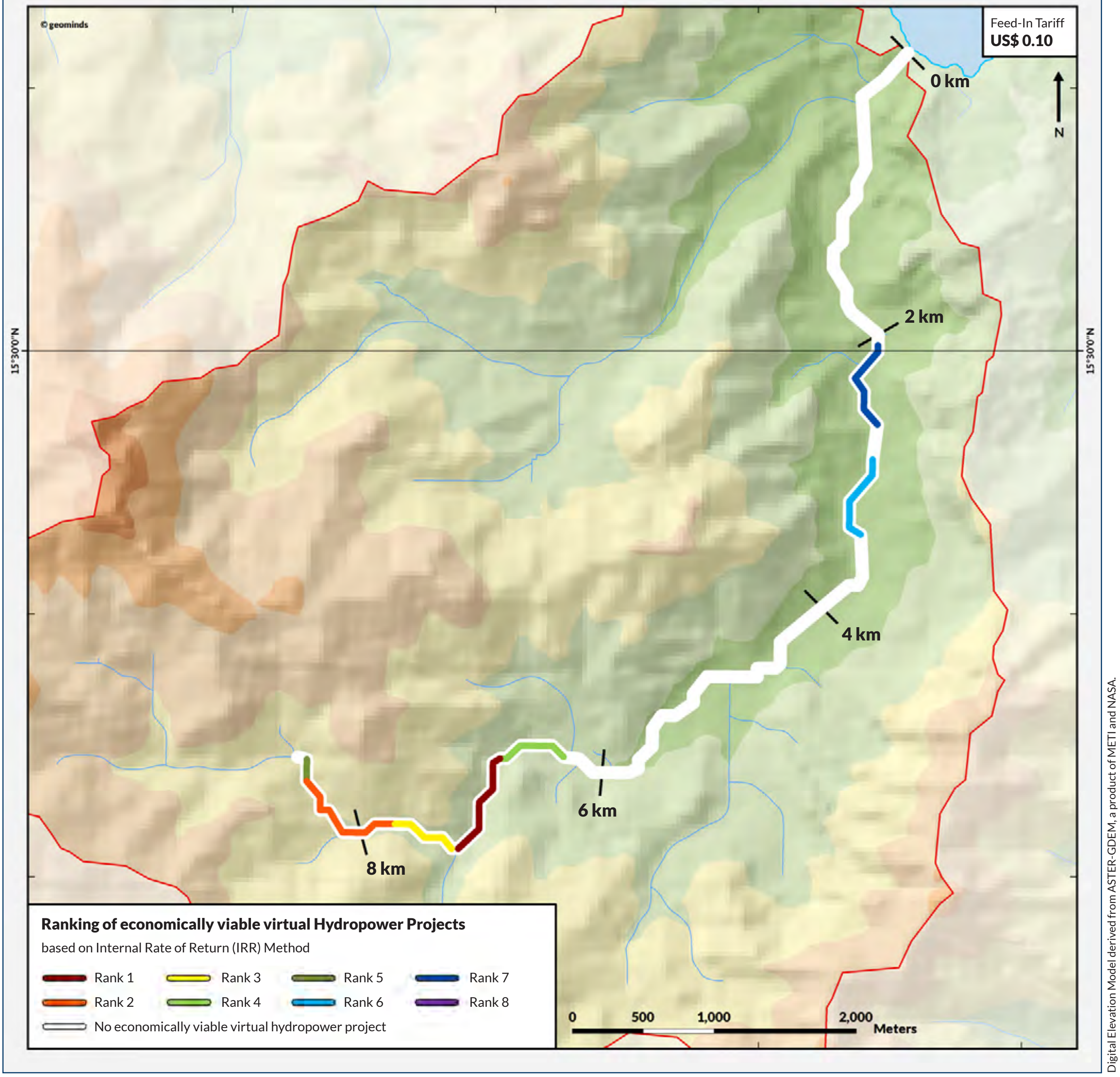


7.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

7.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.50%	345.03 kW	6.66 km	7.26 km	0.60 km	44 m	1.076 m³/s
2	2.13%	308.63 kW	7.74 km	8.52 km	0.78 km	62 m	0.679 m³/s
3	1.56%	136.46 kW	7.35 km	7.71 km	0.36 km	24 m	0.786 m³/s
4	1.08%	158.79 kW	6.24 km	6.63 km	0.39 km	20 m	1.124 m³/s
5	0.82%	69.03 kW	8.64 km	8.82 km	0.18 km	14 m	0.673 m³/s
6	0.23%	165.57 kW	2.88 km	3.39 km	0.51 km	16 m	1.573 m³/s
7	0.04%	159.27 kW	2.10 km	2.61 km	0.51 km	15 m	1.635 m³/s
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

7.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.88%	345.03 kW	6.66 km	7.26 km
2	5.52%	308.63 kW	7.74 km	8.52 km
3	4.95%	136.46 kW	7.35 km	7.71 km
4	4.48%	158.79 kW	6.24 km	6.63 km
5	4.23%	69.03 kW	8.64 km	8.82 km
6	3.67%	165.57 kW	2.88 km	3.39 km
7	3.49%	159.27 kW	2.10 km	2.61 km
8	2.93%	83.73 kW	5.91 km	6.18 km

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.71%	345.03 kW	6.66 km	7.26 km
2	8.33%	308.63 kW	7.74 km	8.52 km
3	7.75%	136.46 kW	7.35 km	7.71 km
4	7.27%	158.79 kW	6.24 km	6.63 km
5	7.01%	69.03 kW	8.64 km	8.82 km
6	6.43%	165.57 kW	2.88 km	3.39 km
7	6.25%	159.27 kW	2.10 km	2.61 km
8	5.69%	83.73 kW	5.91 km	6.18 km

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.22%	345.03 kW	6.66 km	7.26 km
2	10.81%	308.63 kW	7.74 km	8.52 km
3	10.20%	136.46 kW	7.35 km	7.71 km
4	9.70%	158.79 kW	6.24 km	6.63 km
5	9.43%	69.03 kW	8.64 km	8.82 km
6	8.83%	165.57 kW	2.88 km	3.39 km
7	8.64%	159.27 kW	2.10 km	2.61 km
8	8.07%	83.73 kW	5.91 km	6.18 km

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.51%	345.03 kW	6.66 km	7.26 km
2	13.08%	308.63 kW	7.74 km	8.52 km
3	12.44%	136.46 kW	7.35 km	7.71 km
4	11.91%	158.79 kW	6.24 km	6.63 km
5	11.63%	69.03 kW	8.64 km	8.82 km
6	11.00%	165.57 kW	2.88 km	3.39 km
7	10.80%	159.27 kW	2.10 km	2.61 km
8	10.20%	83.73 kW	5.91 km	6.18 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

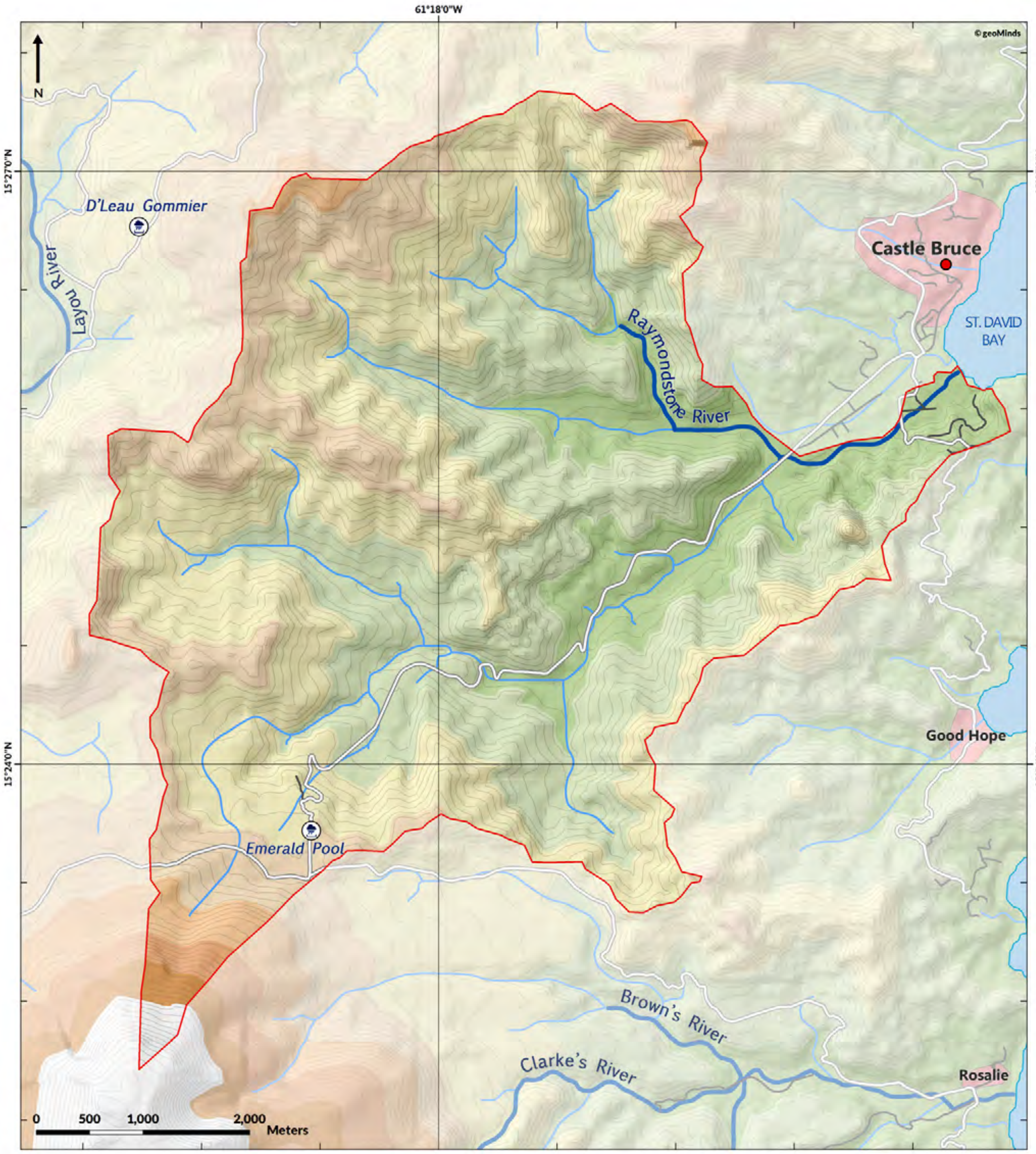
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

8. RAYMONDSTONE RIVER

8.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

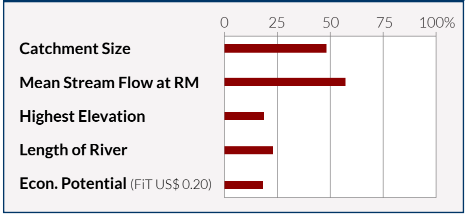
Facts about Catchment

- Catchment Size: . . . . 36.77 km²
- Length of Primary River: . . . . .3.71 km
- Highest Elevation of Primary River: . . . . 106 m
- Long-term Mean Stream Flow at River Mouth: . . . . 3.678 m³/s

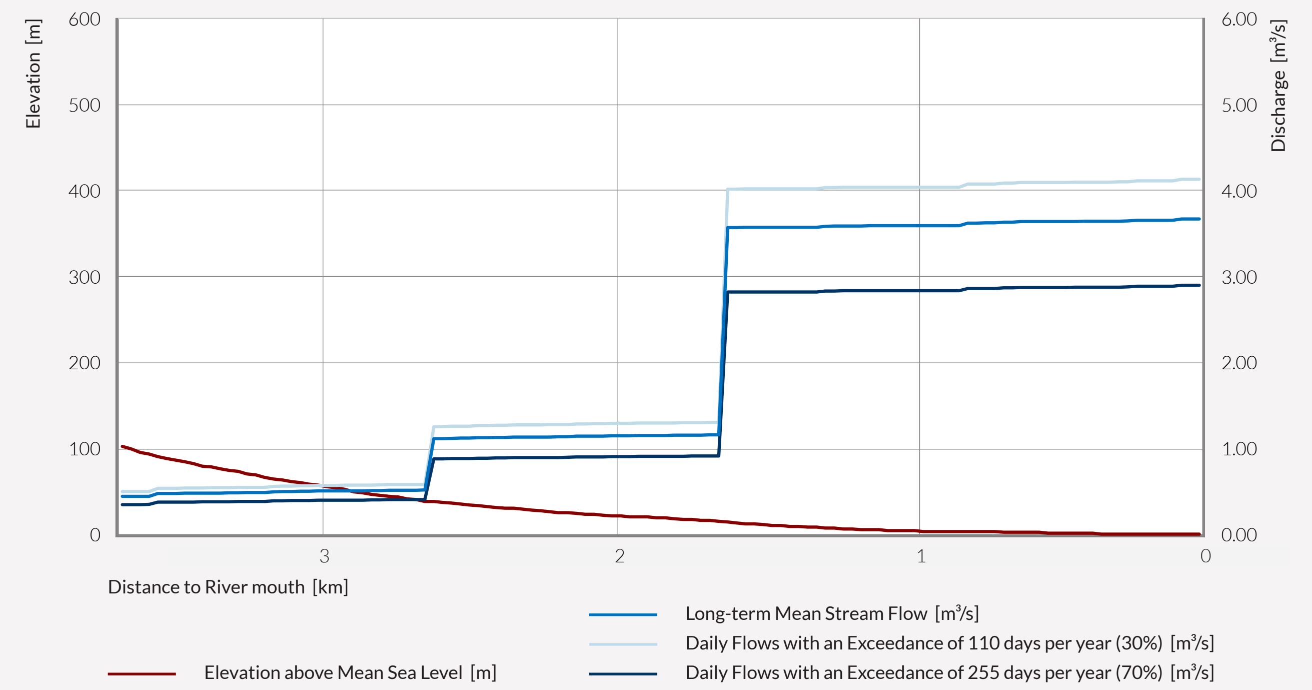
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Castle Bruce catchment consists of the four smaller rivers Raymondstone, Fond Figues, Maclauchlin and the Belle Fille River. Together they form a catchment of about 36.77 km², accumulating as much as 3.678 m³/s of mean annual discharge available for generating hydropower in an ecologically sustainable way at the river mouth at St. David Bay. The Raymondstone River has a length of 3.71 km and its highest elevation is about 106 m above mean sea level. Two economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

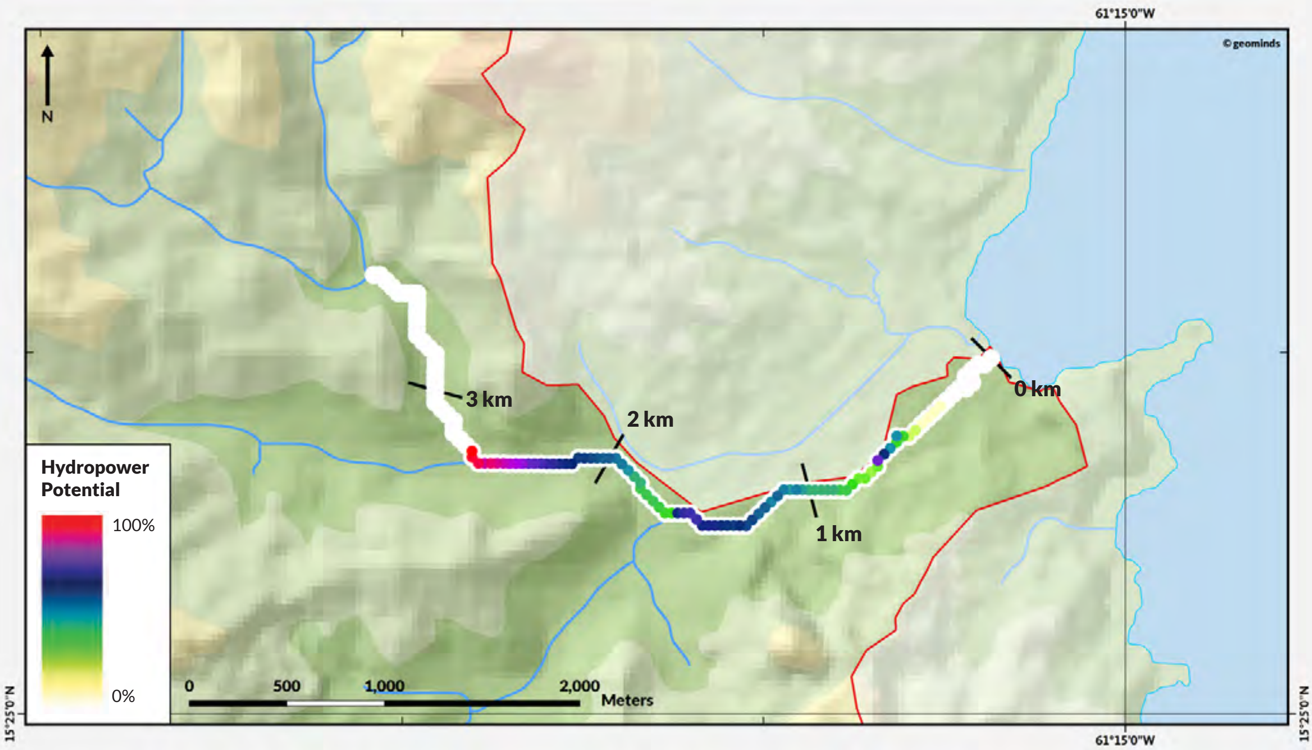
COUNTRY-WIDE RIVER RATING



8.2 • STREAM FLOW DISCHARGE ANALYSIS OF RAYMONDSTONE RIVER



8.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

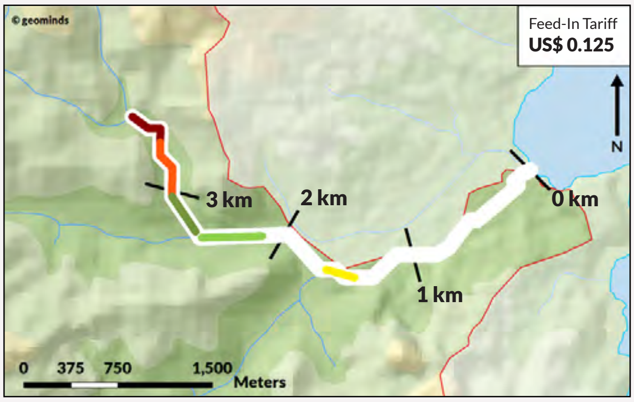
8.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

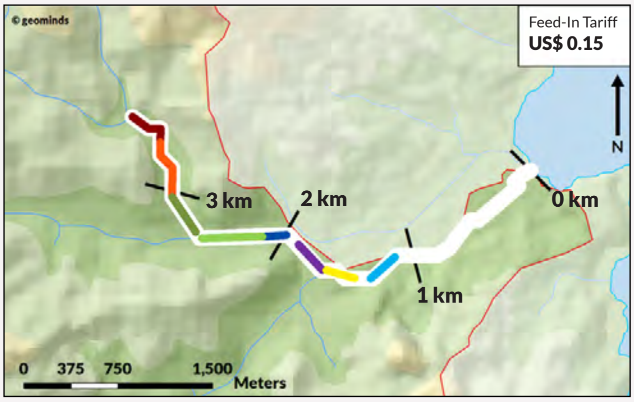
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	1.24%	96.51 kW	3.39 km	3.69 km	0.30 km	26 m	0.503 m³/s
2	0.05%	90.29 kW	2.97 km	3.36 km	0.39 km	23 m	0.548 m³/s
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

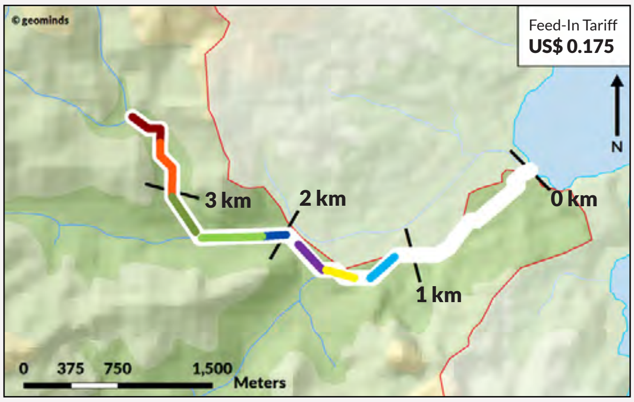
8.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



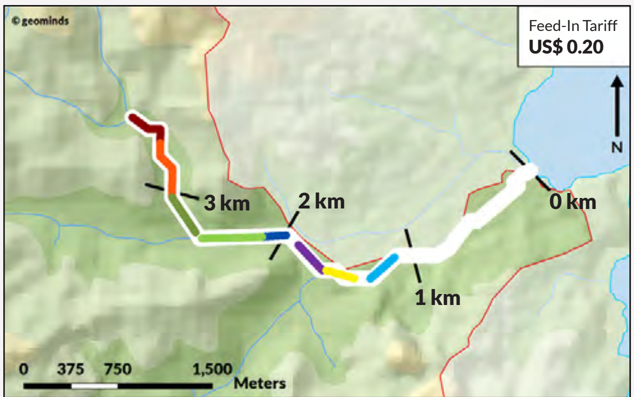
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	4.64%	96.51 kW	3.39 km	3.69 km
2	3.50%	90.29 kW	2.97 km	3.36 km
3	2.72%	129.06 kW	1.47 km	1.65 km
4	2.32%	107.41 kW	2.19 km	2.61 km
5	2.01%	53.37 kW	2.70 km	2.94 km
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.42%	96.51 kW	3.39 km	3.69 km
2	6.26%	90.29 kW	2.97 km	3.36 km
3	5.49%	129.06 kW	1.47 km	1.65 km
4	5.08%	107.41 kW	2.19 km	2.61 km
5	4.78%	53.37 kW	2.70 km	2.94 km
6	2.83%	71.13 kW	1.17 km	1.32 km
7	2.67%	32.86 kW	2.01 km	2.16 km
8	1.45%	31.61 kW	1.71 km	1.89 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.86%	96.51 kW	3.39 km	3.69 km
2	8.66%	90.29 kW	2.97 km	3.36 km
3	7.86%	129.06 kW	1.47 km	1.65 km
4	7.44%	107.41 kW	2.19 km	2.61 km
5	7.13%	53.37 kW	2.70 km	2.94 km
6	5.17%	71.13 kW	1.17 km	1.32 km
7	5.00%	32.86 kW	2.01 km	2.16 km
8	3.80%	31.61 kW	1.71 km	1.89 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.08%	96.51 kW	3.39 km	3.69 km
2	10.82%	90.29 kW	2.97 km	3.36 km
3	9.98%	129.06 kW	1.47 km	1.65 km
4	9.55%	107.41 kW	2.19 km	2.61 km
5	9.23%	53.37 kW	2.70 km	2.94 km
6	7.21%	71.13 kW	1.17 km	1.32 km
7	7.04%	32.86 kW	2.01 km	2.16 km
8	5.83%	31.61 kW	1.71 km	1.89 km

Ranking of economically viable virtual Hydropower Projects
based on Internal Rate of Return (IRR) Method

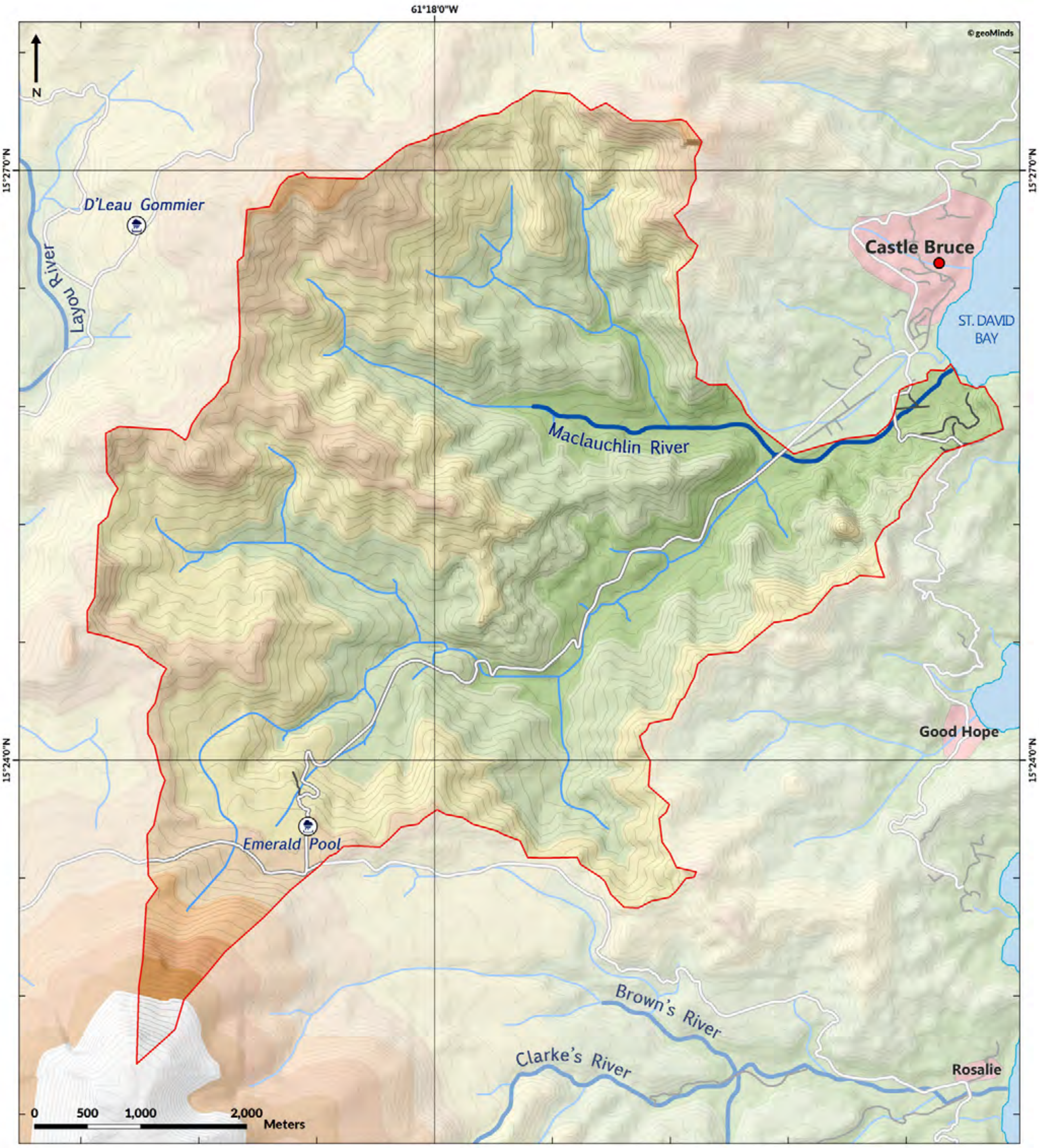
Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

9. MACLAUCHLIN RIVER

9.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 36.77 km²

Length of Primary River: . . . . 3.95 km

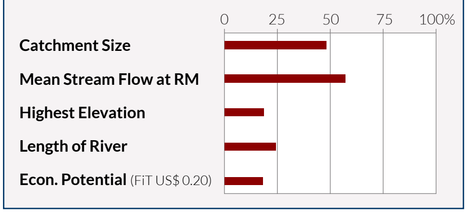
Highest Elevation of Primary River: . . . . 106 m

Long-term Mean Stream Flow at River Mouth: . . . . 3.678 m³/s

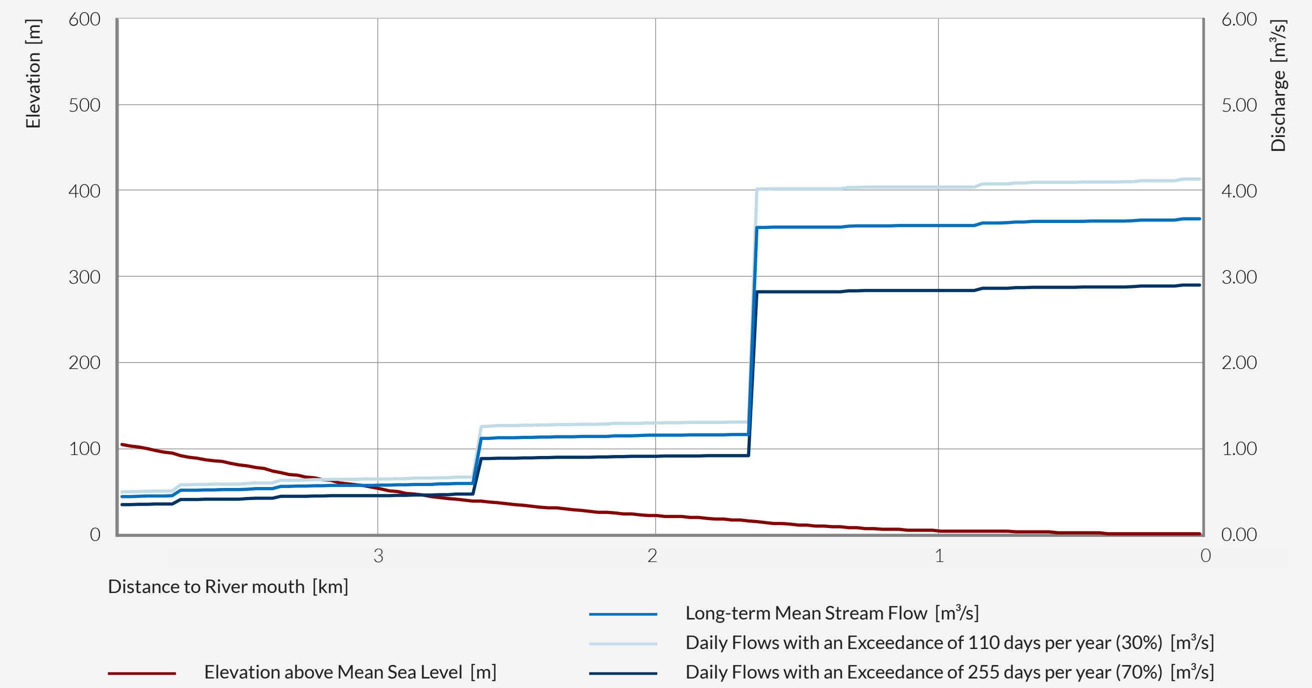
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Castle Bruce catchment consists of the four smaller rivers Raymondstone, Fond Figues, Maclauchlin and the Belle Fille River. Together they form a catchment of about 36.77 km², accumulating as much as 3.678 m³/s of mean annual discharge available for generating hydropower in an ecologically sustainable way at the river mouth at St. David Bay. The Maclauchlin River has a length of 3.95 km and its highest elevation is about 106 m above mean sea level. However, no economically viable virtual hydropower project was located when applying a feed-in tariff of less than US$ 0.125.

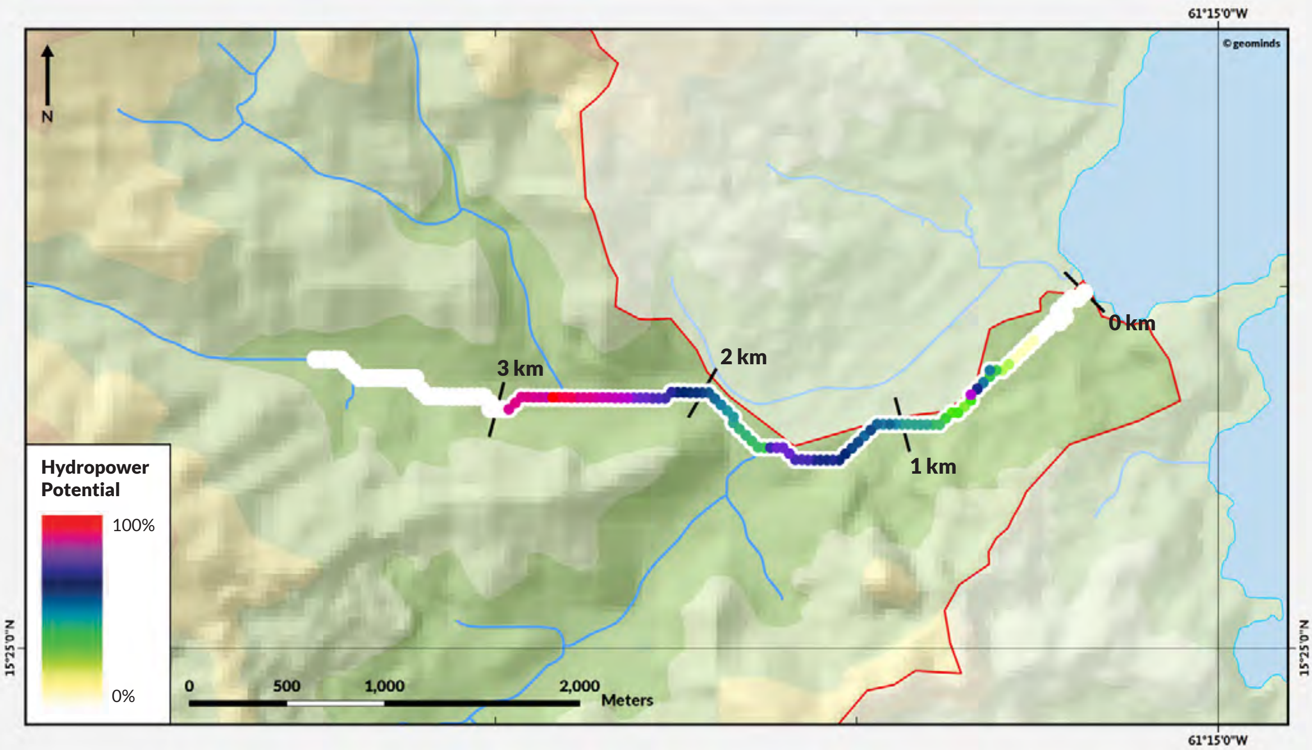
COUNTRY-WIDE RIVER RATING



9.2 • STREAM FLOW DISCHARGE ANALYSIS OF MACLAUCHLIN RIVER

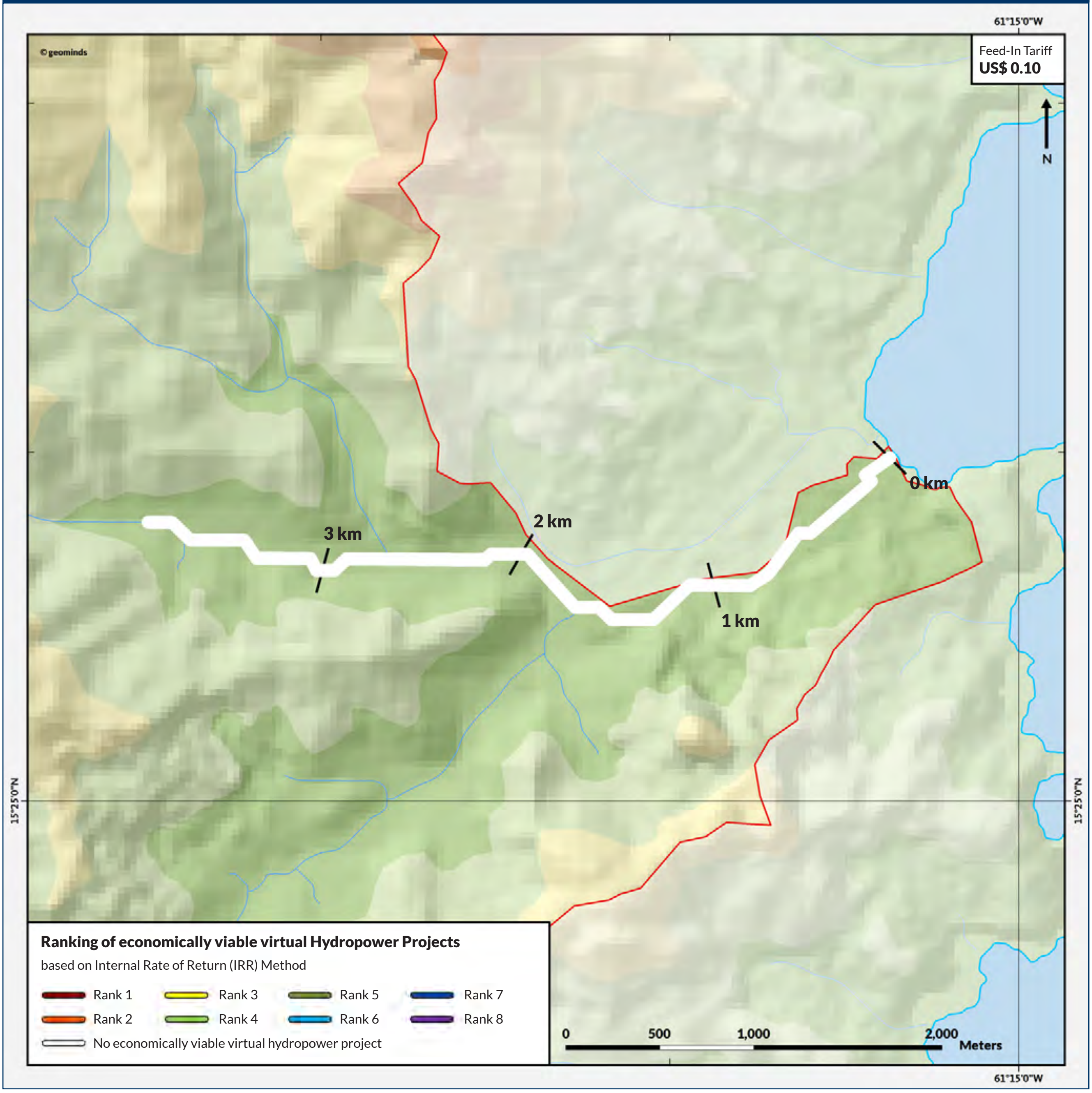


9.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

9.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



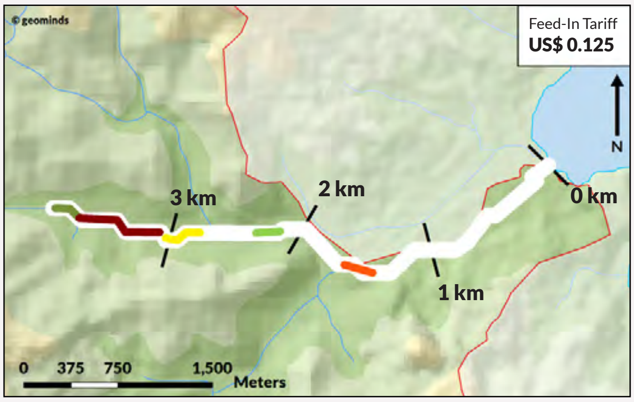
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

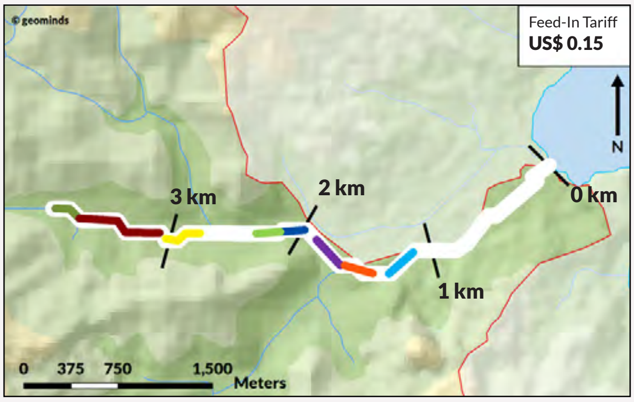
No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

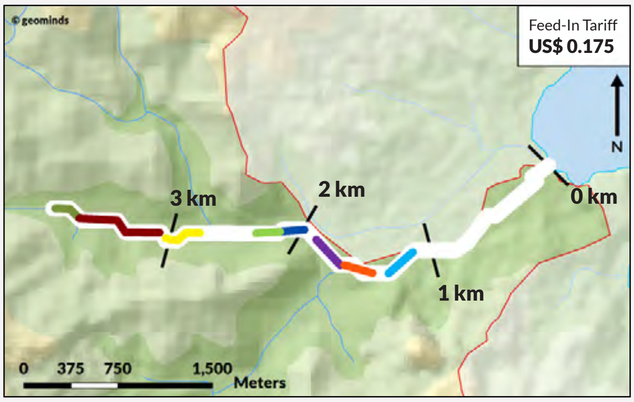
9.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



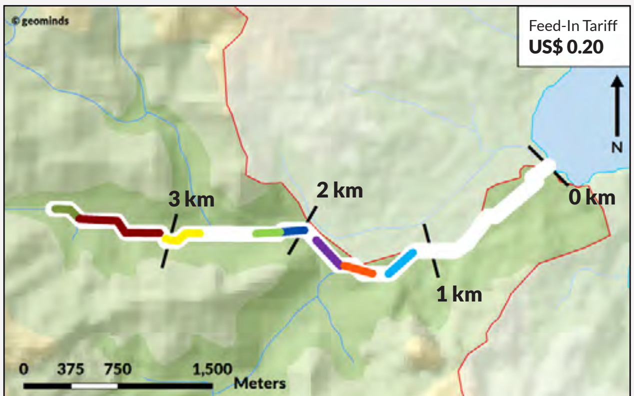
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	3.43%	145.43 kW	3.12 km	3.72 km
2	2.72%	129.05 kW	1.47 km	1.65 km
3	2.62%	59.60 kW	2.79 km	3.03 km
4	2.32%	107.52 kW	2.19 km	2.61 km
5	1.44%	32.16 kW	3.75 km	3.90 km
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.20%	145.43 kW	3.12 km	3.72 km
2	5.49%	129.05 kW	1.47 km	1.65 km
3	5.38%	59.60 kW	2.79 km	3.03 km
4	5.09%	107.52 kW	2.19 km	2.61 km
5	4.22%	32.16 kW	3.75 km	3.90 km
6	2.83%	71.13 kW	1.17 km	1.32 km
7	2.67%	32.90 kW	2.01 km	2.16 km
8	1.46%	31.64 kW	1.71 km	1.89 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.59%	145.43 kW	3.12 km	3.72 km
2	7.86%	129.05 kW	1.47 km	1.65 km
3	7.75%	59.60 kW	2.79 km	3.03 km
4	7.45%	107.52 kW	2.19 km	2.61 km
5	6.56%	32.16 kW	3.75 km	3.90 km
6	5.17%	71.13 kW	1.17 km	1.32 km
7	5.01%	32.90 kW	2.01 km	2.16 km
8	3.81%	31.64 kW	1.71 km	1.89 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.74%	145.43 kW	3.12 km	3.72 km
2	9.98%	129.05 kW	1.47 km	1.65 km
3	9.86%	59.60 kW	2.79 km	3.03 km
4	9.56%	107.52 kW	2.19 km	2.61 km
5	8.64%	32.16 kW	3.75 km	3.90 km
6	7.21%	71.13 kW	1.17 km	1.32 km
7	7.05%	32.90 kW	2.01 km	2.16 km
8	5.83%	31.64 kW	1.71 km	1.89 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7

Rank 2 · Rank 4 · Rank 6 · Rank 8

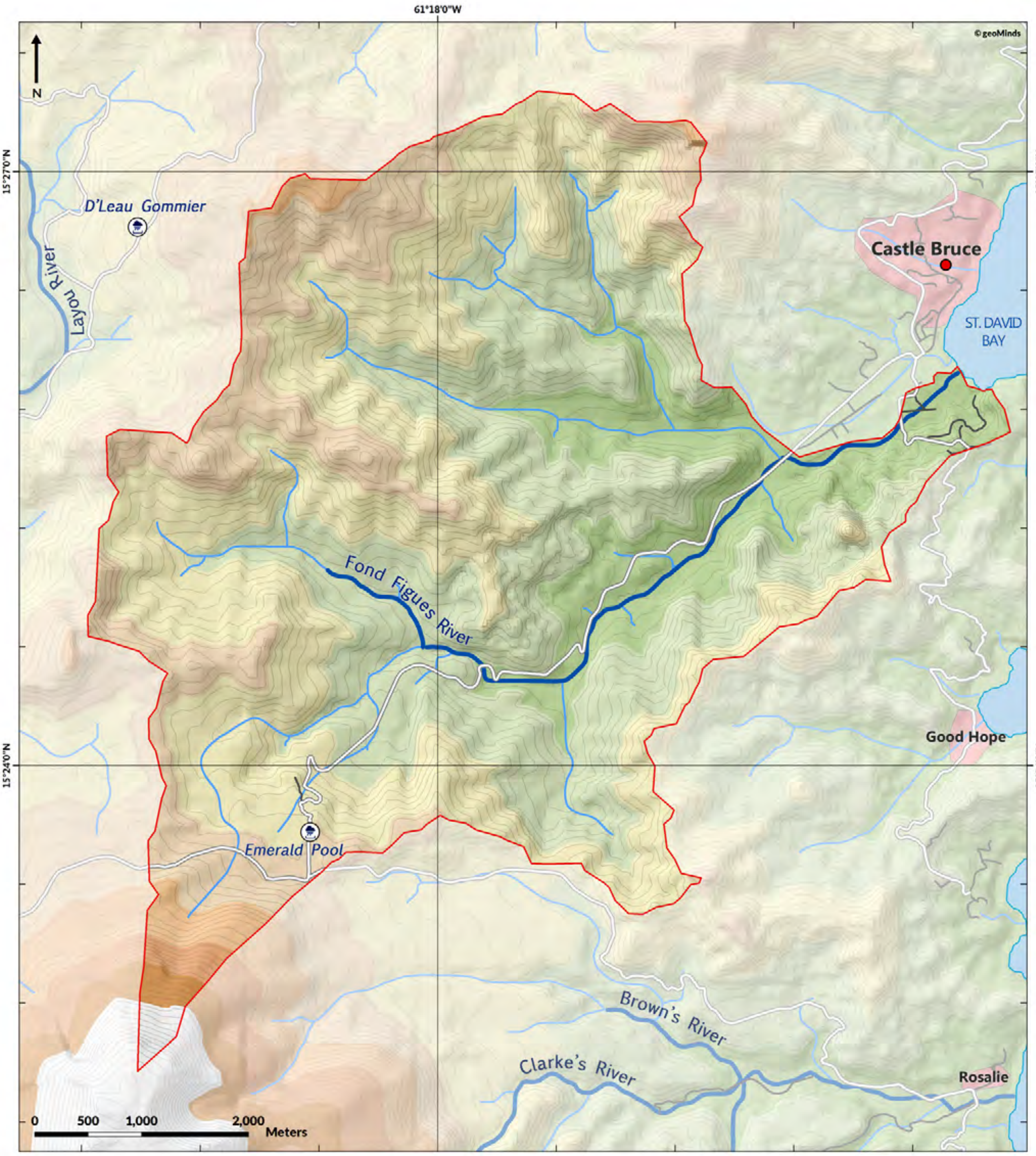
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

10. FOND FIGUES RIVER

10.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 36.77 km²

Length of Primary River: . . . . 6.79 km

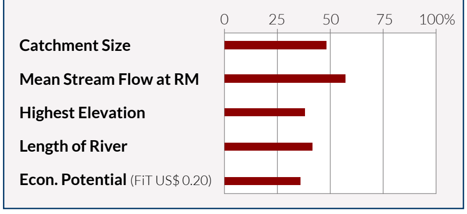
Highest Elevation of Primary River: . . . . 217 m

Long-term Mean Stream Flow at River Mouth: . . . . 3.678 m³/s

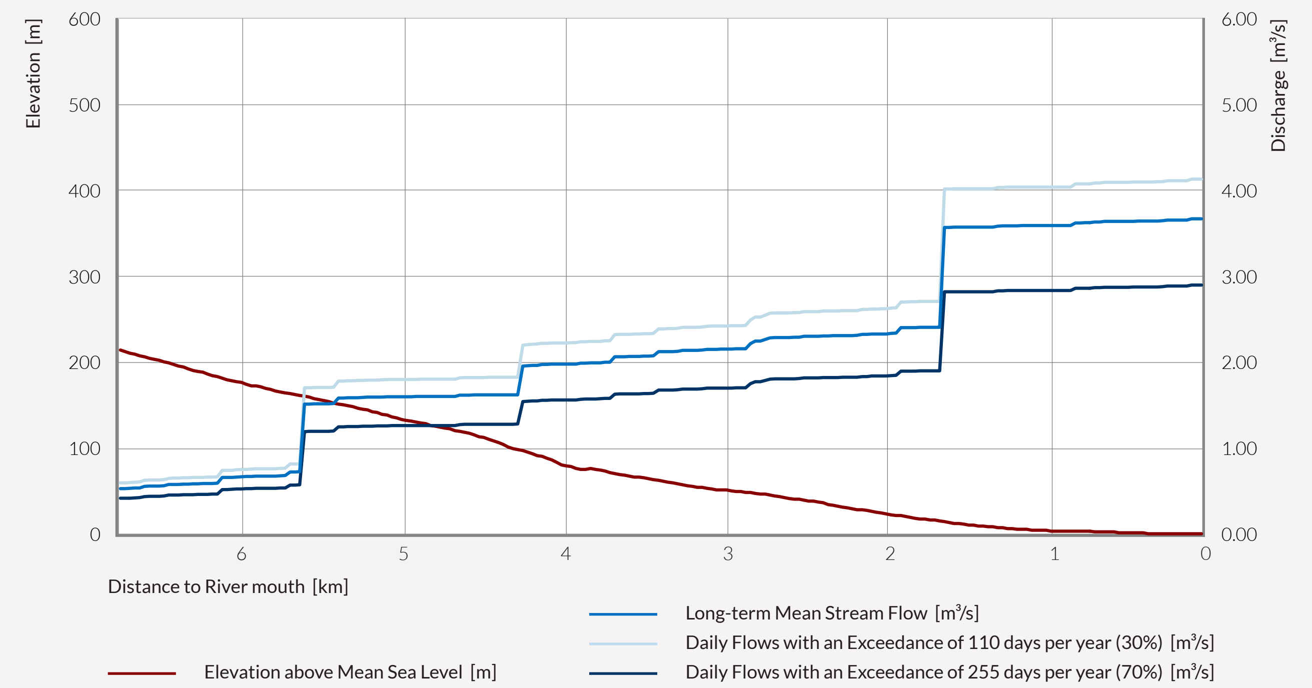
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Castle Bruce catchment consists of the four smaller rivers Raymondstone, Fond Figues, Maclauchlin and the Belle Fille River. Together they form a catchment of about 36.77 km², accumulating as much as 3.678 m³/s of mean annual discharge available for generating hydropower in an ecologically sustainable way at the river mouth at St. David Bay. The Fond Figues River has a length of 6.79 km and its highest elevation is about 217 m above mean sea level. Five economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

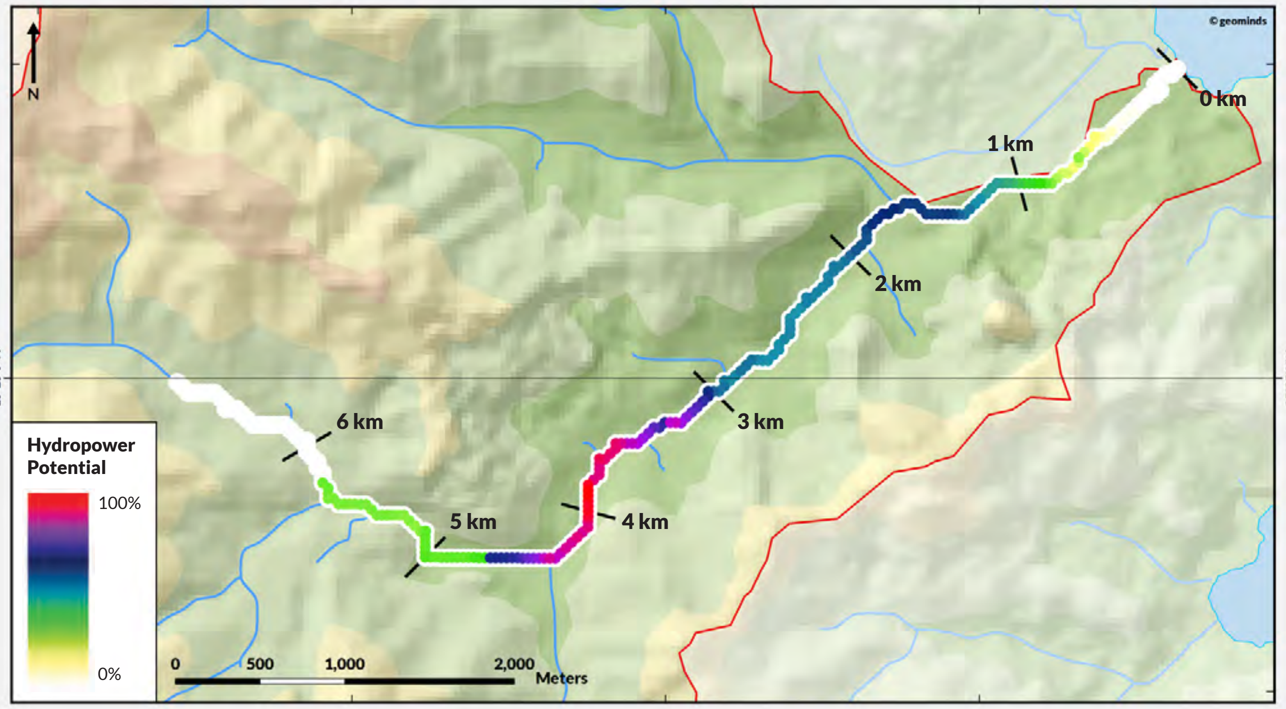
COUNTRY-WIDE RIVER RATING



10.2 • STREAM FLOW DISCHARGE ANALYSIS OF FOND FIGUES RIVER

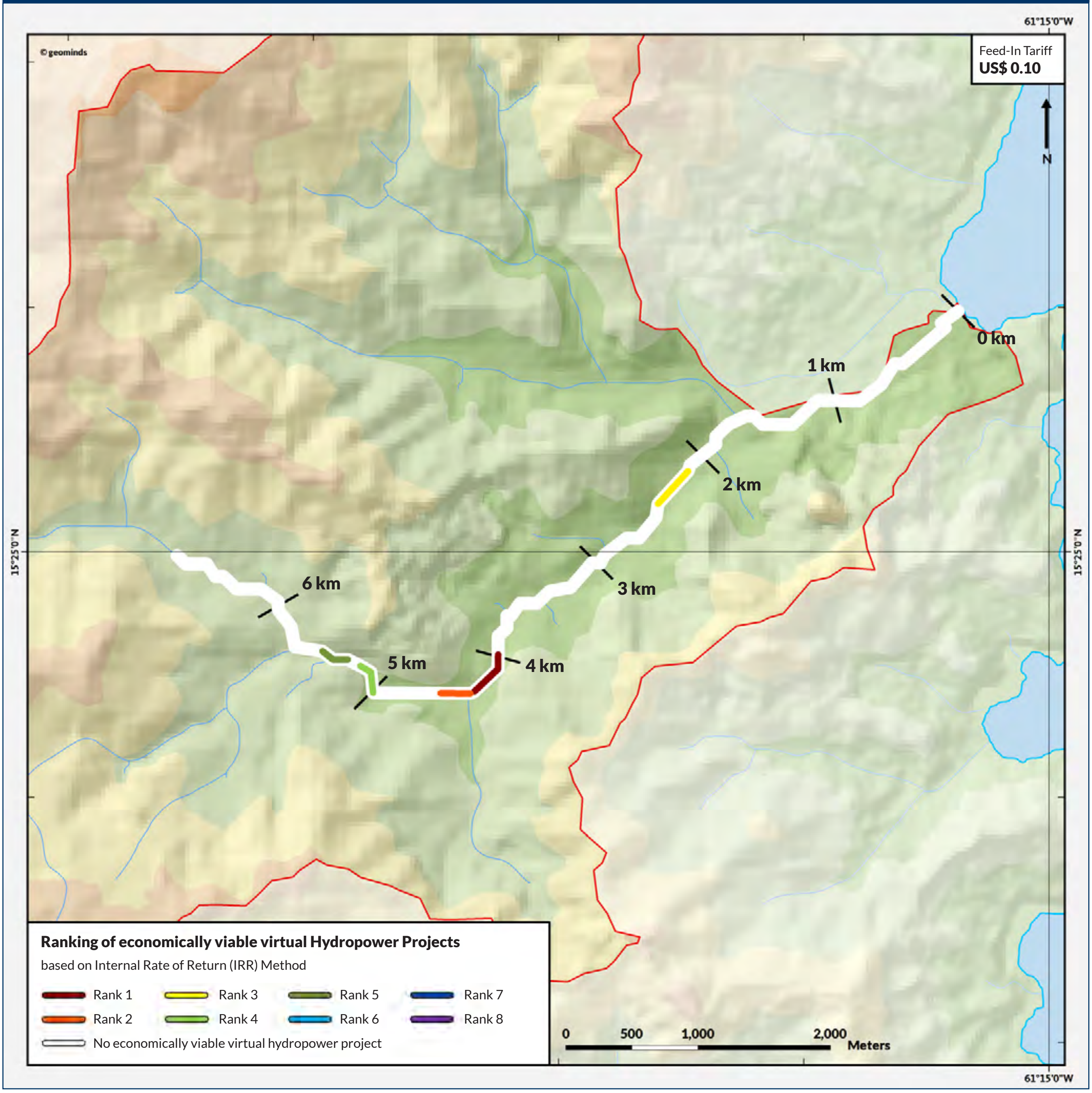


10.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

10.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

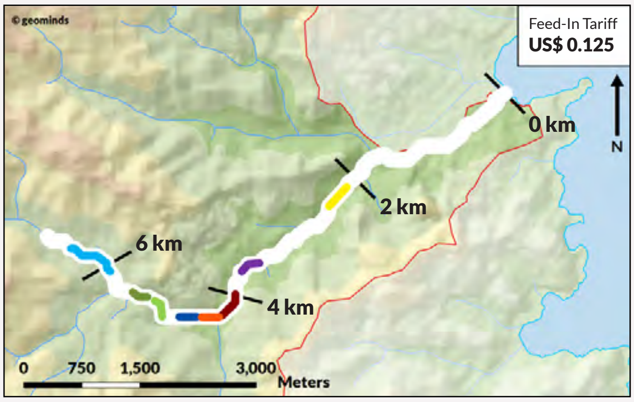


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

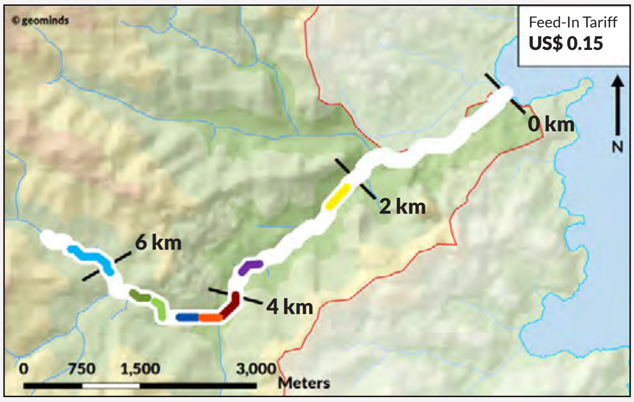
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.51%	273.50 kW	3.99 km	4.23 km	0.24 km	17 m	2.212 m³/s
2	1.81%	173.24 kW	4.29 km	4.47 km	0.18 km	13 m	1.830 m³/s
3	0.46%	158.78 kW	2.16 km	2.40 km	0.24 km	9 m	2.602 m³/s
4	0.40%	140.04 kW	4.98 km	5.19 km	0.21 km	11 m	1.799 m³/s
5	0.05%	114.59 kW	4.50 km	4.68 km	0.18 km	9 m	1.808 m³/s
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

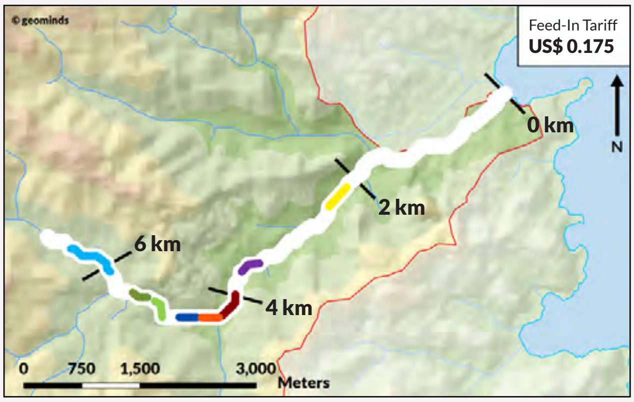
10.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



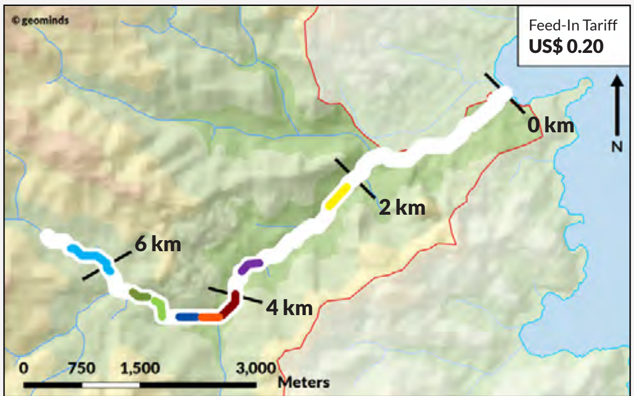
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.89%	273.50 kW	3.99 km	4.23 km
2	5.20%	173.24 kW	4.29 km	4.47 km
3	3.89%	158.78 kW	2.16 km	2.40 km
4	3.83%	140.04 kW	4.98 km	5.19 km
5	3.50%	114.59 kW	4.50 km	4.68 km
6	3.38%	125.65 kW	5.91 km	6.42 km
7	3.21%	122.67 kW	3.54 km	3.75 km
8	3.06%	104.58 kW	1.95 km	2.13 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.72%	273.50 kW	3.99 km	4.23 km
2	8.00%	173.24 kW	4.29 km	4.47 km
3	6.66%	158.78 kW	2.16 km	2.40 km
4	6.60%	140.04 kW	4.98 km	5.19 km
5	6.27%	114.59 kW	4.50 km	4.68 km
6	6.15%	125.65 kW	5.91 km	6.42 km
7	5.97%	122.67 kW	3.54 km	3.75 km
8	5.82%	104.58 kW	1.95 km	2.13 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.22%	273.50 kW	3.99 km	4.23 km
2	10.47%	173.24 kW	4.29 km	4.47 km
3	9.07%	158.78 kW	2.16 km	2.40 km
4	9.01%	140.04 kW	4.98 km	5.19 km
5	8.66%	114.59 kW	4.50 km	4.68 km
6	8.54%	125.65 kW	5.91 km	6.42 km
7	8.36%	122.67 kW	3.54 km	3.75 km
8	8.20%	104.58 kW	1.95 km	2.13 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.52%	273.50 kW	3.99 km	4.23 km
2	12.72%	173.24 kW	4.29 km	4.47 km
3	11.25%	158.78 kW	2.16 km	2.40 km
4	11.19%	140.04 kW	4.98 km	5.19 km
5	10.82%	114.59 kW	4.50 km	4.68 km
6	10.70%	125.65 kW	5.91 km	6.42 km
7	10.50%	122.67 kW	3.54 km	3.75 km
8	10.34%	104.58 kW	1.95 km	2.13 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7

Rank 2 · Rank 4 · Rank 6 · Rank 8

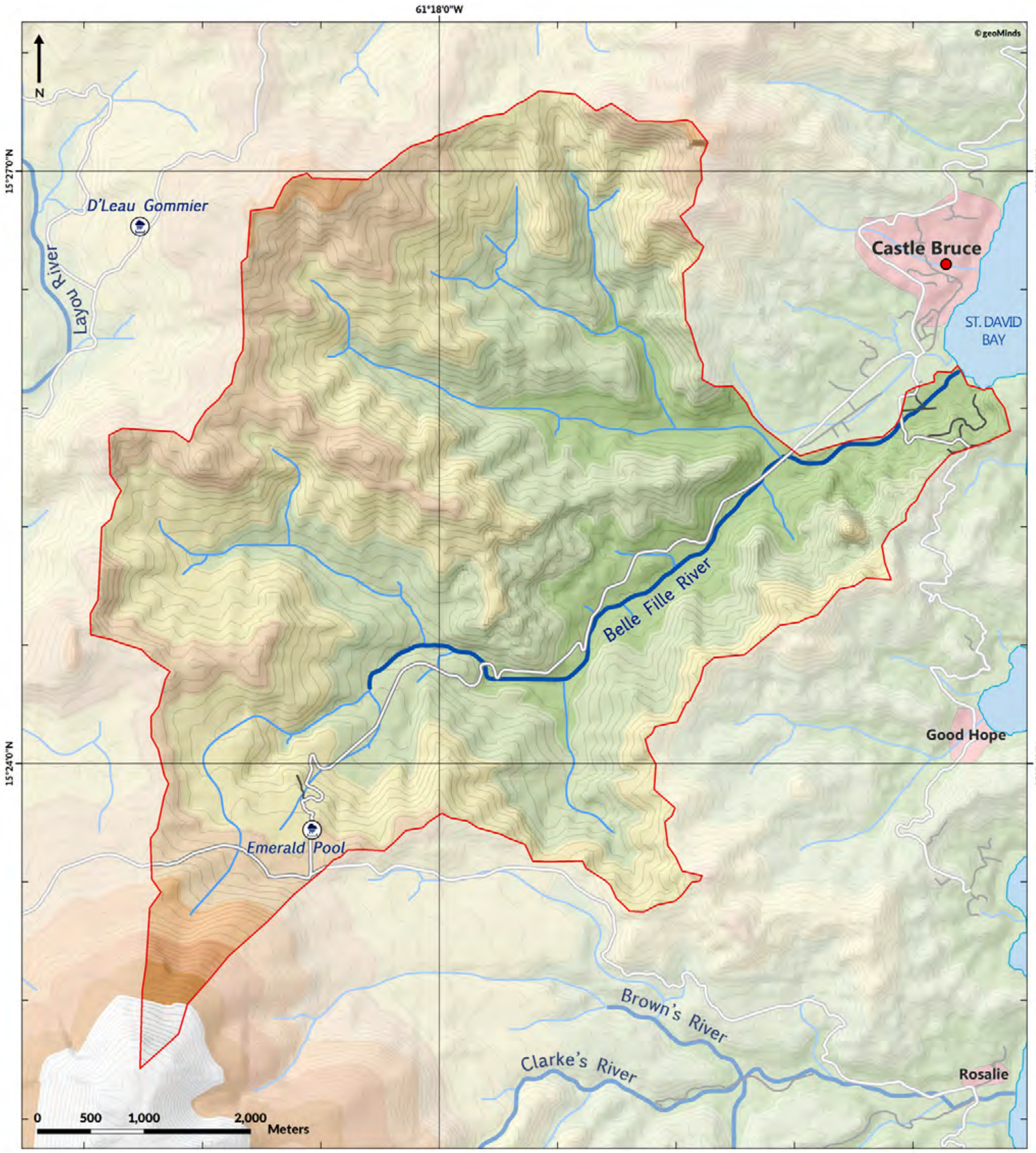
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

11. BELLE FILLE RIVER

11.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 36.66 km²

Length of Primary River: . . . . 6.31 km

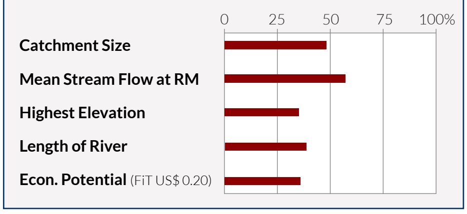
Highest Elevation of Primary River: . . . . 200 m

Long-term Mean Stream Flow at River Mouth: . . . . 3.678 m³/s

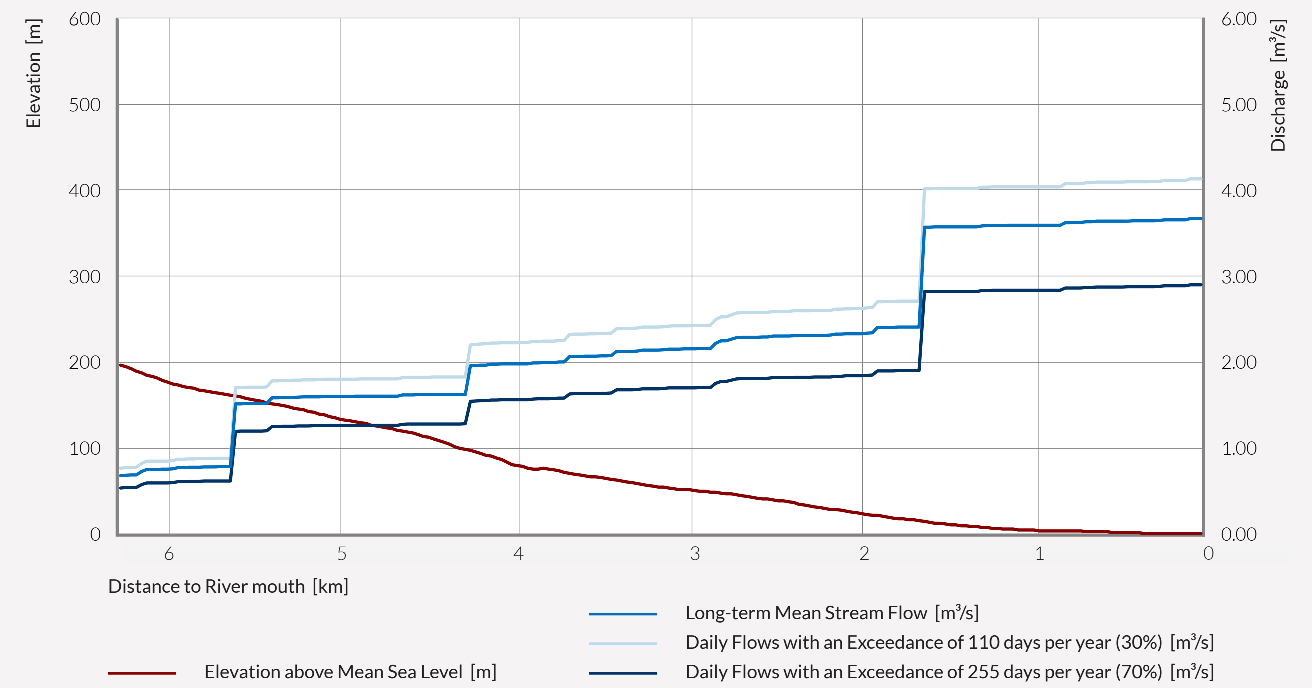
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Castle Bruce catchment consists of the four smaller rivers Raymondstone, Fond Figues, Maclauchlin and the Belle Fille River. Together they form a catchment of about 36.77 km², accumulating as much as 3.678 m³/s of mean annual discharge available for generating hydropower in an ecologically sustainable way at the river mouth at St. David Bay. The Belle Fille River has a length of 6.31 km and its highest elevation is about 200 m above mean sea level. Six economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

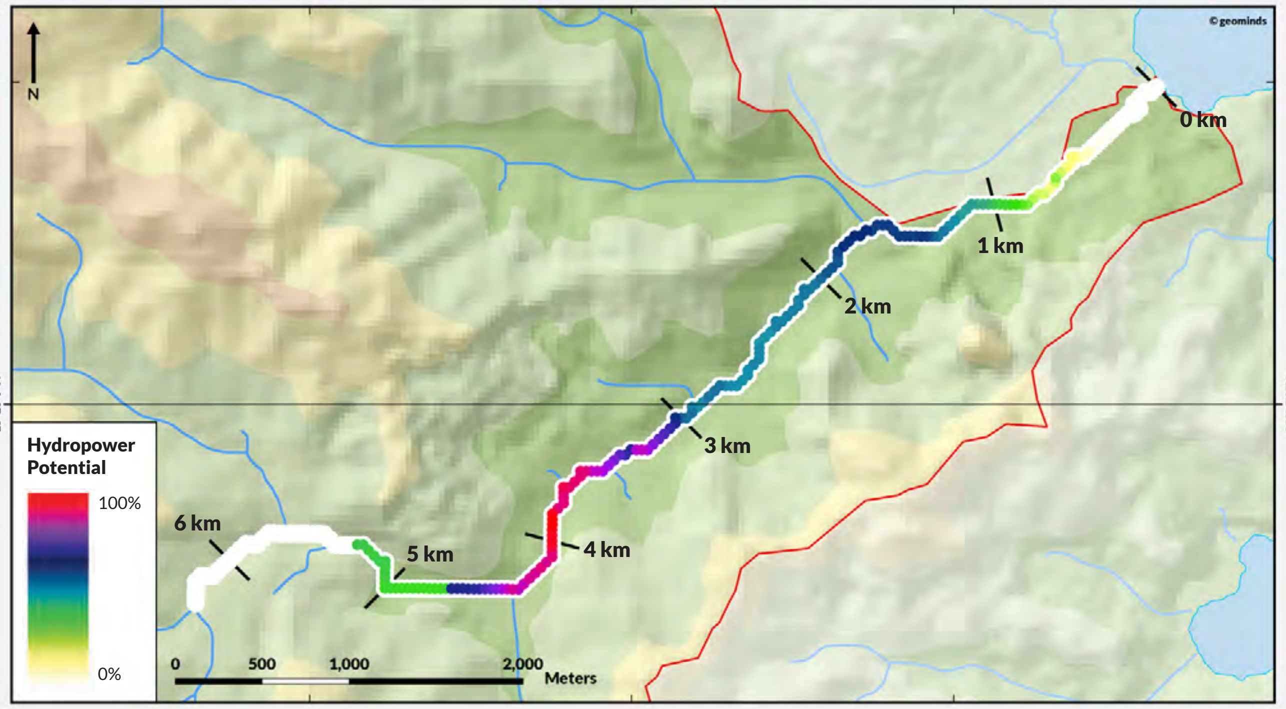
COUNTRY-WIDE RIVER RATING



11.2 • STREAM FLOW DISCHARGE ANALYSIS OF BELLE FILLE RIVER

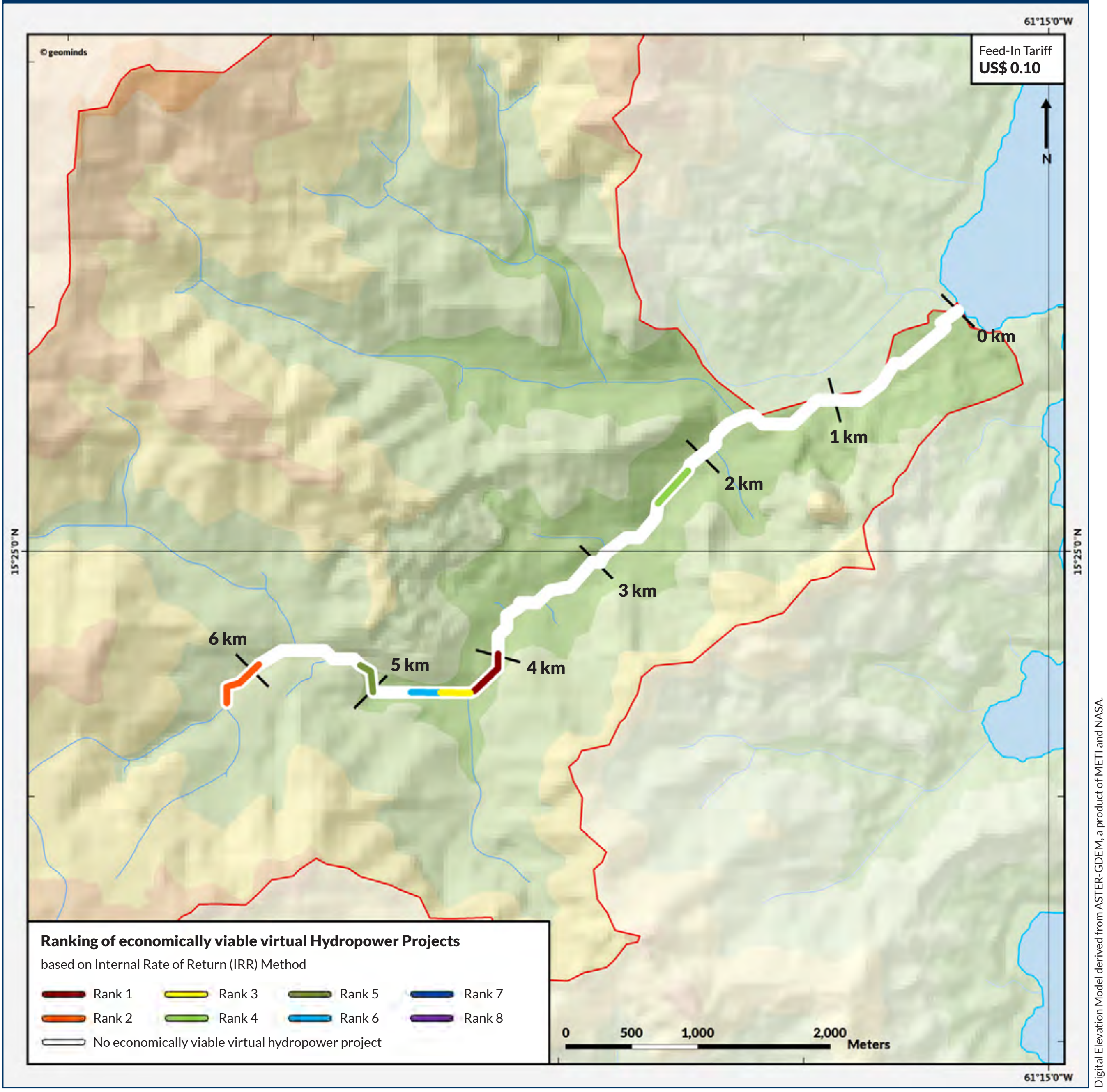


11.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

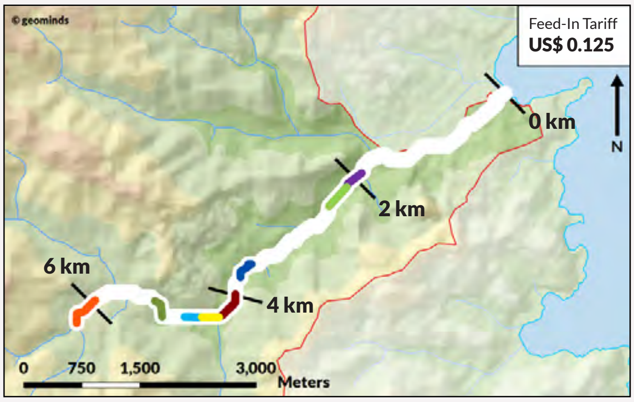
11.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



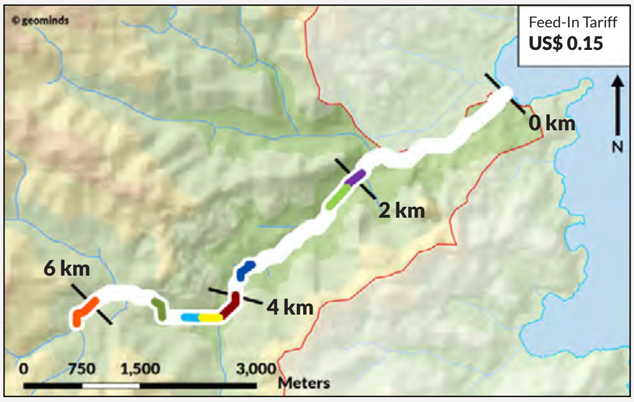
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.51%	273.50 kW	3.99 km	4.23 km	0.24 km	17 m	2.212 m³/s
2	1.92%	140.54 kW	5.94 km	6.27 km	0.33 km	25 m	0.769 m³/s
3	1.81%	173.24 kW	4.29 km	4.47 km	0.18 km	13 m	1.830 m³/s
4	0.46%	158.78 kW	2.16 km	2.40 km	0.24 km	9 m	2.602 m³/s
5	0.40%	140.04 kW	4.98 km	5.19 km	0.21 km	11 m	1.799 m³/s
6	0.05%	114.59 kW	4.50 km	4.68 km	0.18 km	9 m	1.808 m³/s
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

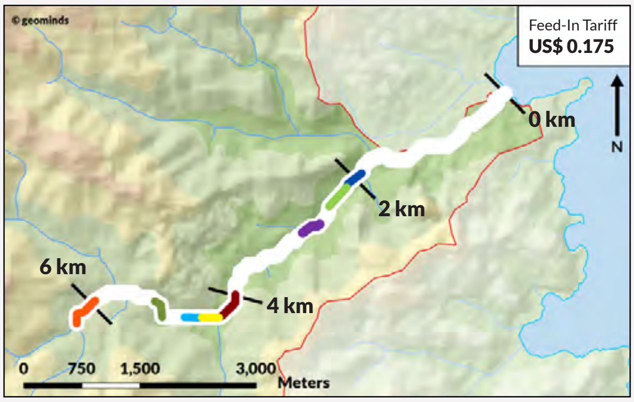
11.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



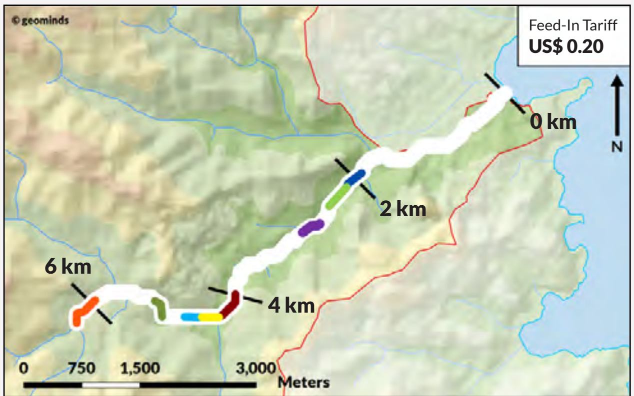
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.89%	273.50 kW	3.99 km	4.23 km
2	5.31%	140.54 kW	5.94 km	6.27 km
3	5.20%	173.24 kW	4.29 km	4.47 km
4	3.89%	158.78 kW	2.16 km	2.40 km
5	3.83%	140.04 kW	4.98 km	5.19 km
6	3.50%	114.59 kW	4.50 km	4.68 km
7	3.21%	122.67 kW	3.54 km	3.75 km
8	3.06%	104.58 kW	1.95 km	2.13 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.72%	273.50 kW	3.99 km	4.23 km
2	8.11%	140.54 kW	5.94 km	6.27 km
3	8.00%	173.24 kW	4.29 km	4.47 km
4	6.66%	158.78 kW	2.16 km	2.40 km
5	6.60%	140.04 kW	4.98 km	5.19 km
6	6.27%	114.59 kW	4.50 km	4.68 km
7	5.97%	122.67 kW	3.54 km	3.75 km
8	5.82%	104.58 kW	1.95 km	2.13 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.22%	273.50 kW	3.99 km	4.23 km
2	10.59%	140.54 kW	5.94 km	6.27 km
3	10.47%	173.24 kW	4.29 km	4.47 km
4	9.07%	158.78 kW	2.16 km	2.40 km
5	9.01%	140.04 kW	4.98 km	5.19 km
6	8.66%	114.59 kW	4.50 km	4.68 km
7	8.20%	104.58 kW	1.95 km	2.13 km
8	8.11%	102.84 kW	2.55 km	2.73 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.52%	273.50 kW	3.99 km	4.23 km
2	12.85%	140.54 kW	5.94 km	6.27 km
3	12.12%	170.92 kW	4.35 km	4.56 km
4	11.25%	158.78 kW	2.16 km	2.40 km
5	11.19%	140.04 kW	4.98 km	5.19 km
6	10.50%	122.67 kW	3.54 km	3.75 km
7	10.34%	104.58 kW	1.95 km	2.13 km
8	10.25%	102.84 kW	2.55 km	2.73 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

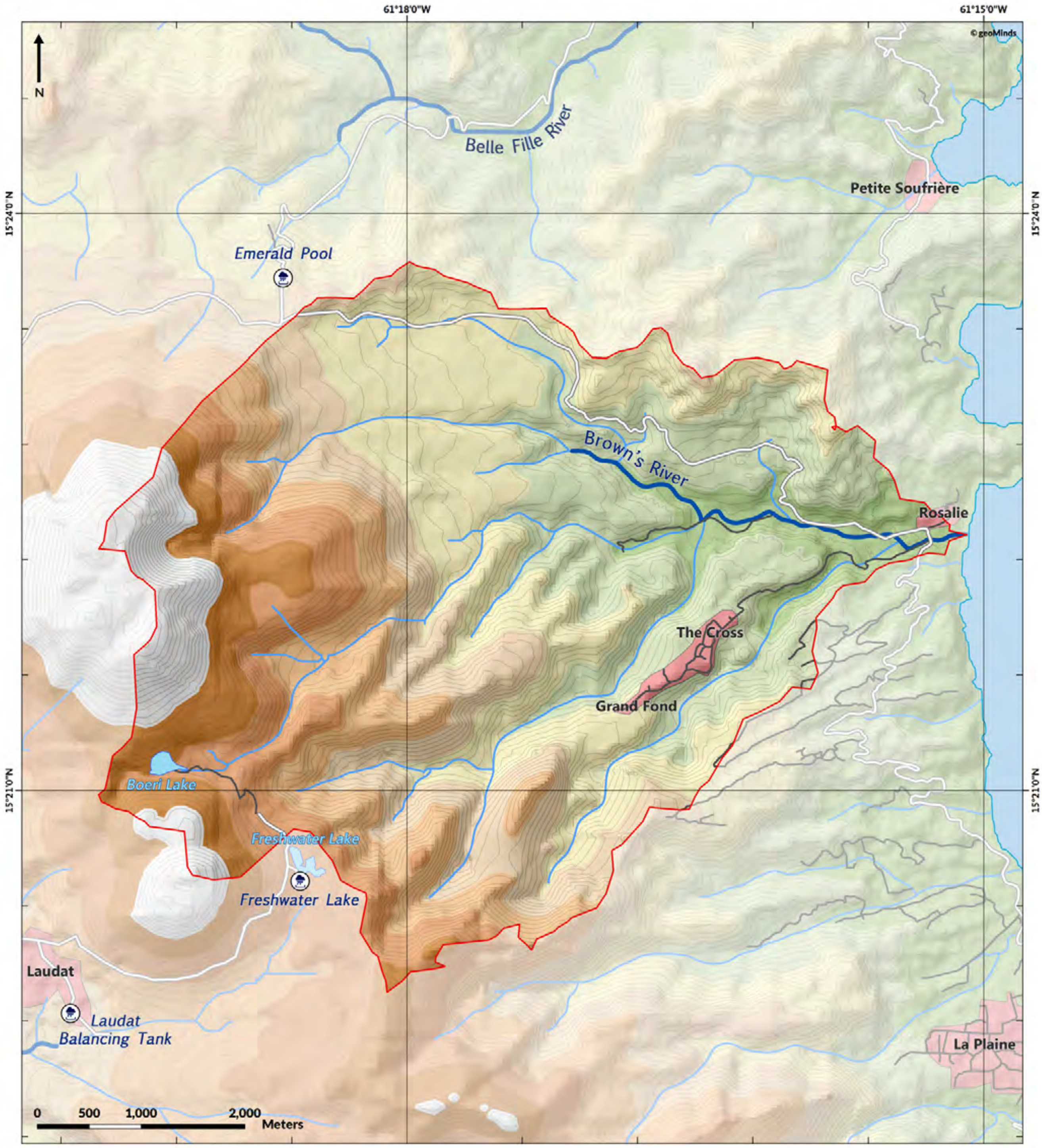
Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

12. BROWN'S RIVER

12.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 33.11 km²

Length of Primary River: . . . . 3.92 km

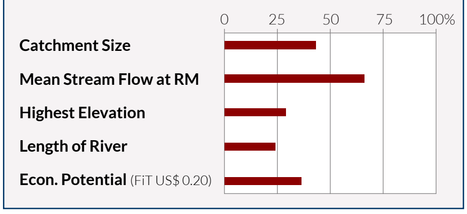
Highest Elevation of Primary River: . . . . 166 m

Long-term Mean Stream Flow at River Mouth: . . . . 4.259 m³/s

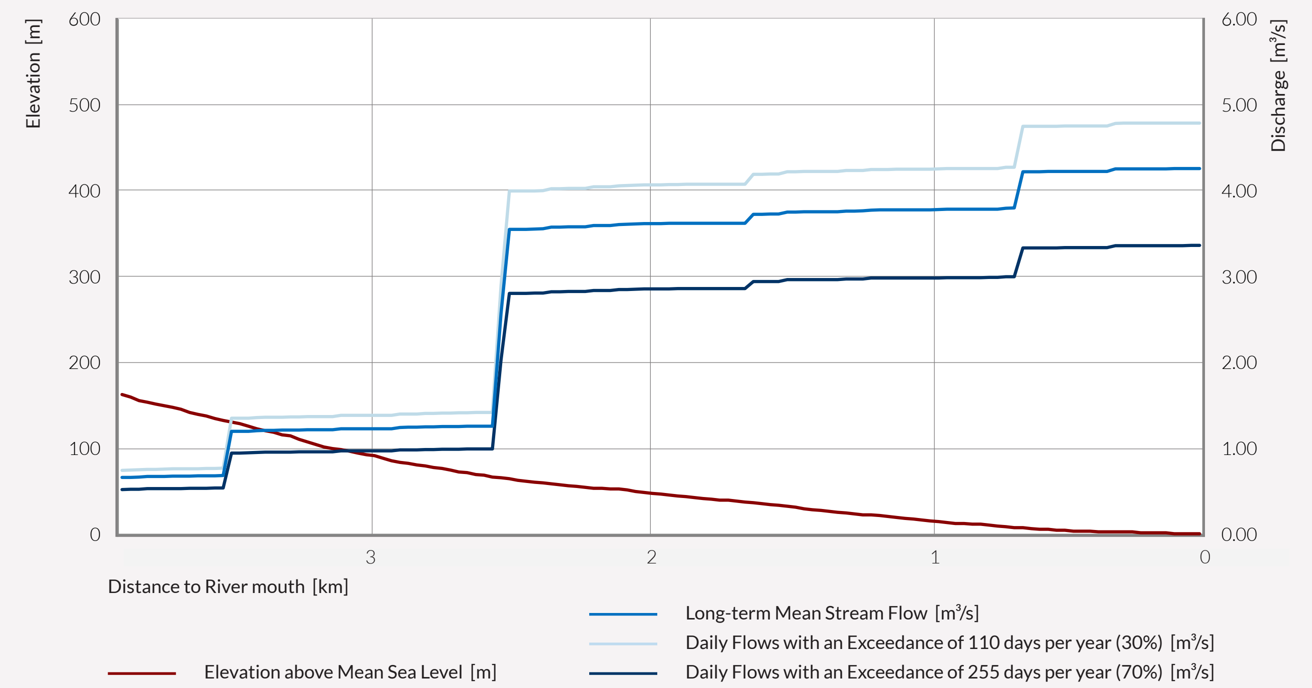
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Rosalie catchment consists of the Brown's and Clarke's Riveras well as the larger Rosalie River. Together their catchment size is about 33.11 km², accumulating about 4.259 m³/s of mean annual discharge available for generating hydropower in a ecologically sustainable way at their river mouth. The Brown's River's highest elevation is about 166 m above mean sea level and has a length of 3.92 km with a joint-river section of about 2.5 km. Several economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

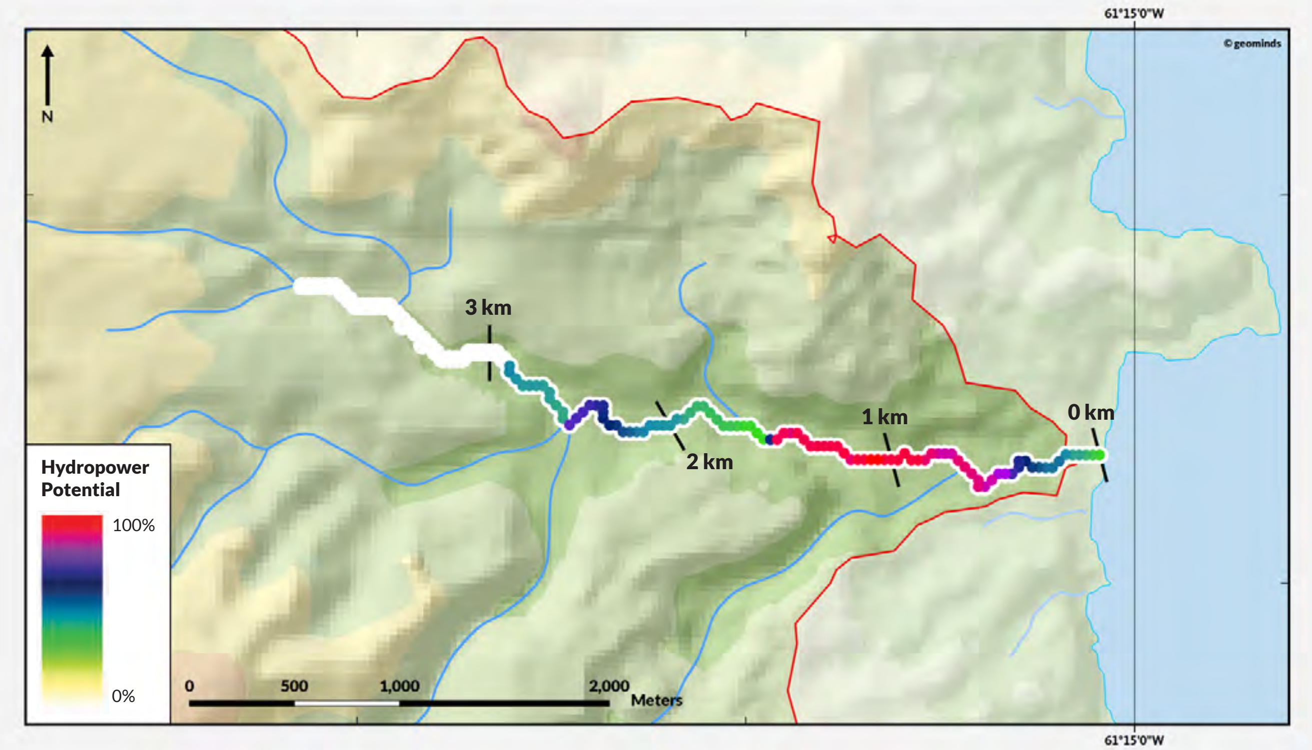
COUNTRY-WIDE RIVER RATING



12.2 • STREAM FLOW DISCHARGE ANALYSIS OF BROWN'S RIVER

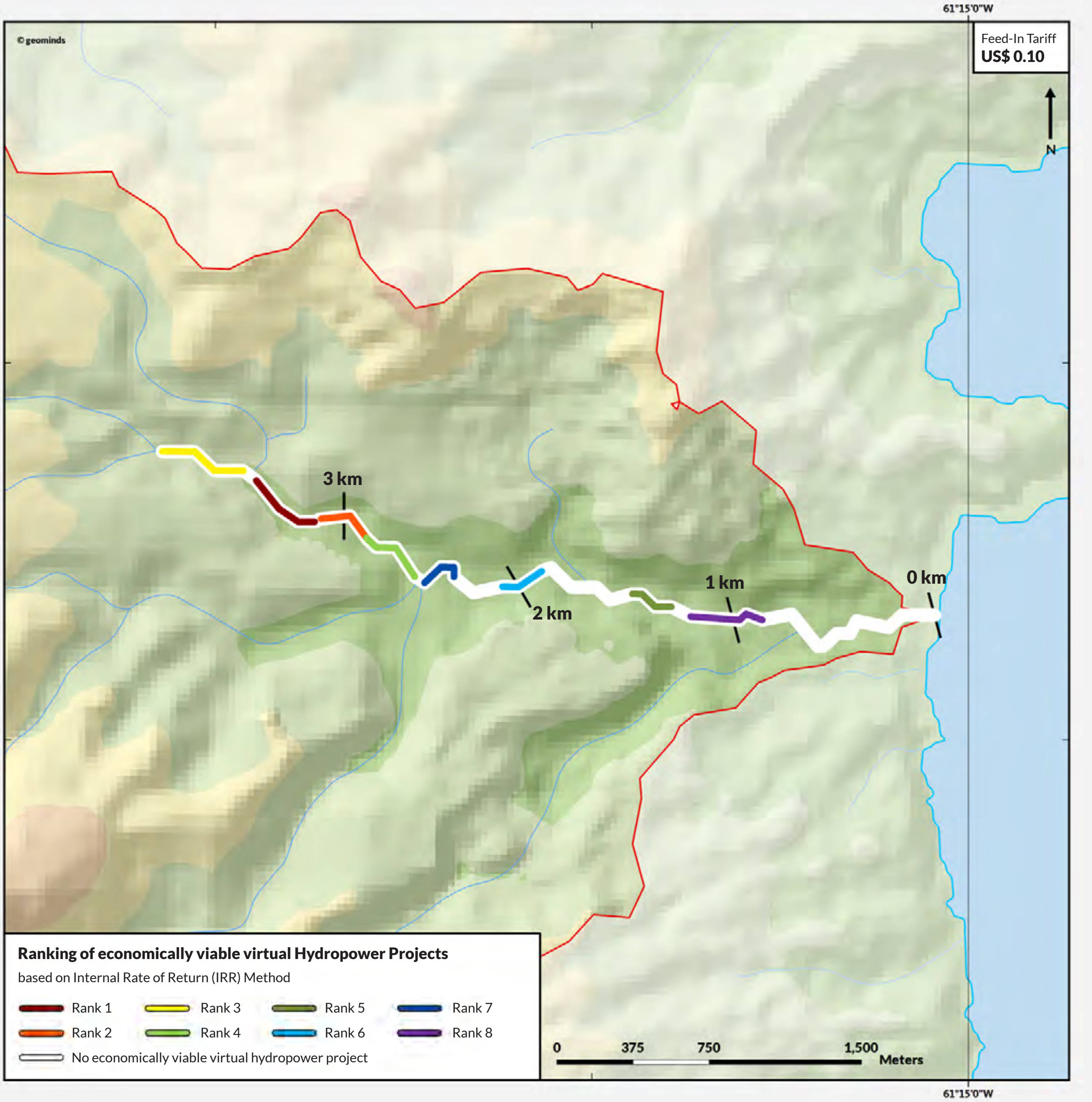


12.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

12.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

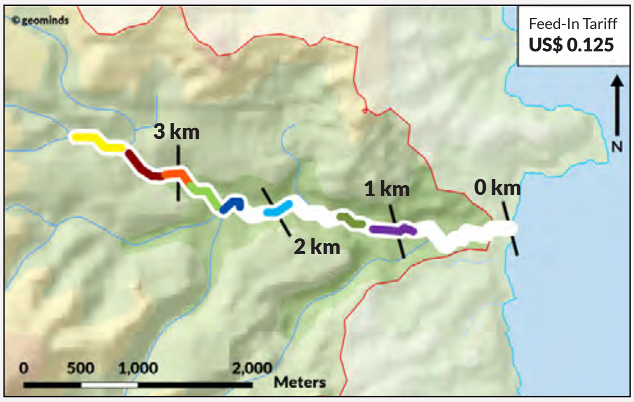


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

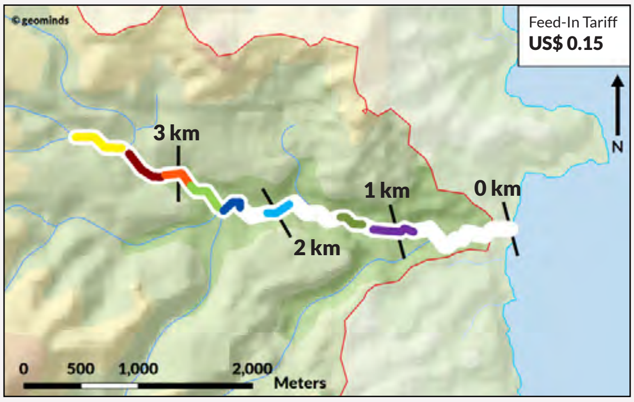
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	3.40%	269.98 kW	3.15 km	3.45 km	0.30 km	27 m	1.353 m³/s
2	2.63%	151.31 kW	2.88 km	3.09 km	0.21 km	15 m	1.386 m³/s
3	2.33%	170.82 kW	3.54 km	3.90 km	0.36 km	31 m	0.748 m³/s
4	1.81%	129.69 kW	2.61 km	2.85 km	0.24 km	13 m	1.405 m³/s
5	1.37%	173.62 kW	1.32 km	1.47 km	0.15 km	6 m	4.227 m³/s
6	1.22%	167.09 kW	1.92 km	2.07 km	0.15 km	6 m	4.068 m³/s
7	1.15%	164.26 kW	2.34 km	2.49 km	0.15 km	6 m	3.999 m³/s
8	0.86%	282.70 kW	0.90 km	1.20 km	0.30 km	10 m	4.251 m³/s

For more information and all setting parameters used for this calculation, see page 12.

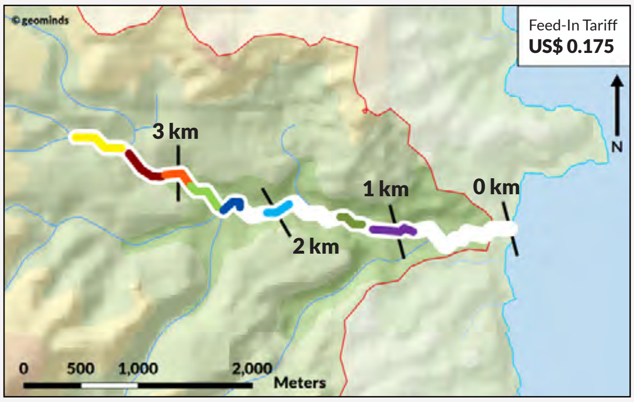
12.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



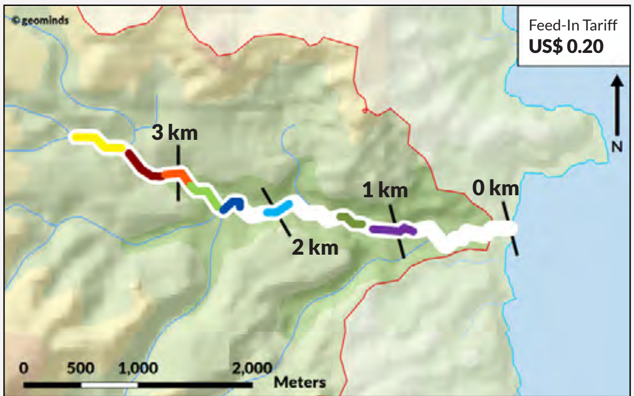
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.79%	269.98 kW	3.15 km	3.45 km
2	6.01%	151.31 kW	2.88 km	3.09 km
3	5.71%	170.82 kW	3.54 km	3.90 km
4	5.20%	129.69 kW	2.61 km	2.85 km
5	4.77%	173.62 kW	1.32 km	1.47 km
6	4.62%	167.09 kW	1.92 km	2.07 km
7	4.55%	164.26 kW	2.34 km	2.49 km
8	4.27%	282.70 kW	0.90 km	1.20 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.65%	269.98 kW	3.15 km	3.45 km
2	8.84%	151.31 kW	2.88 km	3.09 km
3	8.53%	170.82 kW	3.54 km	3.90 km
4	8.00%	129.69 kW	2.61 km	2.85 km
5	7.56%	173.62 kW	1.32 km	1.47 km
6	7.40%	167.09 kW	1.92 km	2.07 km
7	7.33%	164.26 kW	2.34 km	2.49 km
8	7.04%	282.70 kW	0.90 km	1.20 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.21%	269.98 kW	3.15 km	3.45 km
2	11.36%	151.31 kW	2.88 km	3.09 km
3	11.03%	170.82 kW	3.54 km	3.90 km
4	10.47%	129.69 kW	2.61 km	2.85 km
5	10.01%	173.62 kW	1.32 km	1.47 km
6	9.84%	167.09 kW	1.92 km	2.07 km
7	9.77%	164.26 kW	2.34 km	2.49 km
8	9.45%	282.70 kW	0.90 km	1.20 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	14.57%	269.98 kW	3.15 km	3.45 km
2	13.66%	151.31 kW	2.88 km	3.09 km
3	13.31%	170.82 kW	3.54 km	3.90 km
4	12.72%	129.69 kW	2.61 km	2.85 km
5	12.23%	173.62 kW	1.32 km	1.47 km
6	12.06%	167.09 kW	1.92 km	2.07 km
7	11.99%	164.26 kW	2.34 km	2.49 km
8	11.67%	282.70 kW	0.90 km	1.20 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1, Rank 2, Rank 3, Rank 4, Rank 5, Rank 6, Rank 7, Rank 8

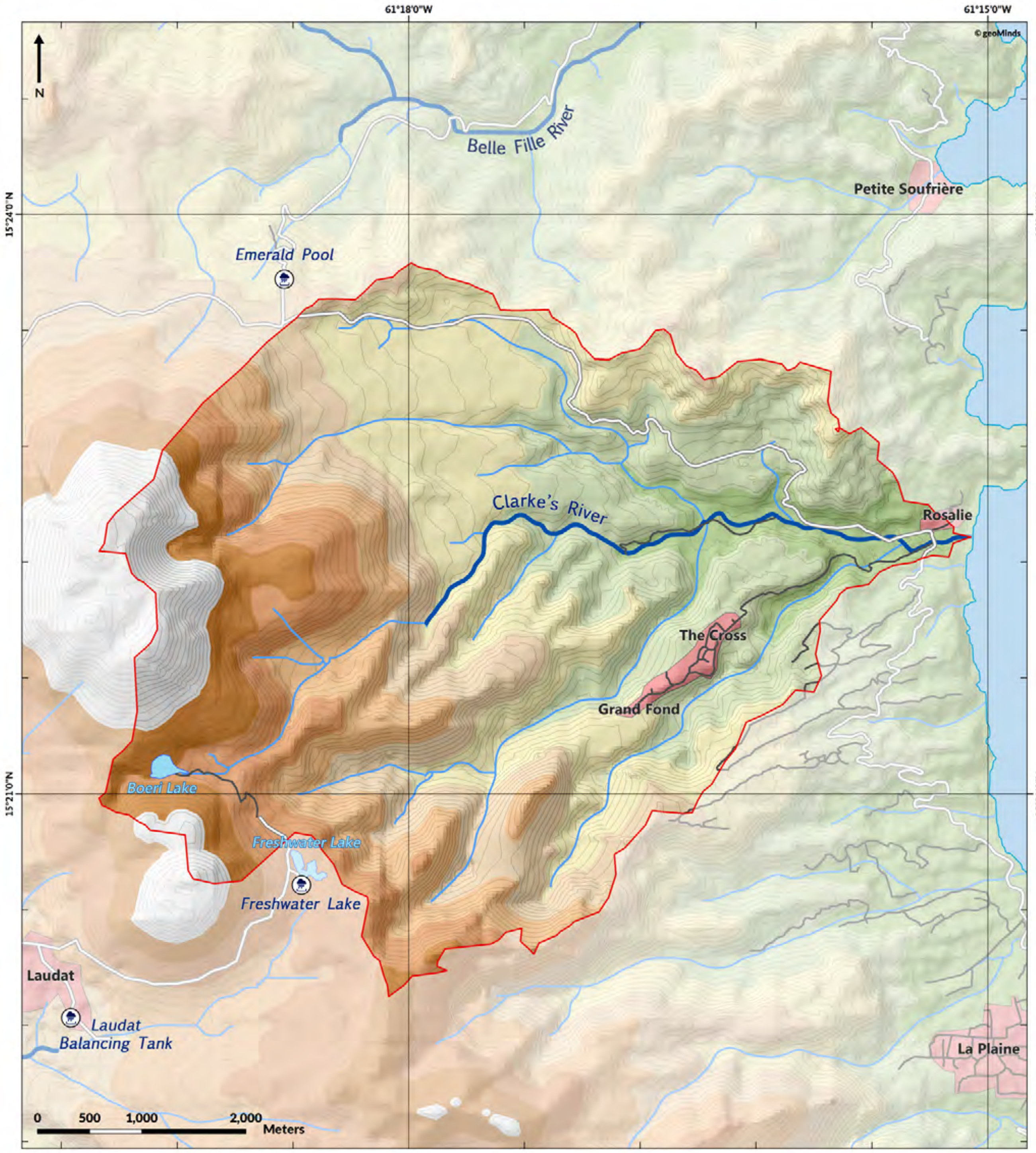
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

13. CLARKE'S RIVER

13.1 • OVERVIEW MAP



Elevation

	> 900
	750 - 900
	600 - 750
	450 - 600
	300 - 450
	150 - 300
	0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

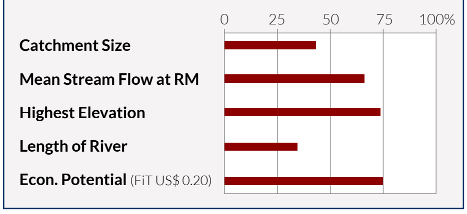
Facts about Catchment

Catchment Size:	33.11 km²
Length of Primary River:	5.65 km
Highest Elevation of Primary River:	420 m
Long-term Mean Stream Flow at River Mouth:	4.259 m³/s

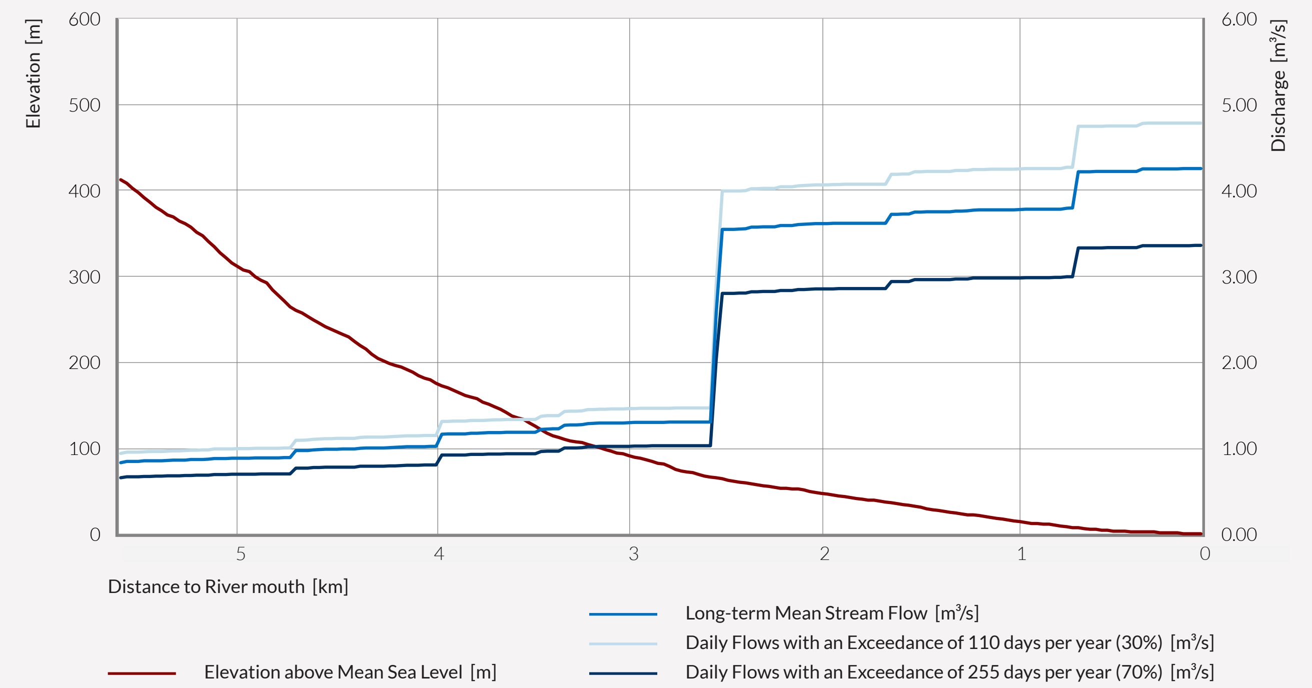
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Rosalie catchment consists of the Clarke's and the Brown's River as well as the larger Rosalie River. Together they form catchment of about 33.11 km², accumulating about 4.259 m³/s of mean annual discharge available for generating hydropower in a ecologically sustainable way at their river mouth. The Clarke's River's highest elevation is about 420 m above mean sea level and it has a total length of 5.65 km including a joint-river section of about 2.5 km. Several economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

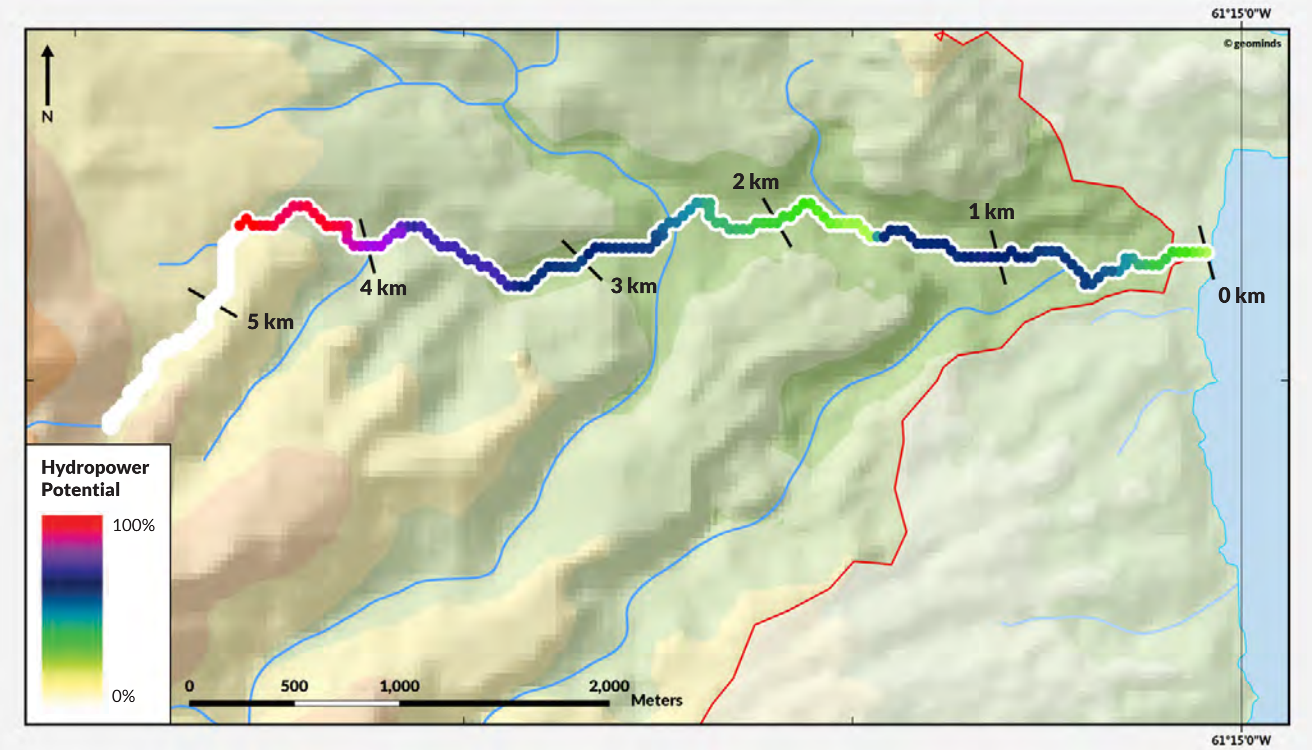
COUNTRY-WIDE RIVER RATING



13.2 • STREAM FLOW DISCHARGE ANALYSIS OF CLARKE'S RIVER

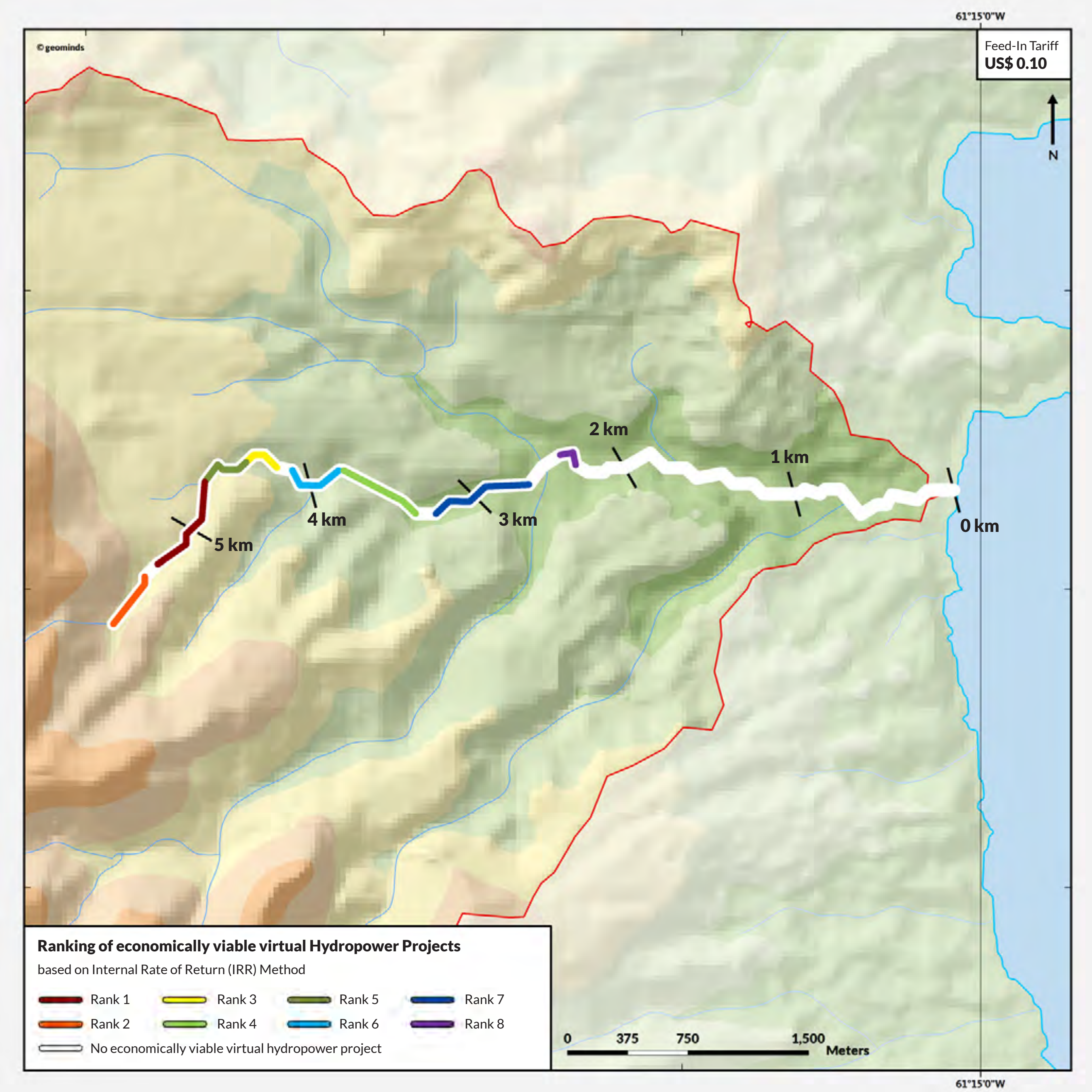


13.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

13.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

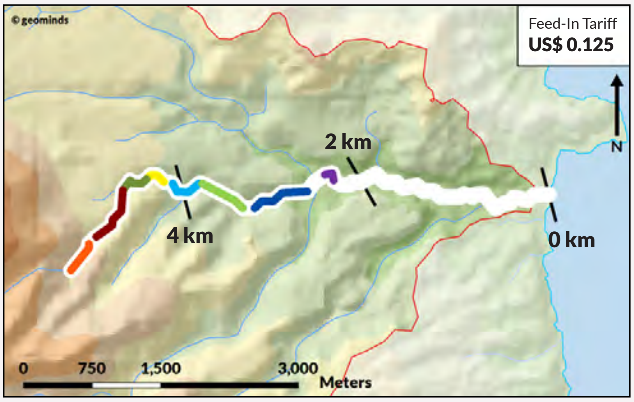


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

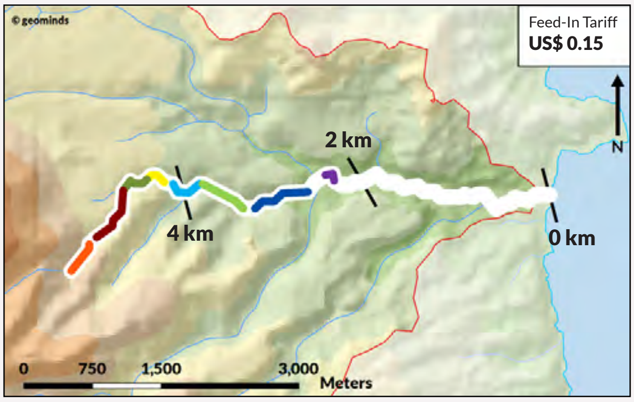
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	4.30%	695.13 kW	4.71 km	5.22 km	0.51 km	93 m	0.982 m^3/s
2	4.03%	344.23 kW	5.34 km	5.61 km	0.27 km	48 m	0.943 m^3/s
3	3.94%	212.42 kW	4.26 km	4.41 km	0.15 km	25 m	1.120 m^3/s
4	3.88%	427.01 kW	3.36 km	3.75 km	0.39 km	43 m	1.330 m^3/s
5	3.43%	230.48 kW	4.44 km	4.68 km	0.24 km	28 m	1.099 m^3/s
6	3.31%	281.91 kW	3.81 km	4.14 km	0.33 km	33 m	1.149 m^3/s
7	2.92%	346.55 kW	2.70 km	3.21 km	0.51 km	33 m	1.455 m^3/s
8	1.37%	173.62 kW	1.32 km	1.47 km	0.15 km	6 m	4.227 m^3/s

For more information and all setting parameters used for this calculation, see page 12.

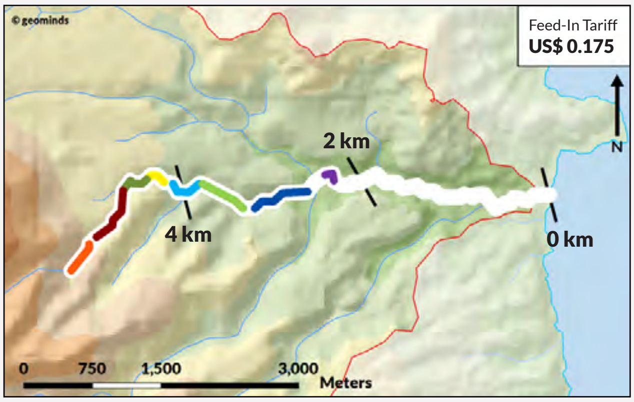
13.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



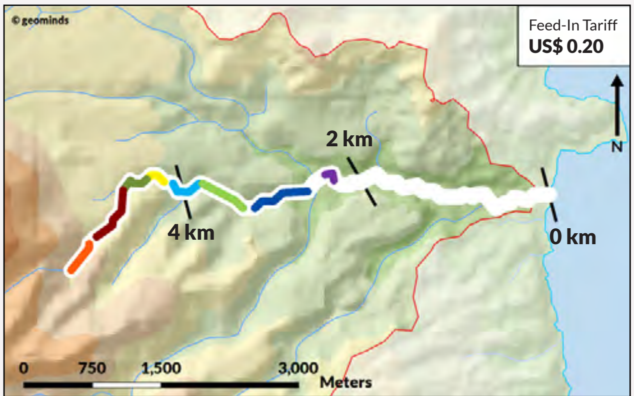
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.71%	695.13 kW	4.71 km	5.22 km
2	7.43%	344.23 kW	5.34 km	5.61 km
3	7.34%	212.42 kW	4.26 km	4.41 km
4	7.28%	427.01 kW	3.36 km	3.75 km
5	6.82%	230.48 kW	4.44 km	4.68 km
6	6.70%	281.91 kW	3.81 km	4.14 km
7	6.30%	346.55 kW	2.70 km	3.21 km
8	4.77%	173.62 kW	1.32 km	1.47 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.62%	695.13 kW	4.71 km	5.22 km
2	10.33%	344.23 kW	5.34 km	5.61 km
3	10.24%	212.42 kW	4.26 km	4.41 km
4	10.17%	427.01 kW	3.36 km	3.75 km
5	9.69%	230.48 kW	4.44 km	4.68 km
6	9.57%	281.91 kW	3.81 km	4.14 km
7	9.15%	346.55 kW	2.70 km	3.21 km
8	7.56%	173.62 kW	1.32 km	1.47 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.24%	695.13 kW	4.71 km	5.22 km
2	12.93%	344.23 kW	5.34 km	5.61 km
3	12.84%	212.42 kW	4.26 km	4.41 km
4	12.77%	427.01 kW	3.36 km	3.75 km
5	12.25%	230.48 kW	4.44 km	4.68 km
6	12.12%	281.91 kW	3.81 km	4.14 km
7	11.68%	346.55 kW	2.70 km	3.21 km
8	10.01%	173.62 kW	1.32 km	1.47 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	15.66%	695.13 kW	4.71 km	5.22 km
2	15.33%	344.23 kW	5.34 km	5.61 km
3	15.23%	212.42 kW	4.26 km	4.41 km
4	15.15%	427.01 kW	3.36 km	3.75 km
5	14.61%	230.48 kW	4.44 km	4.68 km
6	14.47%	281.91 kW	3.81 km	4.14 km
7	14.00%	346.55 kW	2.70 km	3.21 km
8	12.23%	173.62 kW	1.32 km	1.47 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

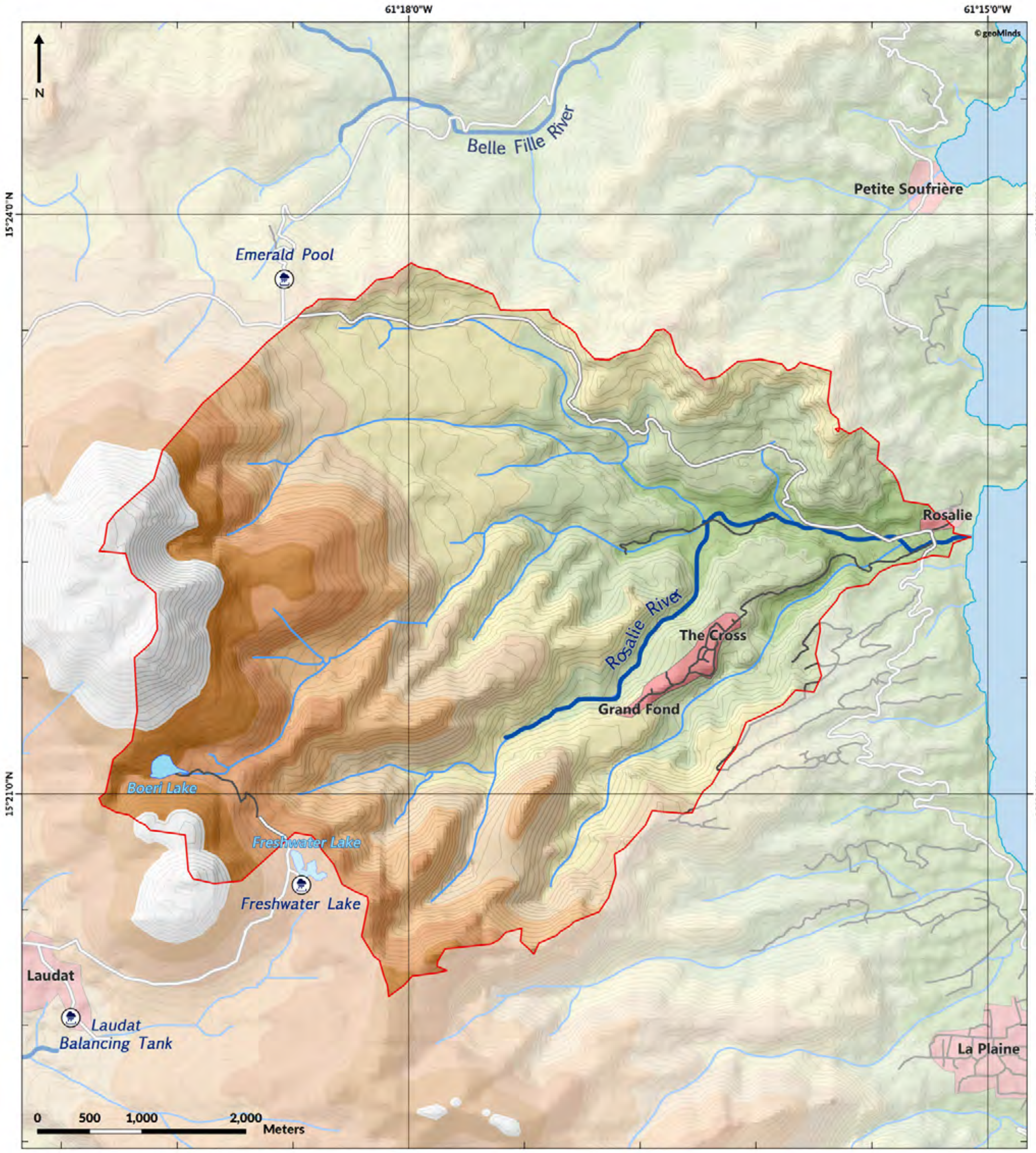
Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

14. ROSALIE RIVER

14.1 • OVERVIEW MAP



Elevation

> 900	
750 - 900	
600 - 750	
450 - 600	
300 - 450	
150 - 300	
0 - 150 m	

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

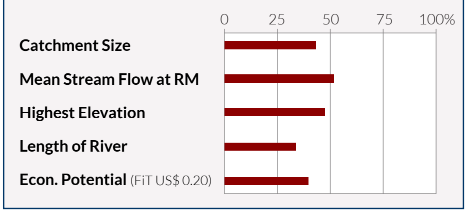
Facts about Catchment

Catchment Size:	33.11 km²
Length of Primary River:	5.52 km
Highest Elevation of Primary River:	271 m
Long-term Mean Stream Flow at River Mouth:	4.259 m³/s

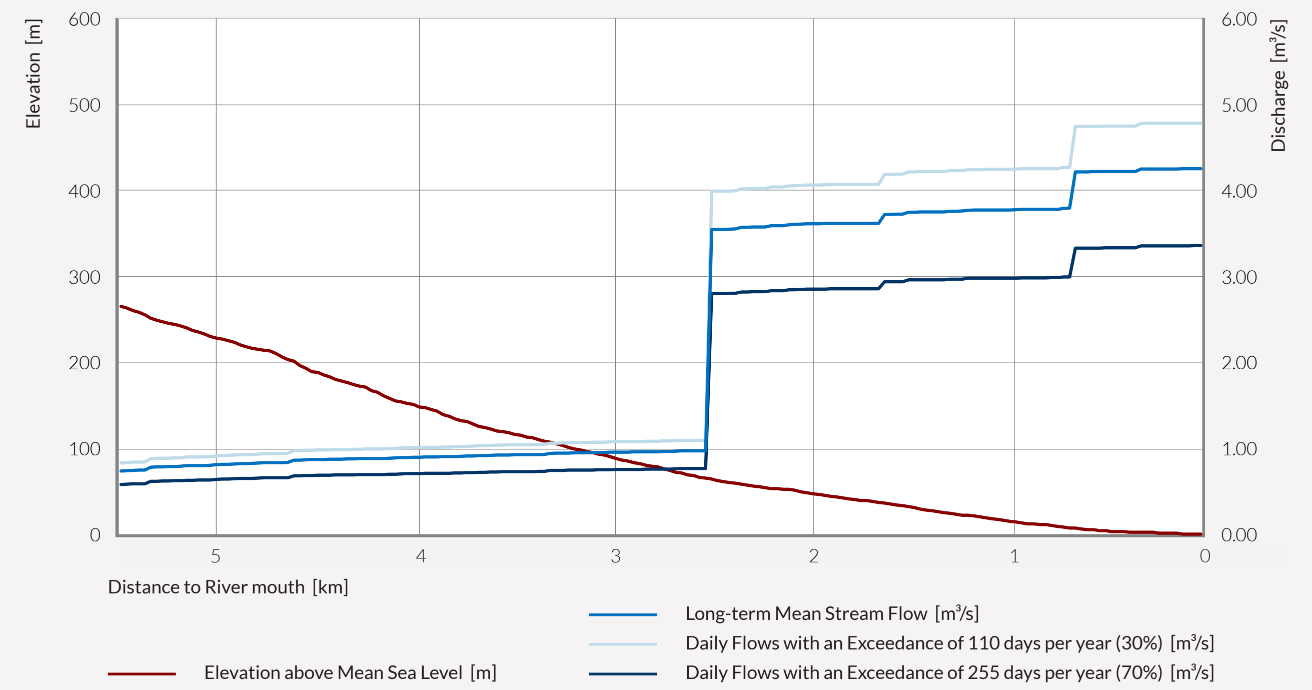
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Rosalie catchment consists of the Rosalie River and the two smaller Brown's River and Clarke's River. Together their catchment size is about 33.11 km², accumulating about 4.259 m³/s of mean annual discharge available for generating hydropower in an ecologically sustainable way at its river mouth. The Rosalie River's highest elevation is about 271 m above mean sea level and it has a length of 5.52 km including a joint-river section of about 2.5 km. Several economically viable virtual hydropower projects were located even when applying a feed-in tariff of US$ 0.10.

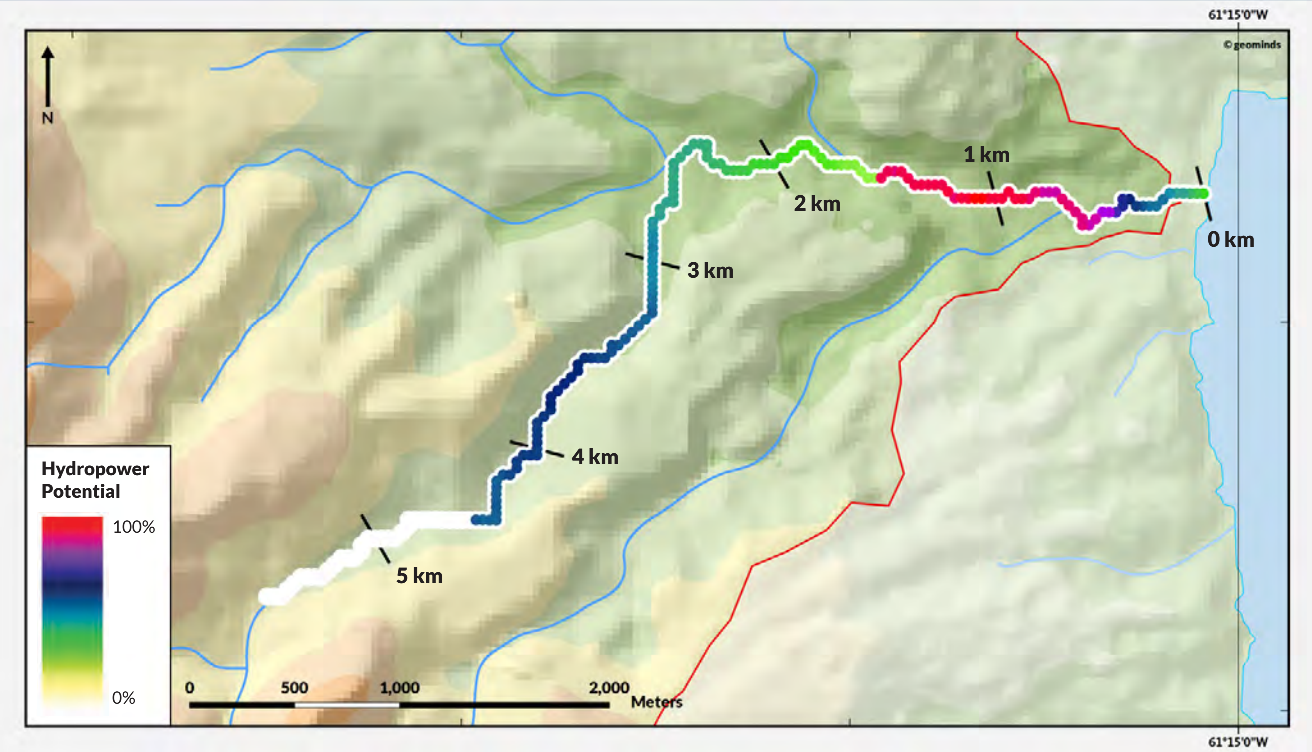
COUNTRY-WIDE RIVER RATING



14.2 • STREAM FLOW DISCHARGE ANALYSIS OF ROSALIE RIVER

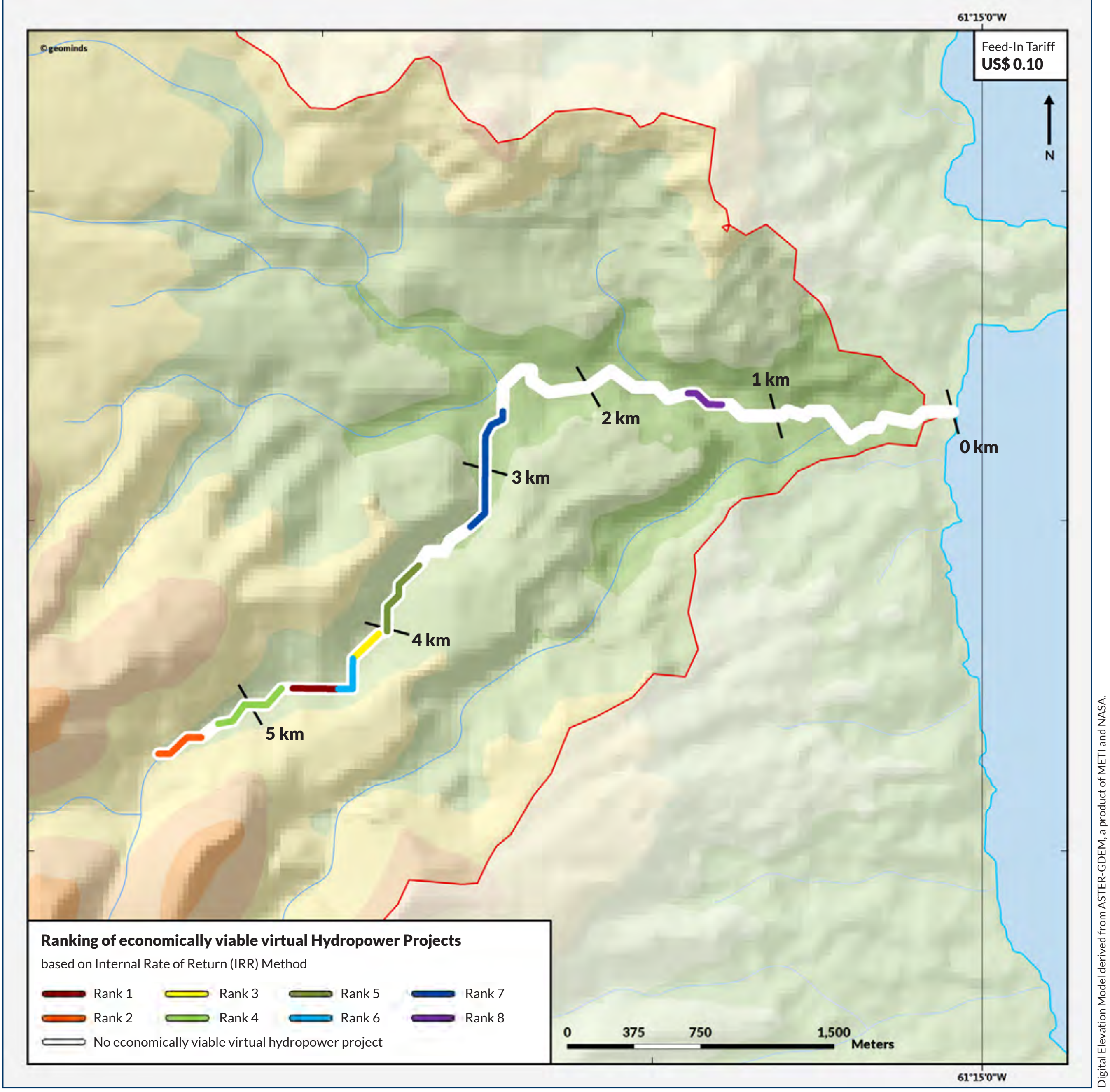


14.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

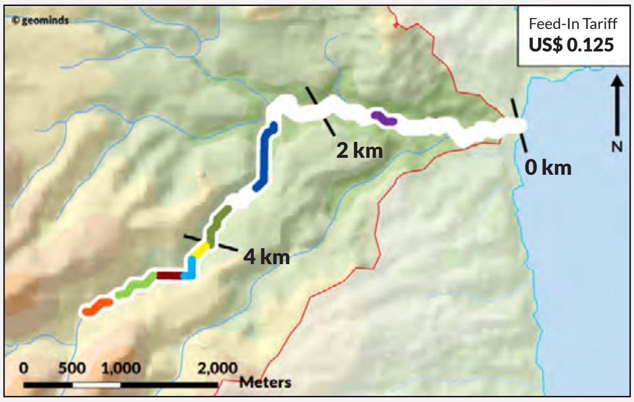
14.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



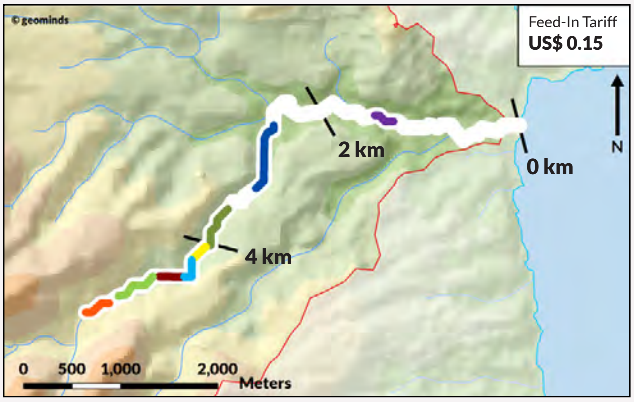
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.95%	169.88 kW	4.50 km	4.71 km	0.21 km	24 m	0.946 m³/s
2	2.74%	130.86 kW	5.28 km	5.49 km	0.21 km	21 m	0.838 m³/s
3	2.63%	119.27 kW	4.08 km	4.23 km	0.15 km	16 m	1.000 m³/s
4	2.34%	171.62 kW	4.80 km	5.16 km	0.36 km	26 m	0.906 m³/s
5	2.31%	194.07 kW	3.66 km	3.99 km	0.33 km	26 m	1.019 m³/s
6	1.76%	115.68 kW	4.26 km	4.47 km	0.21 km	16 m	0.989 m³/s
7	1.48%	266.45 kW	2.67 km	3.30 km	0.63 km	35 m	1.069 m³/s
8	1.37%	173.62 kW	1.32 km	1.47 km	0.15 km	6 m	4.227 m³/s

For more information and all setting parameters used for this calculation, see page 12.

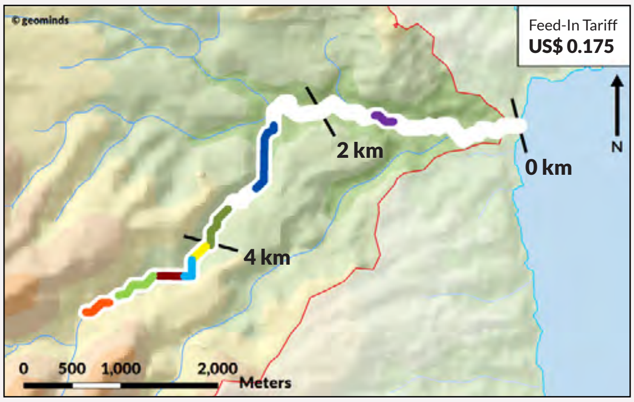
14.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



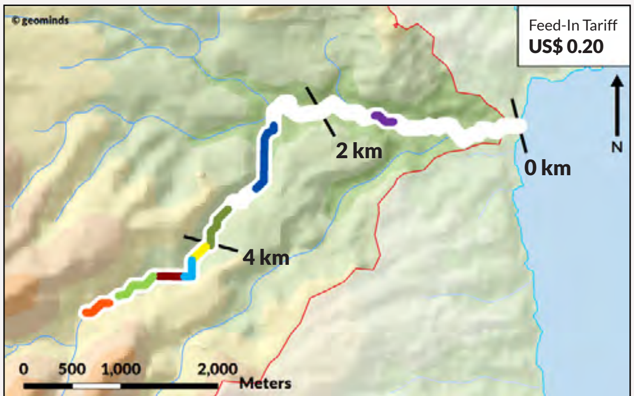
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.33%	169.88 kW	4.50 km	4.71 km
2	6.12%	130.86 kW	5.28 km	5.49 km
3	6.02%	119.27 kW	4.08 km	4.23 km
4	5.73%	171.62 kW	4.80 km	5.16 km
5	5.70%	194.07 kW	3.66 km	3.99 km
6	5.15%	115.68 kW	4.26 km	4.47 km
7	4.87%	266.45 kW	2.67 km	3.30 km
8	4.77%	173.62 kW	1.32 km	1.47 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.18%	169.88 kW	4.50 km	4.71 km
2	8.96%	130.86 kW	5.28 km	5.49 km
3	8.85%	119.27 kW	4.08 km	4.23 km
4	8.55%	171.62 kW	4.80 km	5.16 km
5	8.52%	194.07 kW	3.66 km	3.99 km
6	7.95%	115.68 kW	4.26 km	4.47 km
7	7.66%	266.45 kW	2.67 km	3.30 km
8	7.56%	173.62 kW	1.32 km	1.47 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.71%	169.88 kW	4.50 km	4.71 km
2	11.48%	130.86 kW	5.28 km	5.49 km
3	11.36%	119.27 kW	4.08 km	4.23 km
4	11.05%	171.62 kW	4.80 km	5.16 km
5	11.01%	194.07 kW	3.66 km	3.99 km
6	10.41%	115.68 kW	4.26 km	4.47 km
7	10.01%	266.45 kW	2.67 km	3.30 km
8	10.01%	173.62 kW	1.32 km	1.47 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	14.03%	169.88 kW	4.50 km	4.71 km
2	13.79%	130.86 kW	5.28 km	5.49 km
3	13.66%	119.27 kW	4.08 km	4.23 km
4	13.33%	171.62 kW	4.80 km	5.16 km
5	13.29%	194.07 kW	3.66 km	3.99 km
6	12.66%	115.68 kW	4.26 km	4.47 km
7	12.35%	266.45 kW	2.67 km	3.30 km
8	12.23%	173.62 kW	1.32 km	1.47 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7

Rank 2 · Rank 4 · Rank 6 · Rank 8

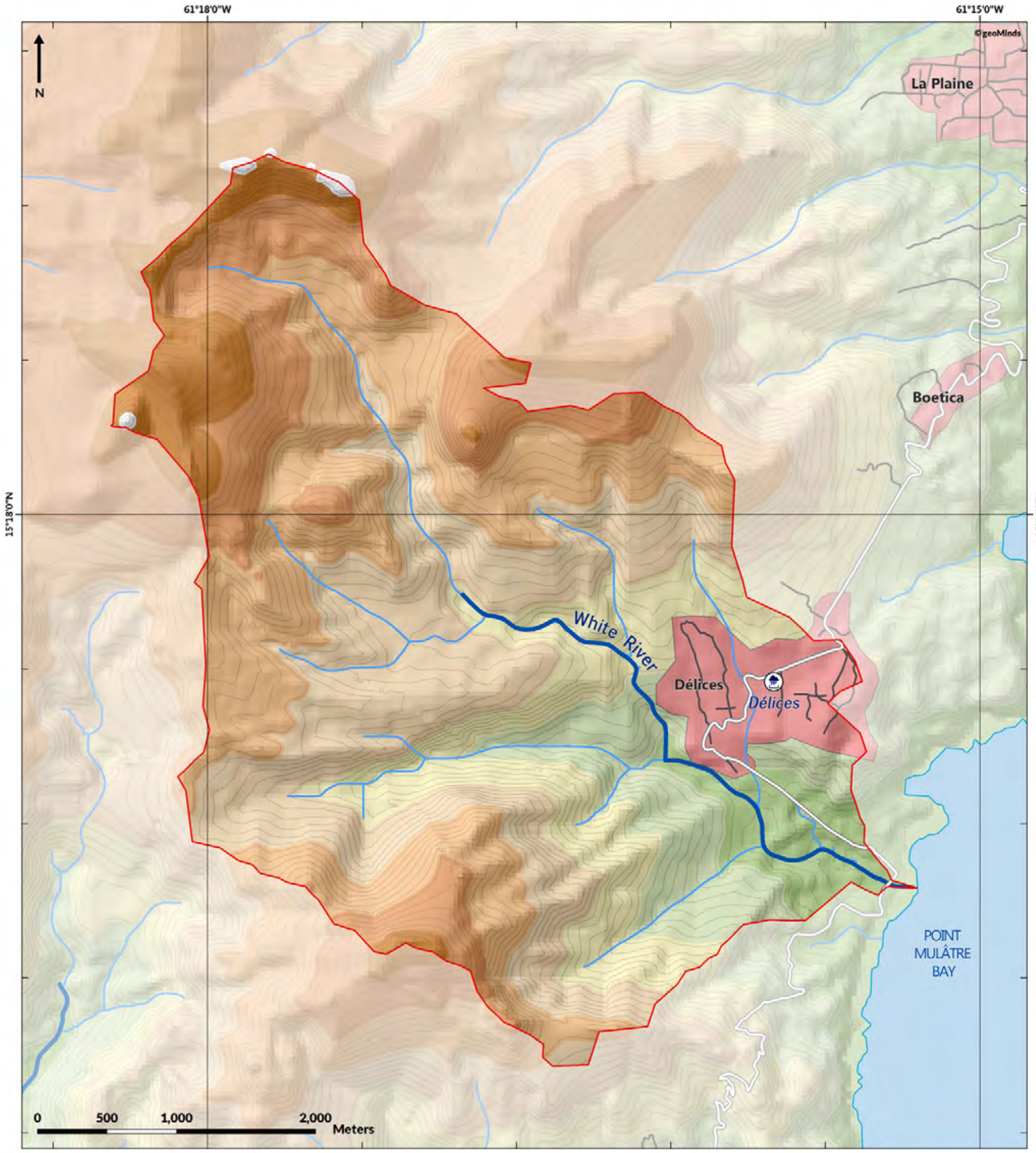
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

15. WHITE RIVER

15.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 19.76 km²

Length of Primary River: . . . . .3.92 km

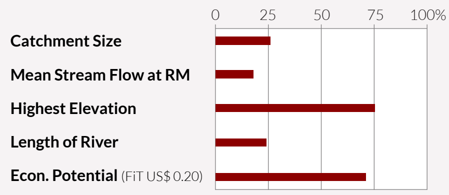
Highest Elevation of Primary River: . . . . 430 m

Long-term Mean Stream Flow at River Mouth: . . . . 1.147 m³/s

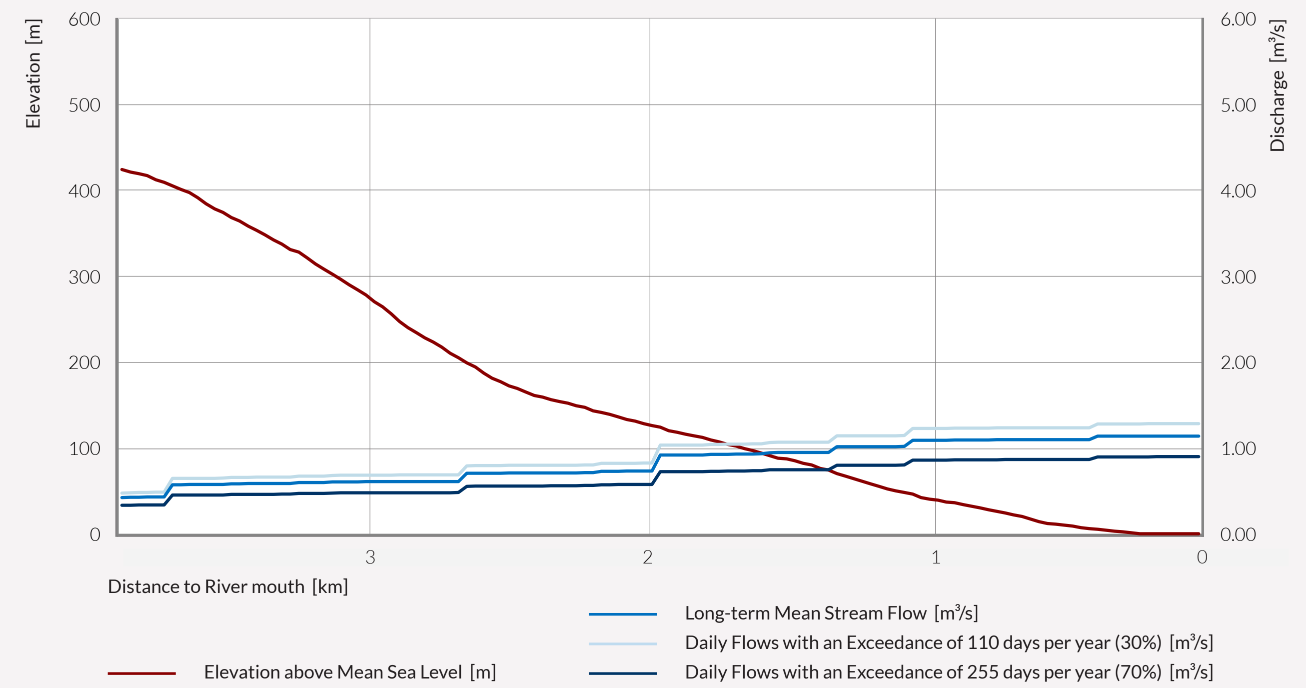
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The White River collects its waters from the southern central highlands east of Boiling Lake and flows into Point Mulâtre Bay on the south-east coast of the island. Its highest elevation is about 430 m above sea level whereas the length of the river is just 3.92 km leading to the steepest gradient of all analyzed rivers of Dominica. White River has an annual mean discharge available for generating hydropower in an ecologically sustainable way of 1.147 m^3/s at its river mouth. The catchment size is about 19.76 km^2. One of the country's highest economically viable hydropower potentials was identified at the river.

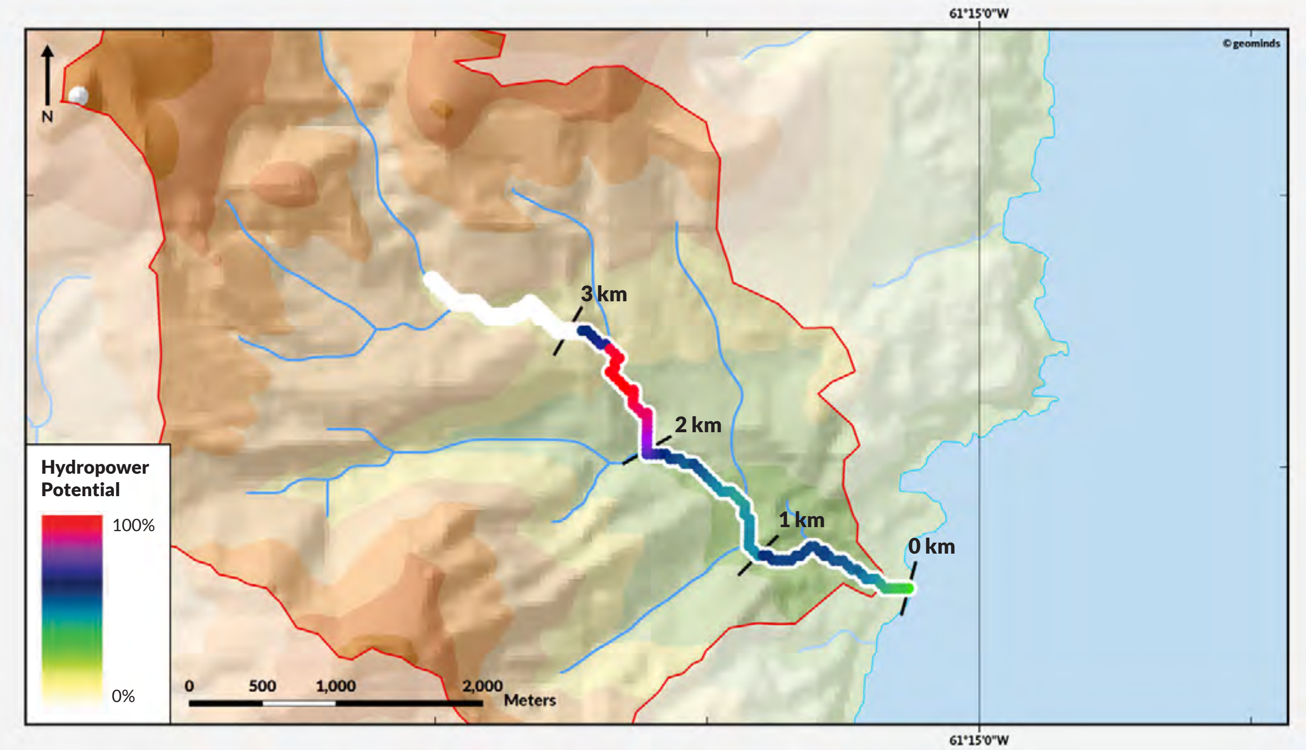
COUNTRY-WIDE RIVER RATING



15.2 • STREAM FLOW DISCHARGE ANALYSIS OF WHITE RIVER

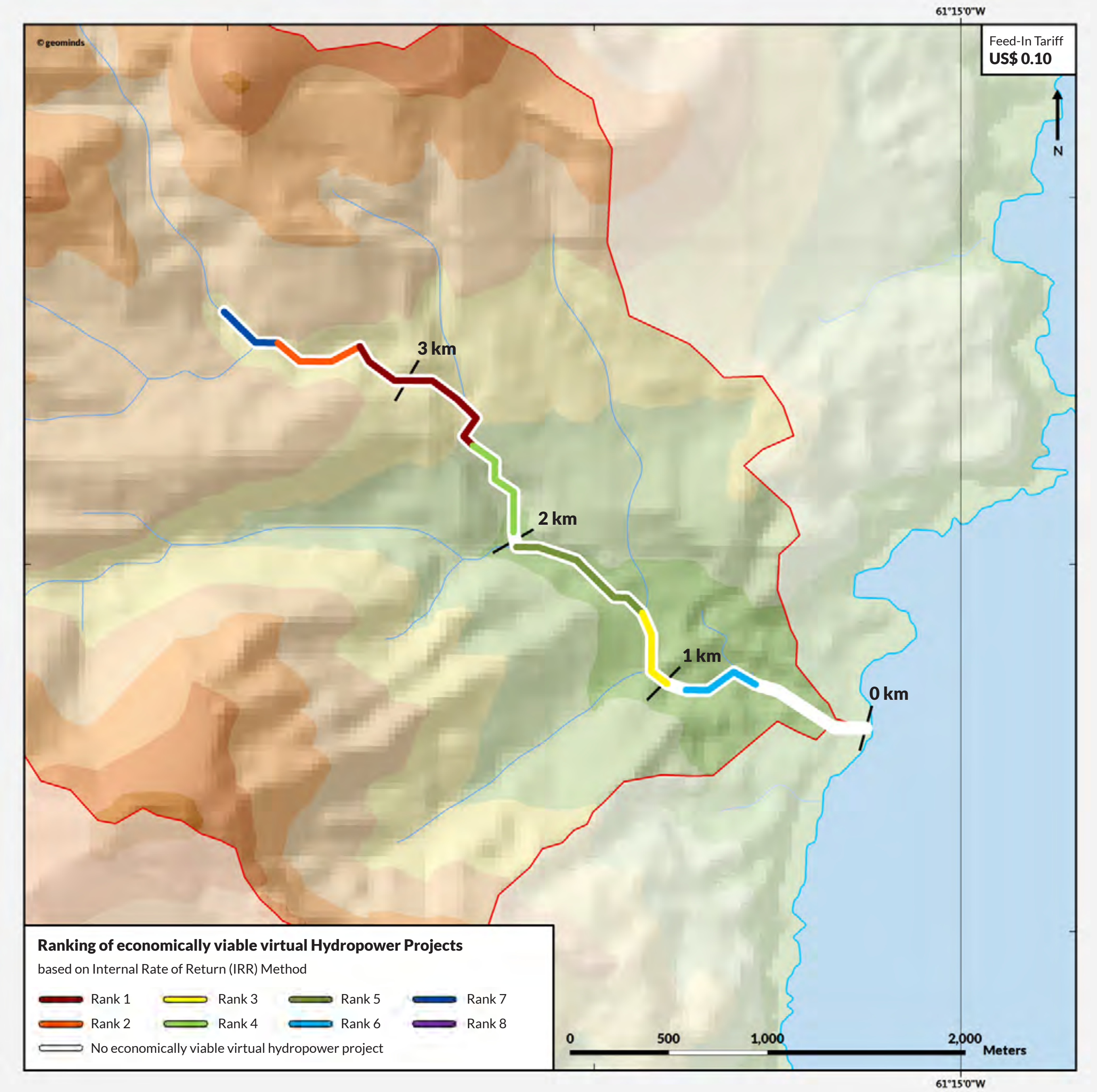


15.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

15.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

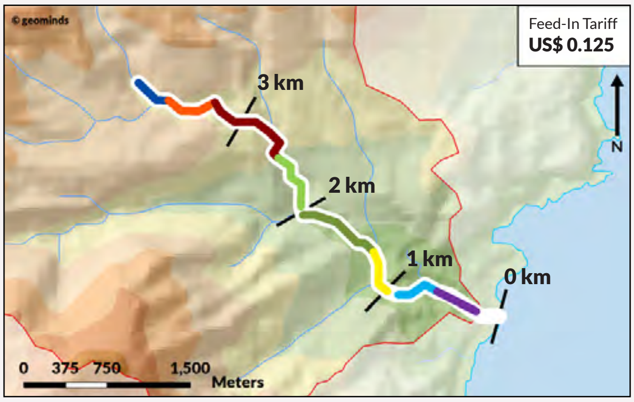


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

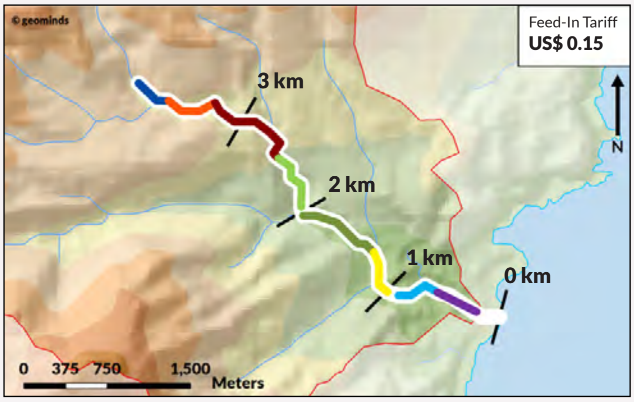
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	4.34%	763.90 kW	2.55 km	3.24 km	0.69 km	147 m	0.680 m³/s
2	3.90%	329.27 kW	3.27 km	3.63 km	0.36 km	66 m	0.656 m³/s
3	3.25%	273.07 kW	1.02 km	1.35 km	0.33 km	32 m	1.150 m³/s
4	3.04%	263.07 kW	2.07 km	2.52 km	0.45 km	44 m	0.805 m³/s
5	2.81%	368.24 kW	1.38 km	1.95 km	0.57 km	48 m	1.042 m³/s
6	2.65%	216.83 kW	0.57 km	0.90 km	0.33 km	24 m	1.240 m³/s
7	1.61%	101.58 kW	3.66 km	3.90 km	0.24 km	28 m	0.484 m³/s
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

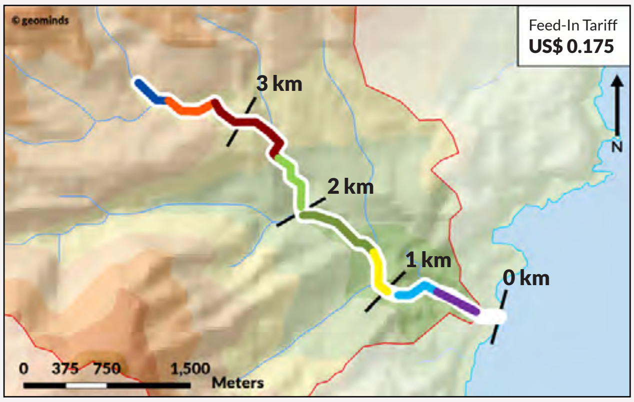
15.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



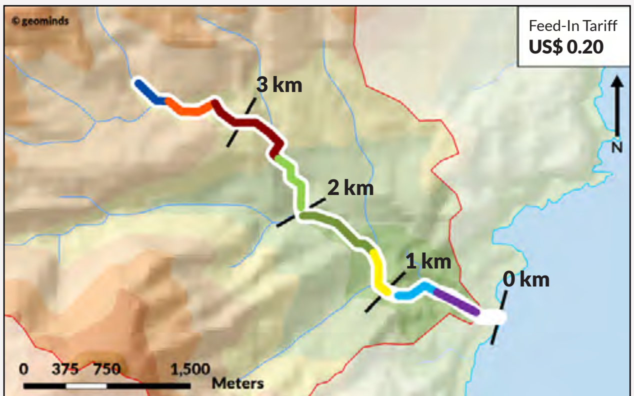
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.78%	763.90 kW	2.55 km	3.24 km
2	7.30%	329.27 kW	3.27 km	3.63 km
3	6.63%	273.07 kW	1.02 km	1.35 km
4	6.43%	263.07 kW	2.07 km	2.52 km
5	6.20%	368.24 kW	1.38 km	1.95 km
6	6.03%	216.83 kW	0.57 km	0.90 km
7	5.00%	101.58 kW	3.66 km	3.90 km
8	3.01%	92.35 kW	0.24 km	0.54 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.70%	763.90 kW	2.55 km	3.24 km
2	10.20%	329.27 kW	3.27 km	3.63 km
3	9.49%	273.07 kW	1.02 km	1.35 km
4	9.28%	263.07 kW	2.07 km	2.52 km
5	9.04%	368.24 kW	1.38 km	1.95 km
6	8.86%	216.83 kW	0.57 km	0.90 km
7	7.79%	101.58 kW	3.66 km	3.90 km
8	5.77%	92.35 kW	0.24 km	0.54 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.33%	763.90 kW	2.55 km	3.24 km
2	12.79%	329.27 kW	3.27 km	3.63 km
3	12.04%	273.07 kW	1.02 km	1.35 km
4	11.81%	263.07 kW	2.07 km	2.52 km
5	11.56%	368.24 kW	1.38 km	1.95 km
6	11.37%	216.83 kW	0.57 km	0.90 km
7	10.25%	101.58 kW	3.66 km	3.90 km
8	8.15%	92.35 kW	0.24 km	0.54 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	15.75%	763.90 kW	2.55 km	3.24 km
2	15.18%	329.27 kW	3.27 km	3.63 km
3	14.38%	273.07 kW	1.02 km	1.35 km
4	14.14%	263.07 kW	2.07 km	2.52 km
5	13.87%	368.24 kW	1.38 km	1.95 km
6	13.68%	216.83 kW	0.57 km	0.90 km
7	12.49%	101.58 kW	3.66 km	3.90 km
8	10.28%	92.35 kW	0.24 km	0.54 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1, Rank 2, Rank 3, Rank 4, Rank 5, Rank 6, Rank 7, Rank 8

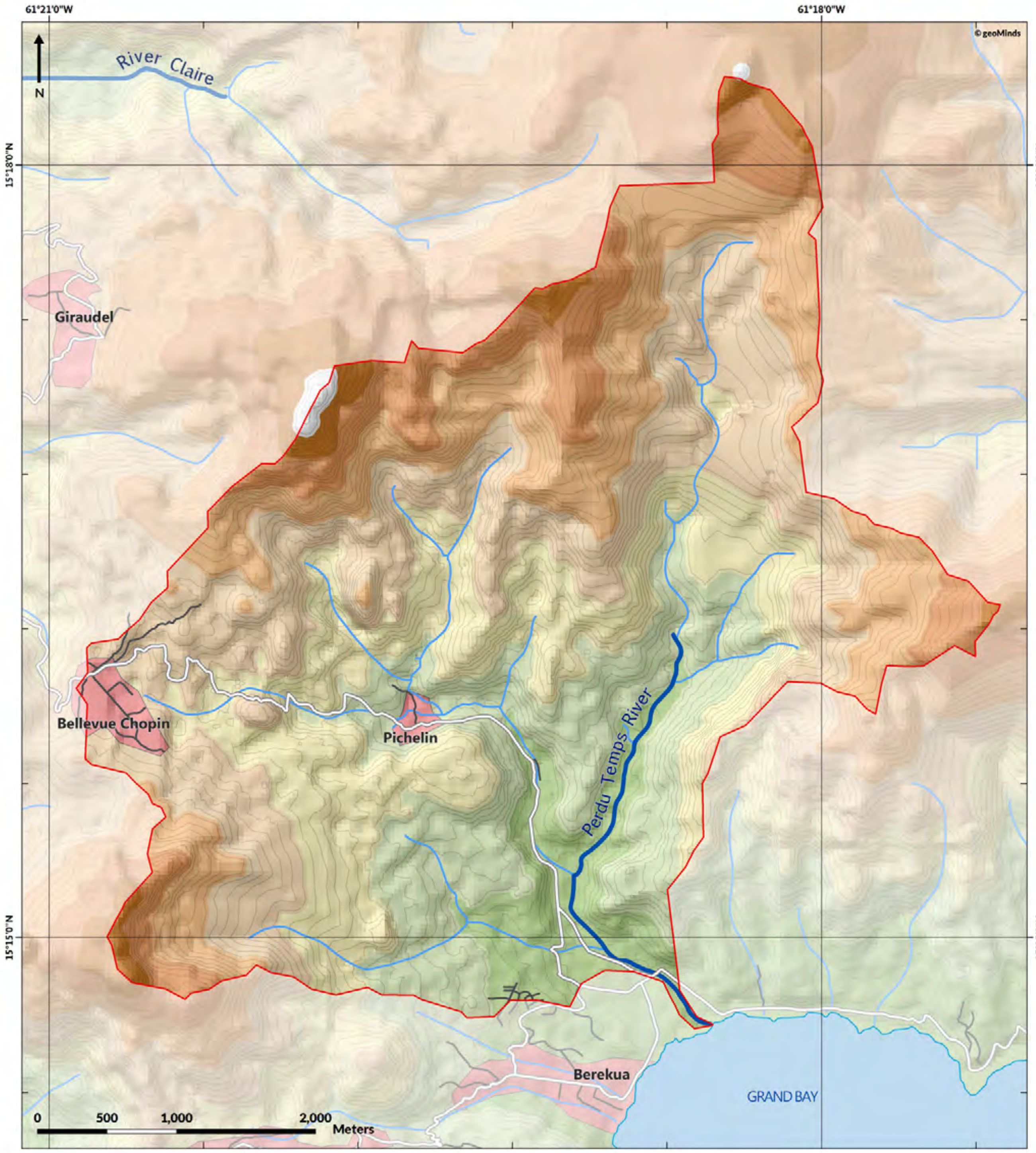
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

16. PERDU TEMPS RIVER

16.1 • OVERVIEW MAP



Elevation

> 900	
750 - 900	
600 - 750	
450 - 600	
300 - 450	
150 - 300	
0 - 150 m	

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

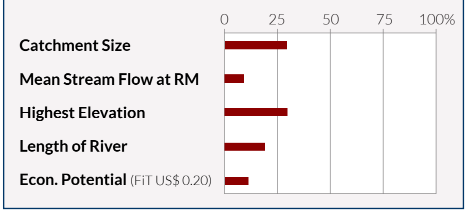
Facts about Catchment

Catchment Size:	22.43 km²
Length of Primary River:	3.11 km
Highest Elevation of Primary River:	169 m
Long-term Mean Stream Flow at River Mouth:	0.584 m³/s

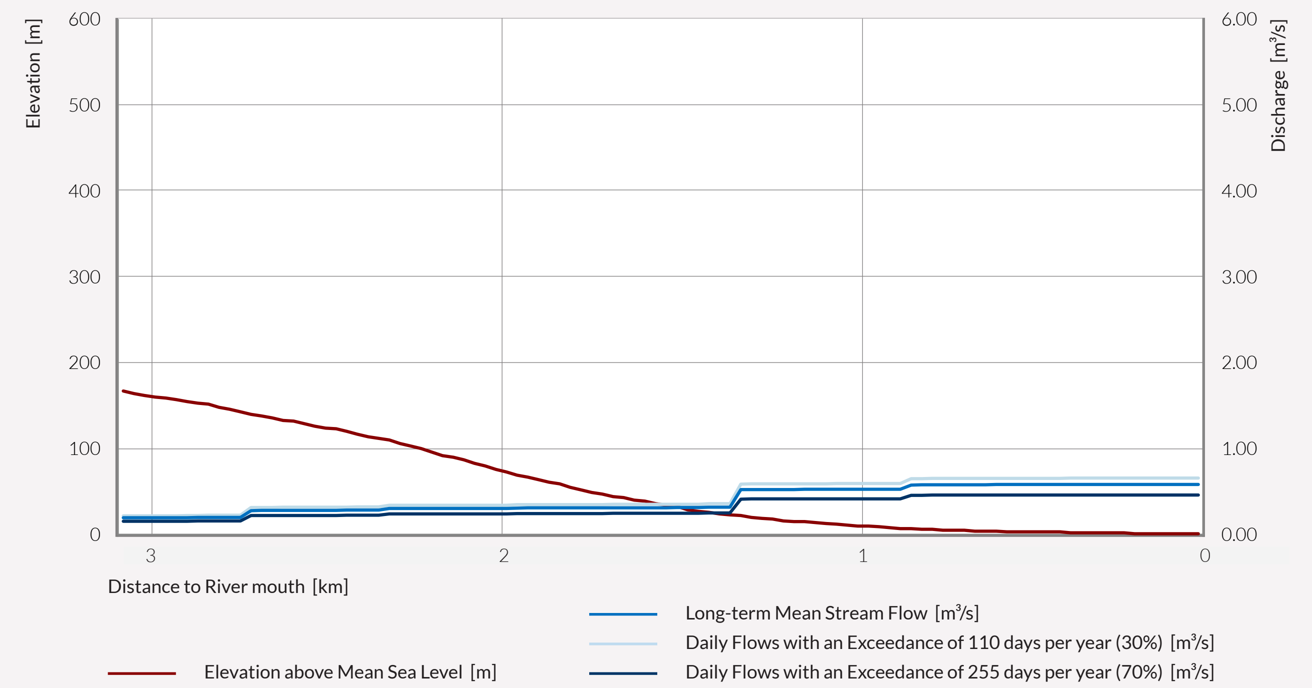
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Perdu Temps and the Geneva River form a joint-catchment of about 22.43 km² flowing into the Grand Bay north of the town of Berekua. The annual mean discharge available for generating hydropower in an ecologically sustainable way is about 0.584 m³/s at the river mouth. The Perdu Temps River is about 3.11 km long including a joint-river section of about 1.5 km; its highest elevation is about 169 m above sea level. Only one economically viable virtual hydropower project was located when applying a feed-in tariff of US$ 0.10.

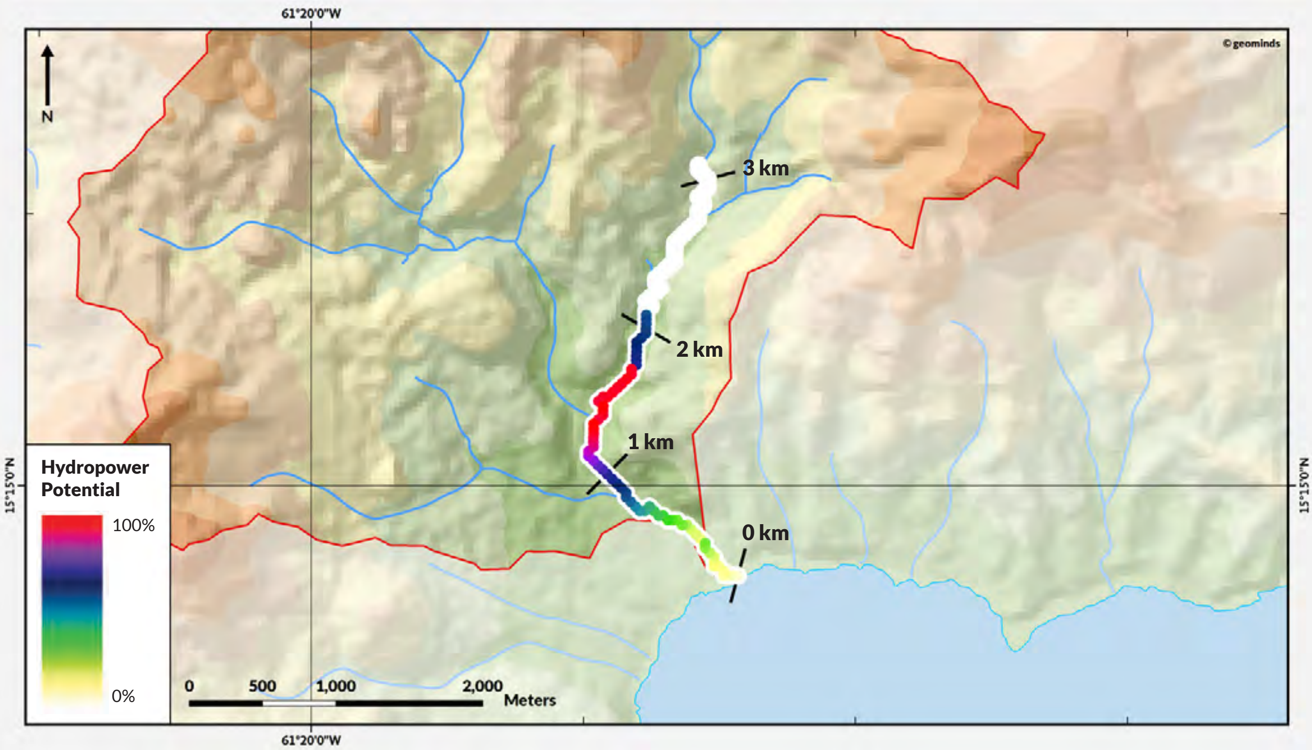
COUNTRY-WIDE RIVER RATING



16.2 • STREAM FLOW DISCHARGE ANALYSIS OF PERDU TEMPS RIVER

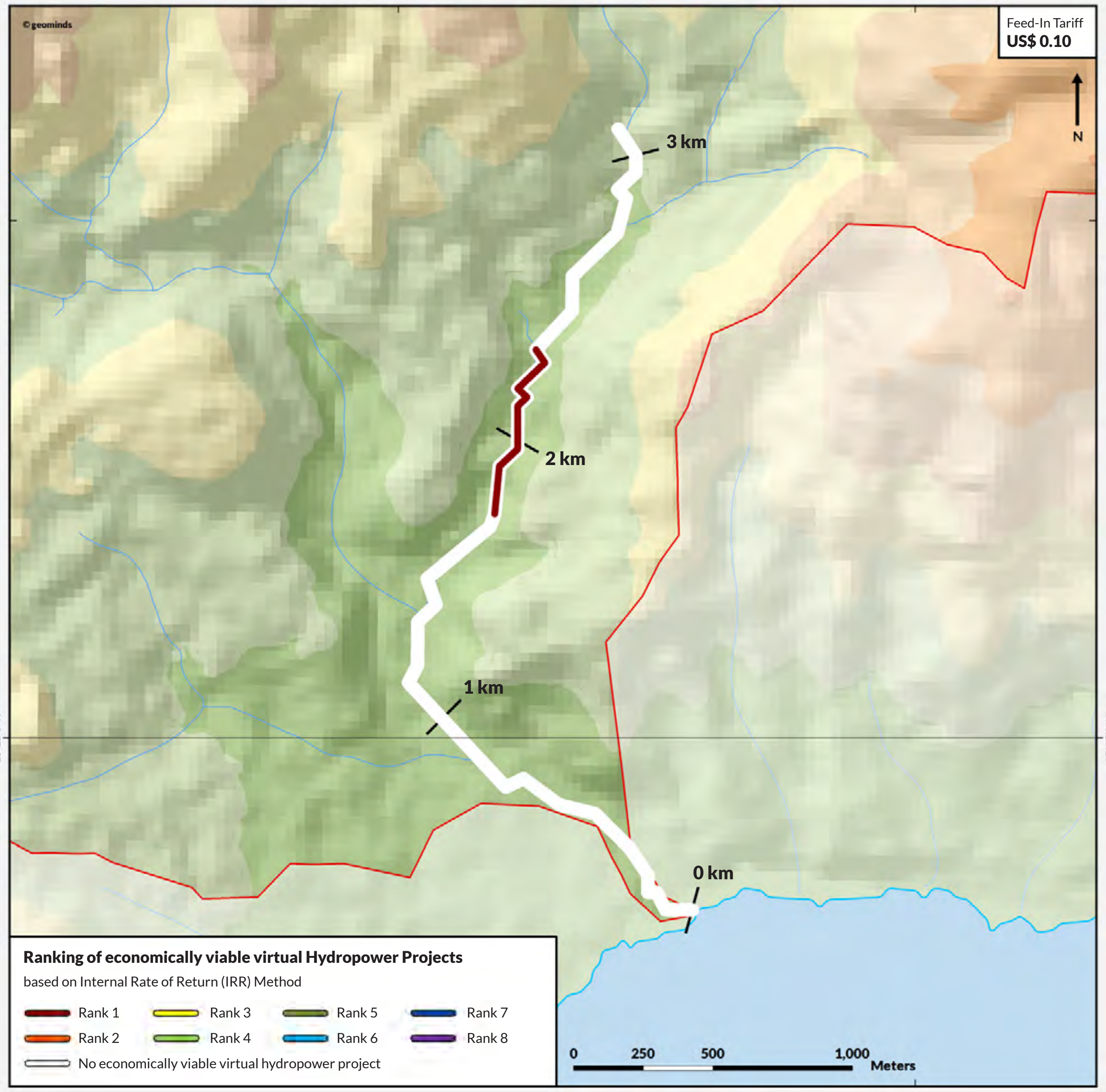


16.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

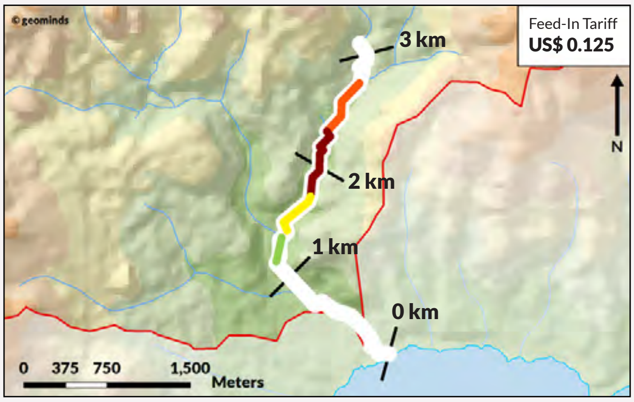
16.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	1.50%	147.10 kW	1.77 km	2.31 km	0.54 km	58 m	0.340 m³/s
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

16.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	4.89%	147.10 kW	1.77 km	2.31 km
2	2.79%	71.45 kW	2.34 km	2.73 km
3	2.55%	56.17 kW	1.44 km	1.74 km
4	0.08%	32.70 kW	1.17 km	1.35 km
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.68%	147.10 kW	1.77 km	2.31 km
2	5.55%	71.45 kW	2.34 km	2.73 km
3	5.31%	56.17 kW	1.44 km	1.74 km
4	2.91%	32.70 kW	1.17 km	1.35 km
5	2.70%	36.50 kW	2.76 km	3.09 km
6	0.33%	30.81 kW	0.87 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.31%	147.10 kW	1.77 km	2.31 km
2	7.92%	71.45 kW	2.34 km	2.73 km
3	7.67%	56.17 kW	1.44 km	1.74 km
4	5.24%	32.70 kW	1.17 km	1.35 km
5	5.04%	36.50 kW	2.76 km	3.09 km
6	2.72%	30.81 kW	0.87 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.37%	147.10 kW	1.77 km	2.31 km
2	10.05%	71.45 kW	2.34 km	2.73 km
3	9.79%	56.17 kW	1.44 km	1.74 km
4	7.29%	32.70 kW	1.17 km	1.35 km
5	7.08%	36.50 kW	2.76 km	3.09 km
6	4.74%	30.81 kW	0.87 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1, Rank 2, Rank 3, Rank 4, Rank 5, Rank 6, Rank 7, Rank 8

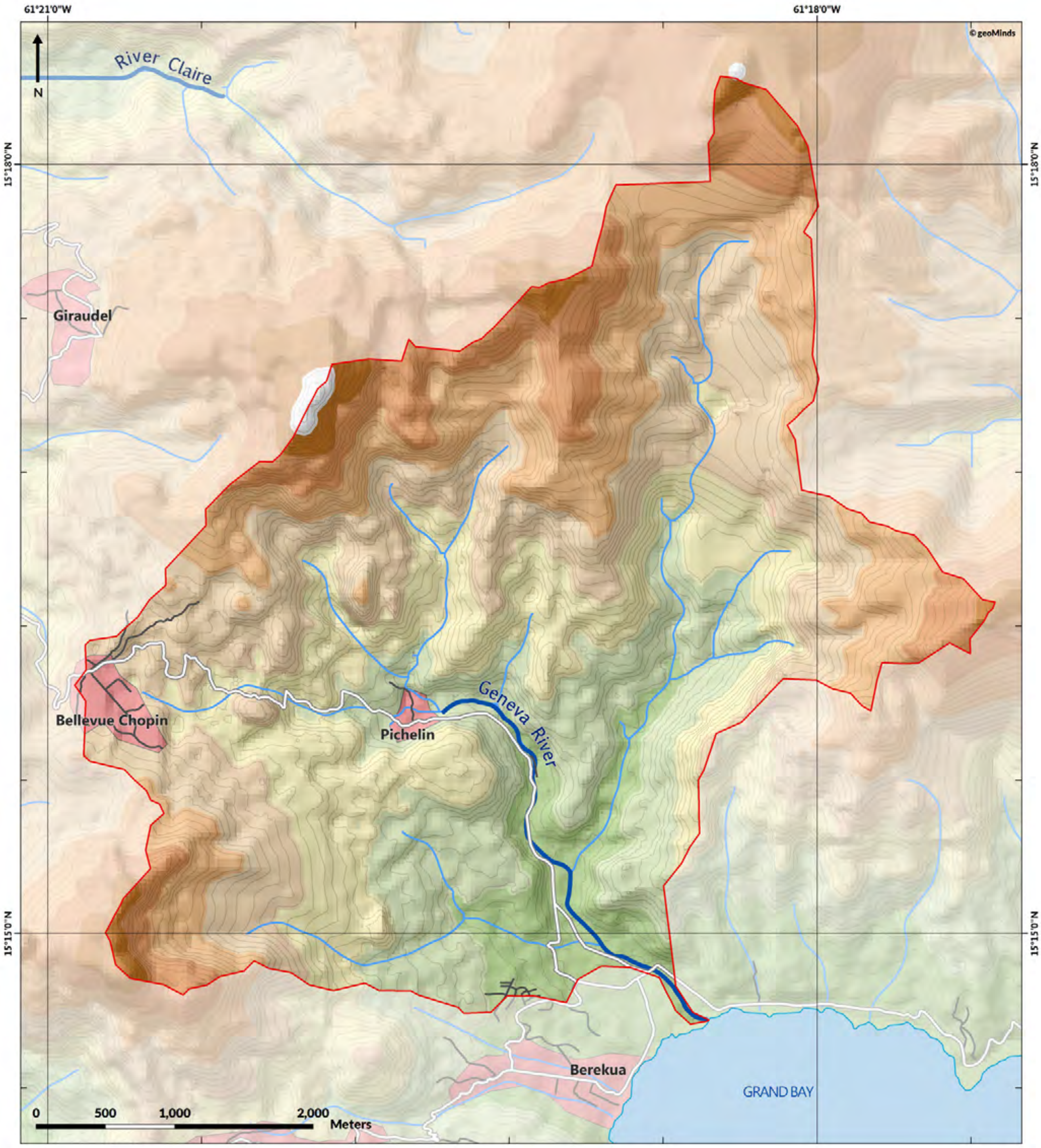
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

17. GENEVA RIVER

17.1 • OVERVIEW MAP



Elevation

> 900	
750 - 900	
600 - 750	
450 - 600	
300 - 450	
150 - 300	
0 - 150 m	

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

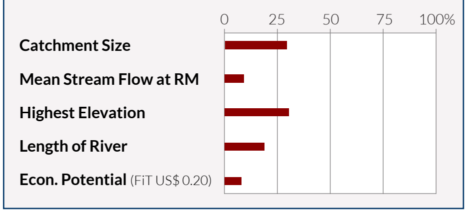
Facts about Catchment

Catchment Size:	22.43 km²
Length of Primary River:	3.08 km
Highest Elevation of Primary River:	173 m
Long-term Mean Stream Flow at River Mouth:	0.584 m³/s

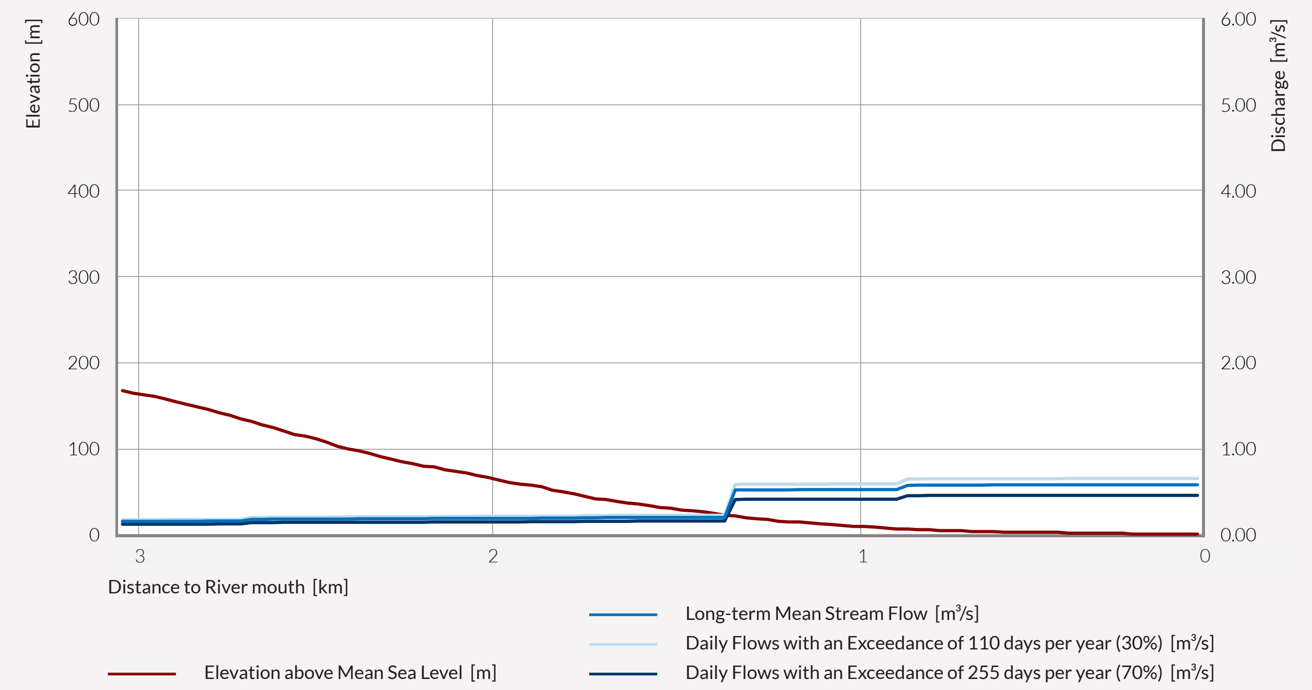
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Geneva and the Perdu Temps River form a joint-catchment of about 22.43 km² flowing into the Grand Bay north of the town of Berekua. The annual mean discharge available for generating hydropower in an ecologically sustainable way is about 0.584 m³/s at the river mouth. The Geneva River is only about 3.08 km long, including a joint-river section of about 1.5 km. Even with a maximum elevation of 173 m above sea level, no economically viable virtual hydropower project was located when applying a feed-in tariff of US$ 0.10.

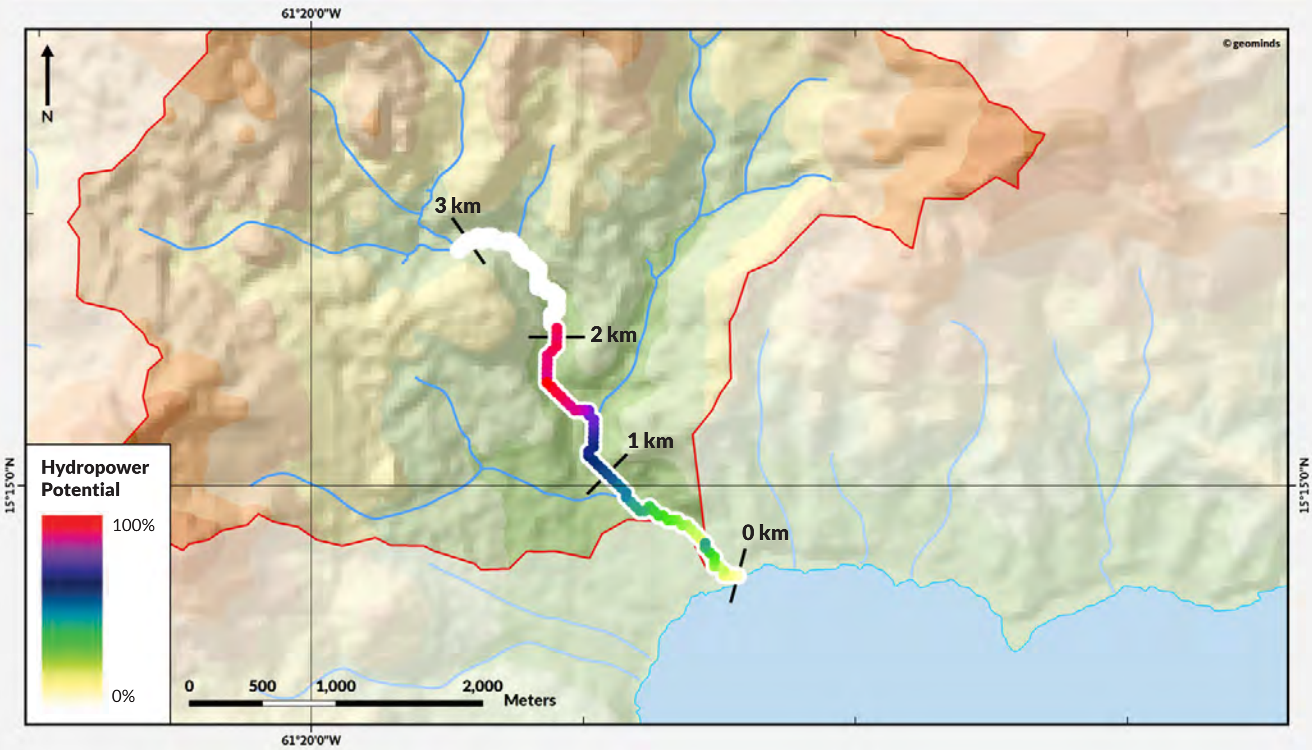
COUNTRY-WIDE RIVER RATING



17.2 • STREAM FLOW DISCHARGE ANALYSIS OF GENEVA RIVER

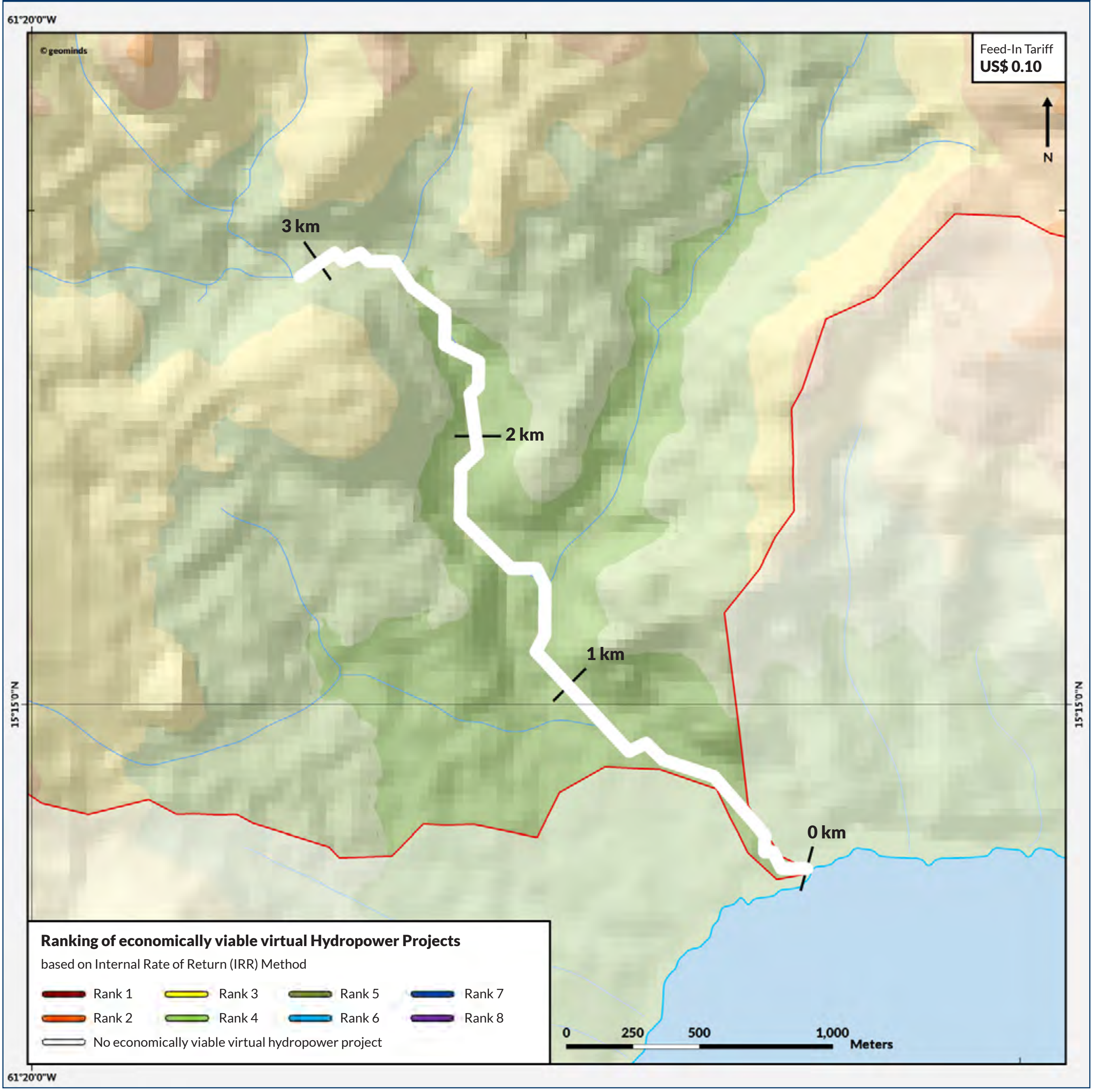


17.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

17.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

17.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	3.07%	76.53 kW	2.25 km	2.70 km
2	1.77%	44.93 kW	2.73 km	3.06 km
3	1.60%	58.72 kW	1.71 km	2.16 km
4	0.08%	32.70 kW	1.17 km	1.35 km
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.83%	76.53 kW	2.25 km	2.70 km
2	4.54%	44.93 kW	2.73 km	3.06 km
3	4.38%	58.72 kW	1.71 km	2.16 km
4	2.91%	32.70 kW	1.17 km	1.35 km
5	0.67%	25.81 kW	1.38 km	1.68 km
6	0.33%	30.81 kW	0.87 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.21%	76.53 kW	2.25 km	2.70 km
2	6.89%	44.93 kW	2.73 km	3.06 km
3	6.72%	58.72 kW	1.71 km	2.16 km
4	5.24%	32.70 kW	1.17 km	1.35 km
5	3.04%	25.81 kW	1.38 km	1.68 km
6	2.72%	30.81 kW	0.87 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.35%	76.53 kW	2.25 km	2.70 km
2	8.98%	44.93 kW	2.73 km	3.06 km
3	8.80%	58.72 kW	1.71 km	2.16 km
4	7.29%	32.70 kW	1.17 km	1.35 km
5	5.06%	25.81 kW	1.38 km	1.68 km
6	4.74%	30.81 kW	0.87 km	1.14 km
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

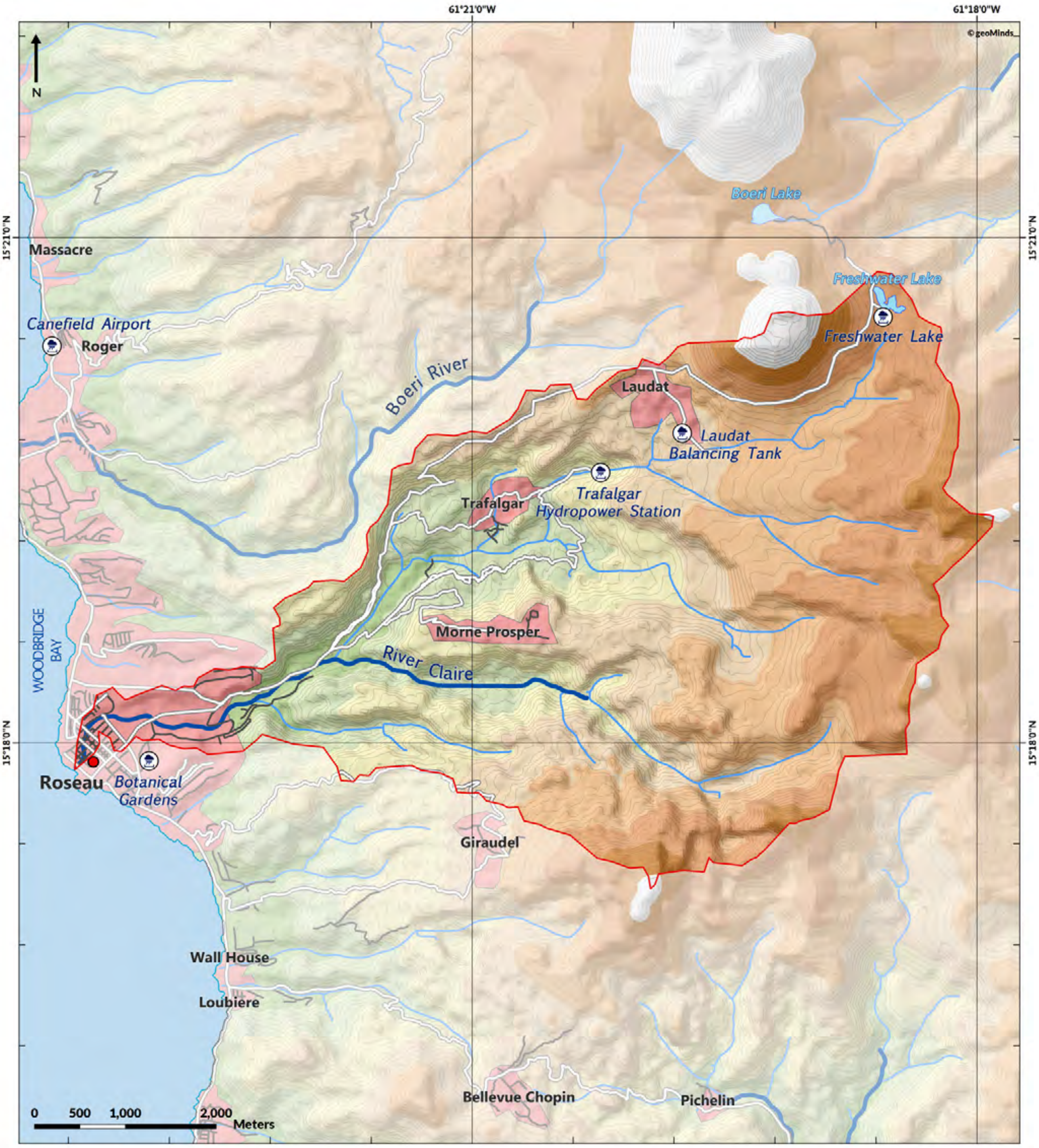
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

18. RIVER CLAIRE

18.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

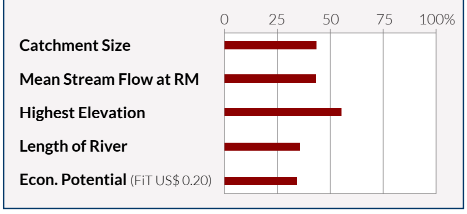
Facts about Catchment

Catchment Size:	33.17 km²
Length of Primary River:	5.83 km
Highest Elevation of Primary River:	315 m
Long-term Mean Stream Flow at River Mouth:	2.778 m³/s

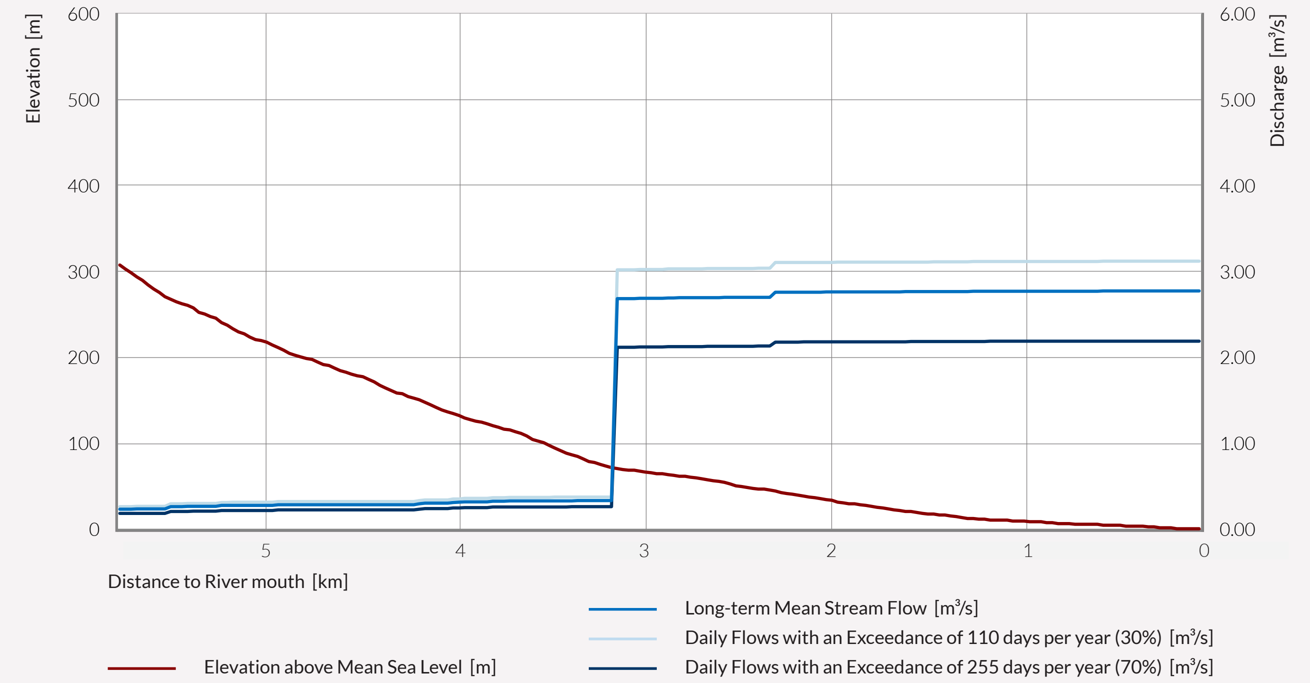
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Roseau catchment consists of the Roseau River and the much smaller River Claire resulting in a total catchment size of about 33.17 km². Flowing into the Caribbean Sea through the capital of Dominica, the joint-river leads as much water as 2.778 m³/s as an annual mean discharge at its river mouth. The River Claire has a maximum elevation of 315 m above mean sea level and a total length of about 5.83 km, including a joint-river section of more than 3 km. Six economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

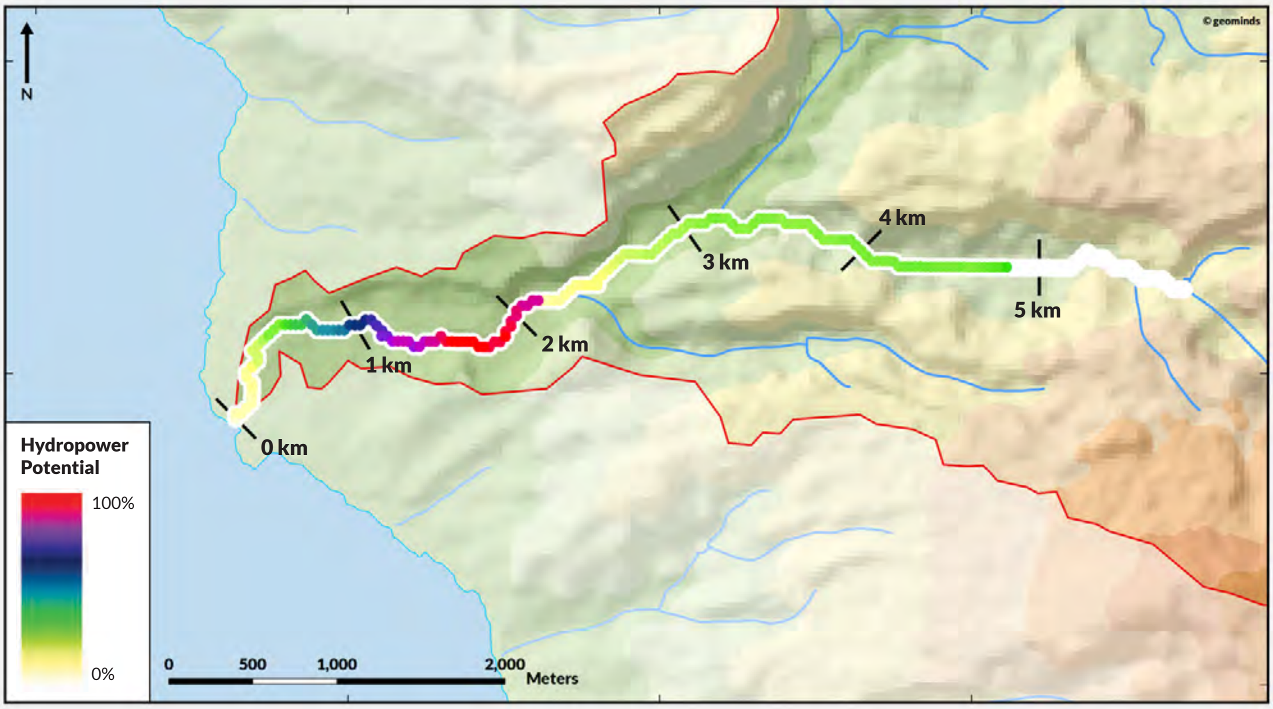
COUNTRY-WIDE RIVER RATING



18.2 • STREAM FLOW DISCHARGE ANALYSIS OF RIVER CLAIRE



18.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



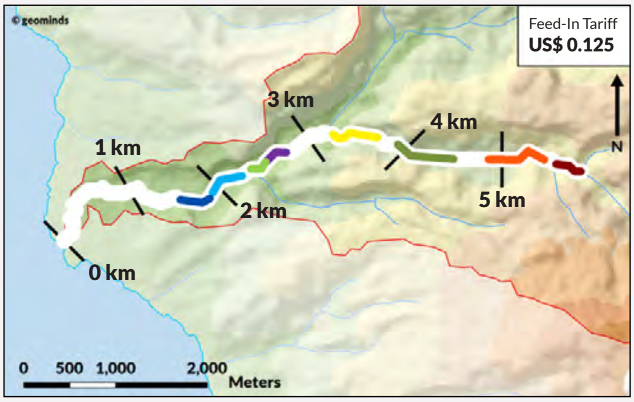
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

18.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	1.68%	79.13 kW	5.55 km	5.79 km	0.24 km	39 m	0.268 m^3/s
2	0.87%	126.24 kW	4.86 km	5.40 km	0.54 km	56 m	0.303 m^3/s
3	0.82%	102.36 kW	3.27 km	3.69 km	0.42 km	37 m	0.375 m^3/s
4	0.73%	148.63 kW	2.40 km	2.55 km	0.15 km	7 m	3.040 m^3/s
5	0.47%	115.59 kW	3.93 km	4.47 km	0.54 km	48 m	0.326 m^3/s
6	0.35%	276.06 kW	1.95 km	2.28 km	0.33 km	13 m	3.109 m^3/s
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

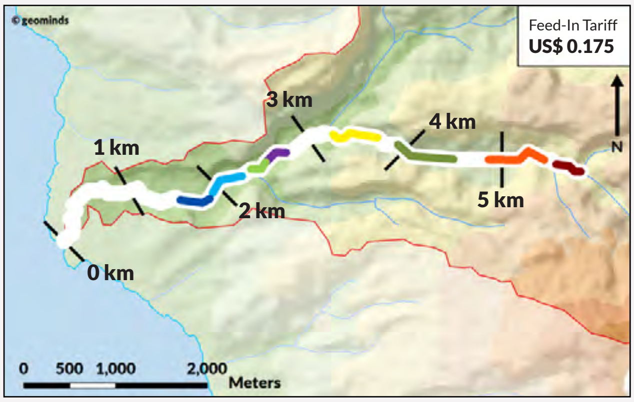
For more information and all setting parameters used for this calculation, see page 12.

18.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.07%	79.13 kW	5.55 km	5.79 km
2	4.28%	126.24 kW	4.86 km	5.40 km
3	4.24%	102.36 kW	3.27 km	3.69 km
4	4.14%	148.63 kW	2.40 km	2.55 km
5	3.90%	115.59 kW	3.93 km	4.47 km
6	3.78%	276.06 kW	1.95 km	2.28 km
7	2.76%	186.26 kW	1.59 km	1.86 km
8	2.38%	121.11 kW	2.58 km	2.76 km

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.87%	79.13 kW	5.55 km	5.79 km
2	7.06%	126.24 kW	4.86 km	5.40 km
3	7.01%	102.36 kW	3.27 km	3.69 km
4	6.92%	148.63 kW	2.40 km	2.55 km
5	6.67%	115.59 kW	3.93 km	4.47 km
6	6.55%	276.06 kW	1.95 km	2.28 km
7	5.52%	186.26 kW	1.59 km	1.86 km
8	5.14%	121.11 kW	2.58 km	2.76 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.33%	79.13 kW	5.55 km	5.79 km
2	9.45%	126.24 kW	4.86 km	5.40 km
3	9.44%	102.36 kW	3.27 km	3.69 km
4	9.34%	148.63 kW	2.40 km	2.55 km
5	9.08%	115.59 kW	3.93 km	4.47 km
6	8.95%	276.06 kW	1.95 km	2.28 km
7	7.89%	186.26 kW	1.59 km	1.86 km
8	7.50%	121.11 kW	2.58 km	2.76 km

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.57%	79.13 kW	5.55 km	5.79 km
2	11.69%	126.24 kW	4.86 km	5.40 km
3	11.63%	102.36 kW	3.27 km	3.69 km
4	11.53%	148.63 kW	2.40 km	2.55 km
5	11.26%	115.59 kW	3.93 km	4.47 km
6	11.13%	276.06 kW	1.95 km	2.28 km
7	10.02%	186.26 kW	1.59 km	1.86 km
8	9.61%	121.11 kW	2.58 km	2.76 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1, Rank 2, Rank 3, Rank 4, Rank 5, Rank 6, Rank 7, Rank 8

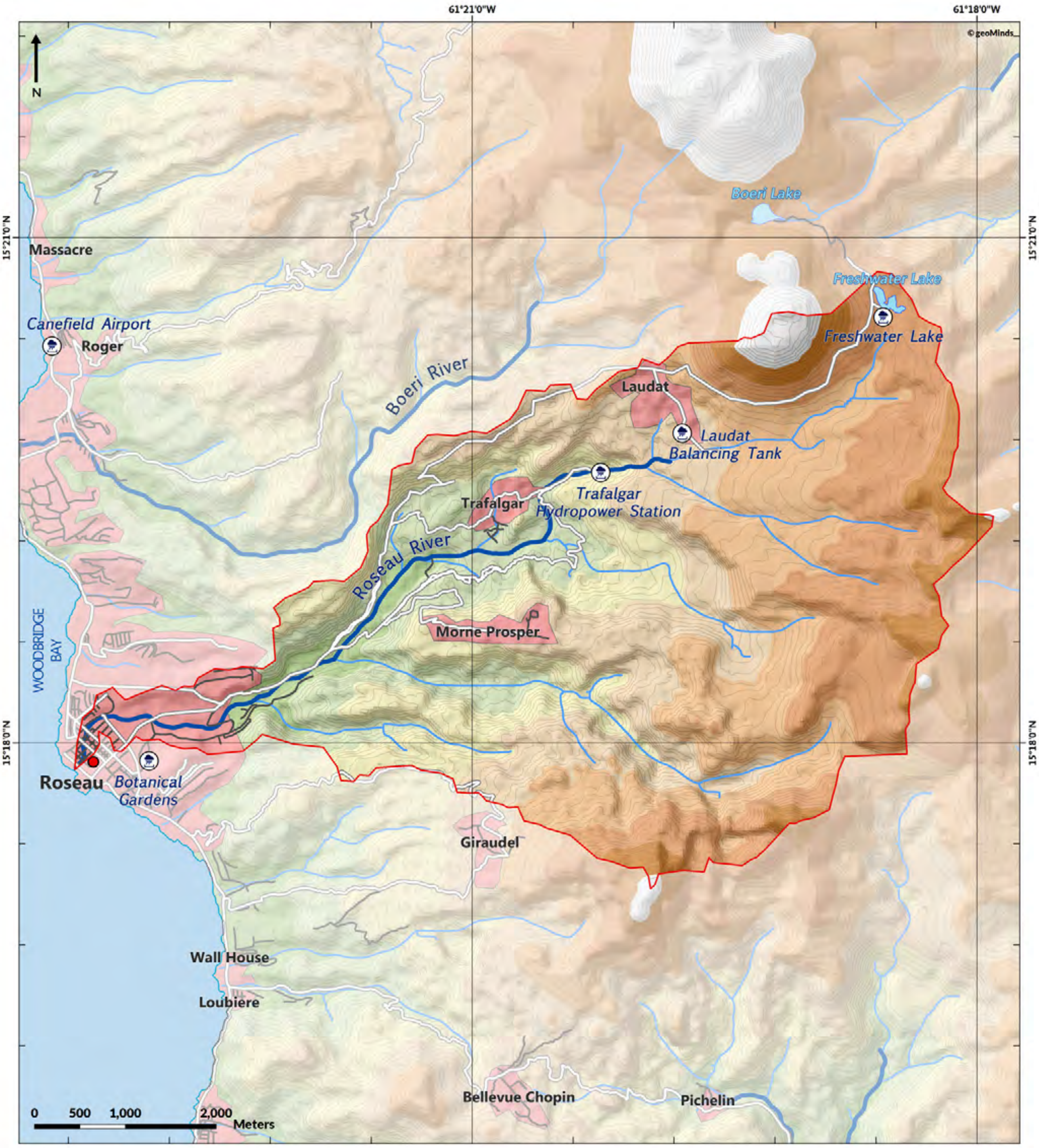
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

19. ROSEAU RIVER

19.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

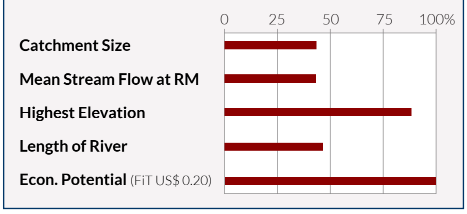
Facts about Catchment

- Catchment Size: . . . . 33.17 km²
- Length of Primary River: . . . . 7.61 km
- Highest Elevation of Primary River: . . . . 504 m
- Long-term Mean Stream Flow at River Mouth: . . . . 2.778 m³/s

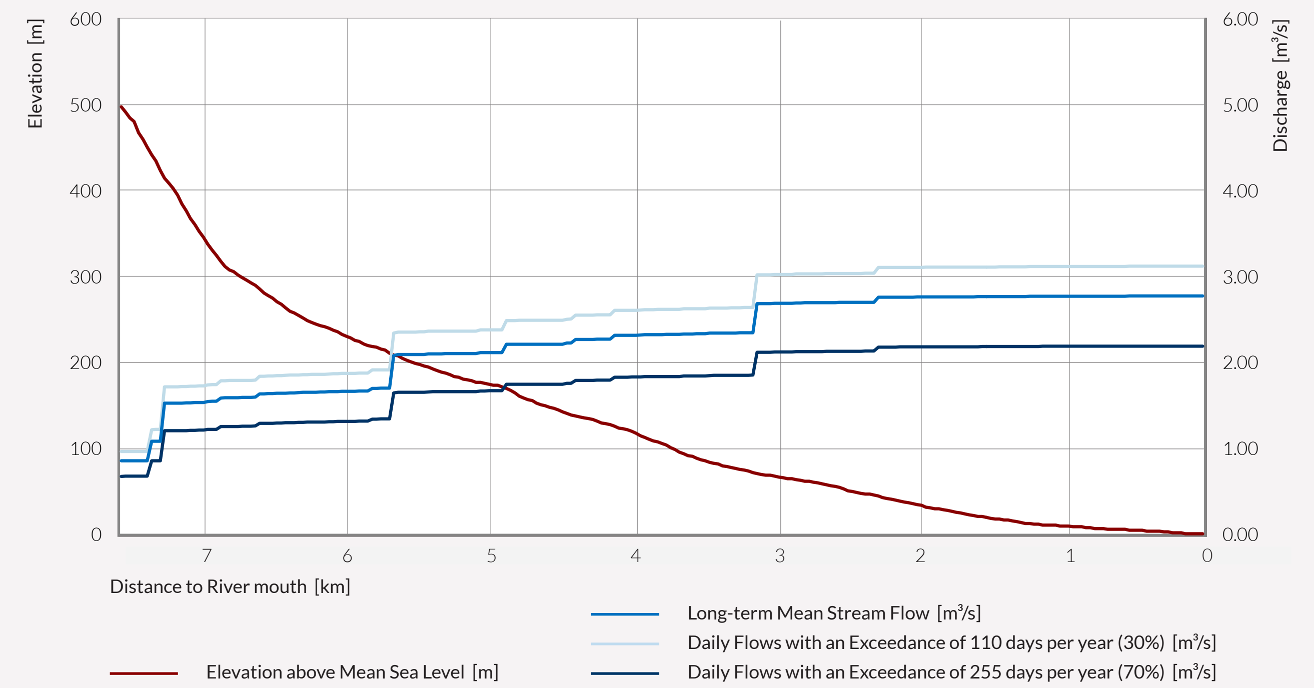
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Roseau catchment consists of the Roseau River and the much smaller River Claire resulting in a total catchment size of about 33.17 km². Flowing into the Caribbean Sea at the capital of Dominica, the joint-river leads as much water as 2.778 m³/s as an annual mean discharge at its river mouth. The Roseau River has a total length of about 7.61 km and a maximum elevation of 504 m above mean sea level. Several economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10, including the country's top economically viable virtual project in the upper river section.

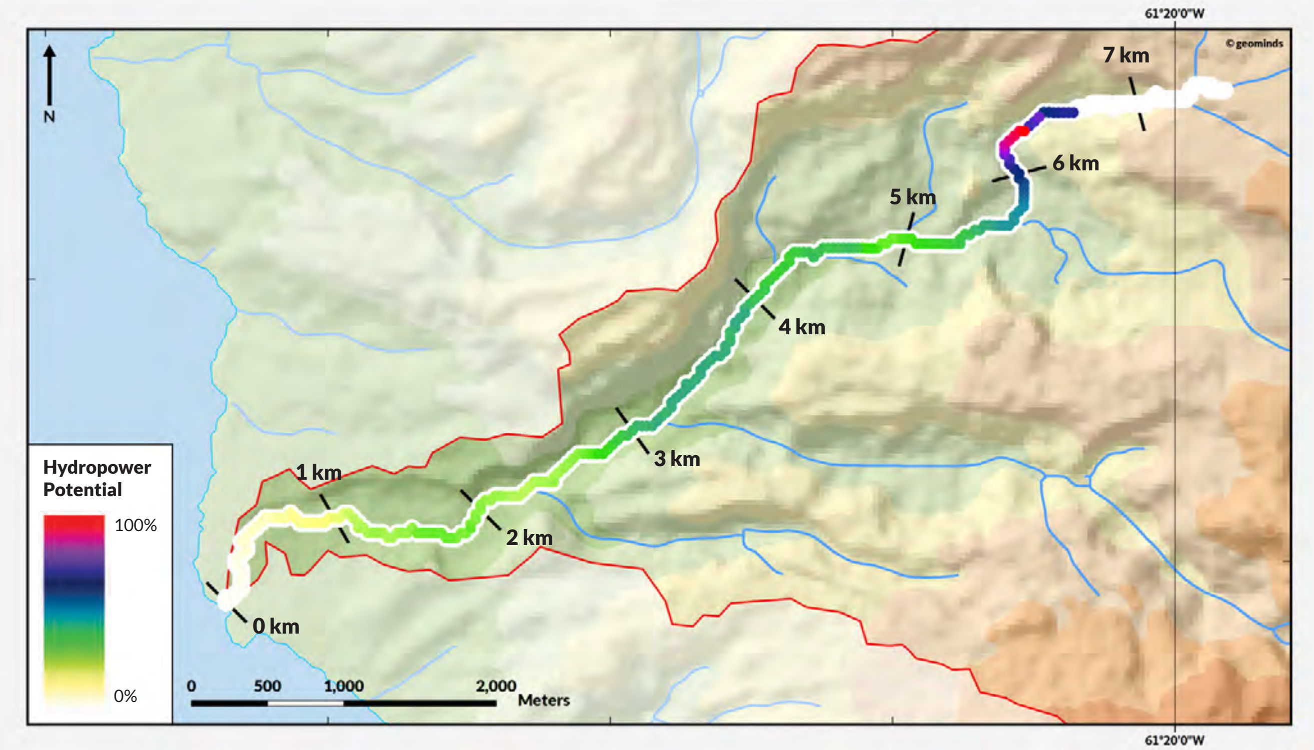
COUNTRY-WIDE RIVER RATING



19.2 • STREAM FLOW DISCHARGE ANALYSIS OF ROSEAU RIVER

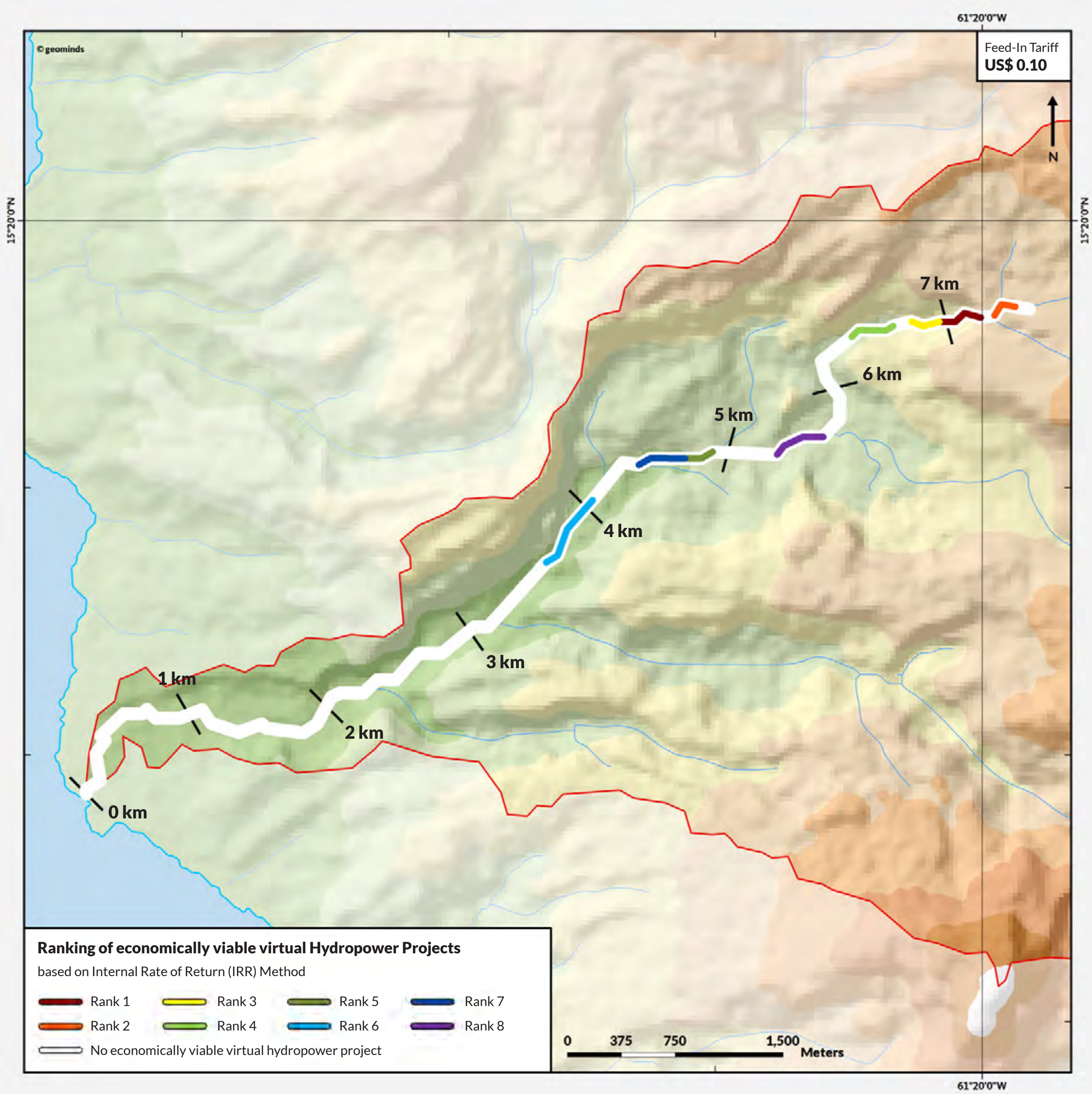


19.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

19.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

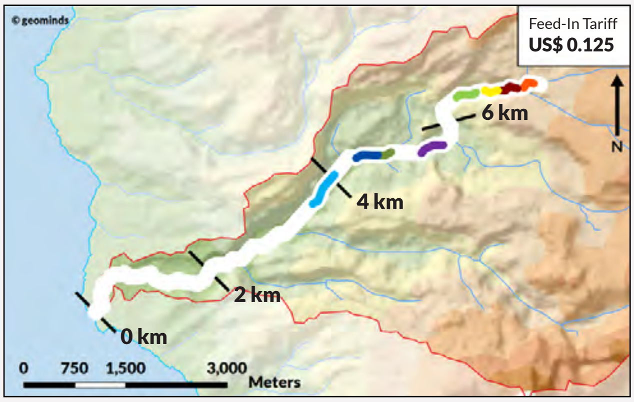


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

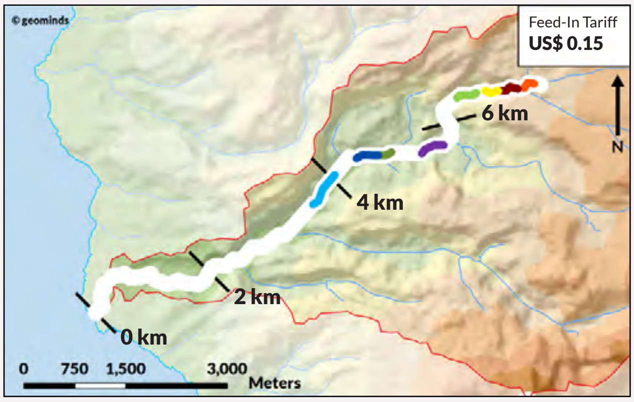
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	4.67%	859.32 kW	6.93 km	7.17 km	0.24 km	65 m	1.721 m^3/s
2	4.62%	342.36 kW	7.29 km	7.44 km	0.15 km	46 m	0.967 m^3/s
3	3.88%	331.20 kW	6.75 km	6.90 km	0.15 km	25 m	1.746 m^3/s
4	3.56%	415.22 kW	6.36 km	6.60 km	0.24 km	30 m	1.843 m^3/s
5	3.19%	238.90 kW	4.71 km	4.86 km	0.15 km	13 m	2.493 m^3/s
6	3.14%	569.89 kW	3.60 km	4.02 km	0.42 km	30 m	2.611 m^3/s
7	2.52%	305.28 kW	4.41 km	4.68 km	0.27 km	17 m	2.493 m^3/s
8	2.41%	322.86 kW	5.31 km	5.61 km	0.30 km	19 m	2.358 m^3/s

For more information and all setting parameters used for this calculation, see page 12.

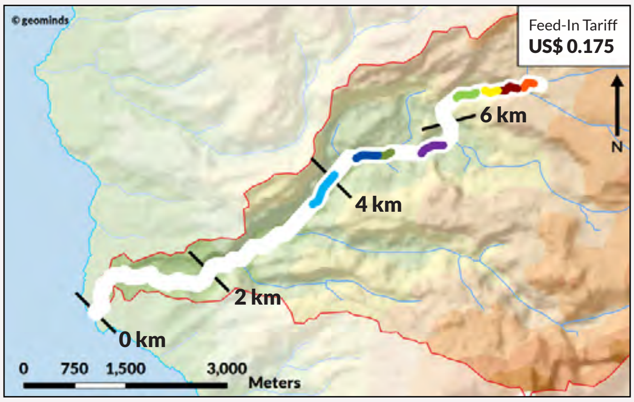
19.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



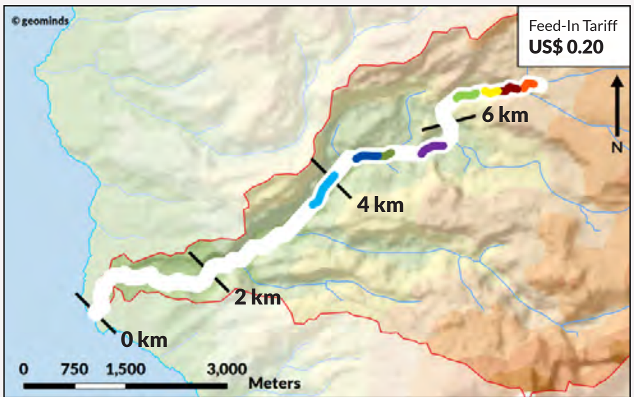
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.10%	859.32 kW	6.93 km	7.17 km
2	8.04%	342.36 kW	7.29 km	7.44 km
3	7.28%	331.20 kW	6.75 km	6.90 km
4	6.95%	415.22 kW	6.36 km	6.60 km
5	6.58%	238.90 kW	4.71 km	4.86 km
6	6.53%	569.89 kW	3.60 km	4.02 km
7	5.91%	305.28 kW	4.41 km	4.68 km
8	5.80%	322.86 kW	5.31 km	5.61 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.04%	859.32 kW	6.93 km	7.17 km
2	10.97%	342.36 kW	7.29 km	7.44 km
3	10.17%	331.20 kW	6.75 km	6.90 km
4	9.82%	415.22 kW	6.36 km	6.60 km
5	9.44%	238.90 kW	4.71 km	4.86 km
6	9.38%	569.89 kW	3.60 km	4.02 km
7	8.73%	305.28 kW	4.41 km	4.68 km
8	8.62%	322.86 kW	5.31 km	5.61 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.68%	859.32 kW	6.93 km	7.17 km
2	13.62%	342.36 kW	7.29 km	7.44 km
3	12.76%	331.20 kW	6.75 km	6.90 km
4	12.39%	415.22 kW	6.36 km	6.60 km
5	11.99%	238.90 kW	4.71 km	4.86 km
6	11.92%	569.89 kW	3.60 km	4.02 km
7	11.24%	305.28 kW	4.41 km	4.68 km
8	11.12%	322.86 kW	5.31 km	5.61 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	16.13%	859.32 kW	6.93 km	7.17 km
2	16.06%	342.36 kW	7.29 km	7.44 km
3	15.15%	331.20 kW	6.75 km	6.90 km
4	14.76%	415.22 kW	6.36 km	6.60 km
5	14.32%	238.90 kW	4.71 km	4.86 km
6	14.26%	569.89 kW	3.60 km	4.02 km
7	13.54%	305.28 kW	4.41 km	4.68 km
8	13.41%	322.86 kW	5.31 km	5.61 km

Ranking of economically viable virtual Hydropower Projects
based on Internal Rate of Return (IRR) Method

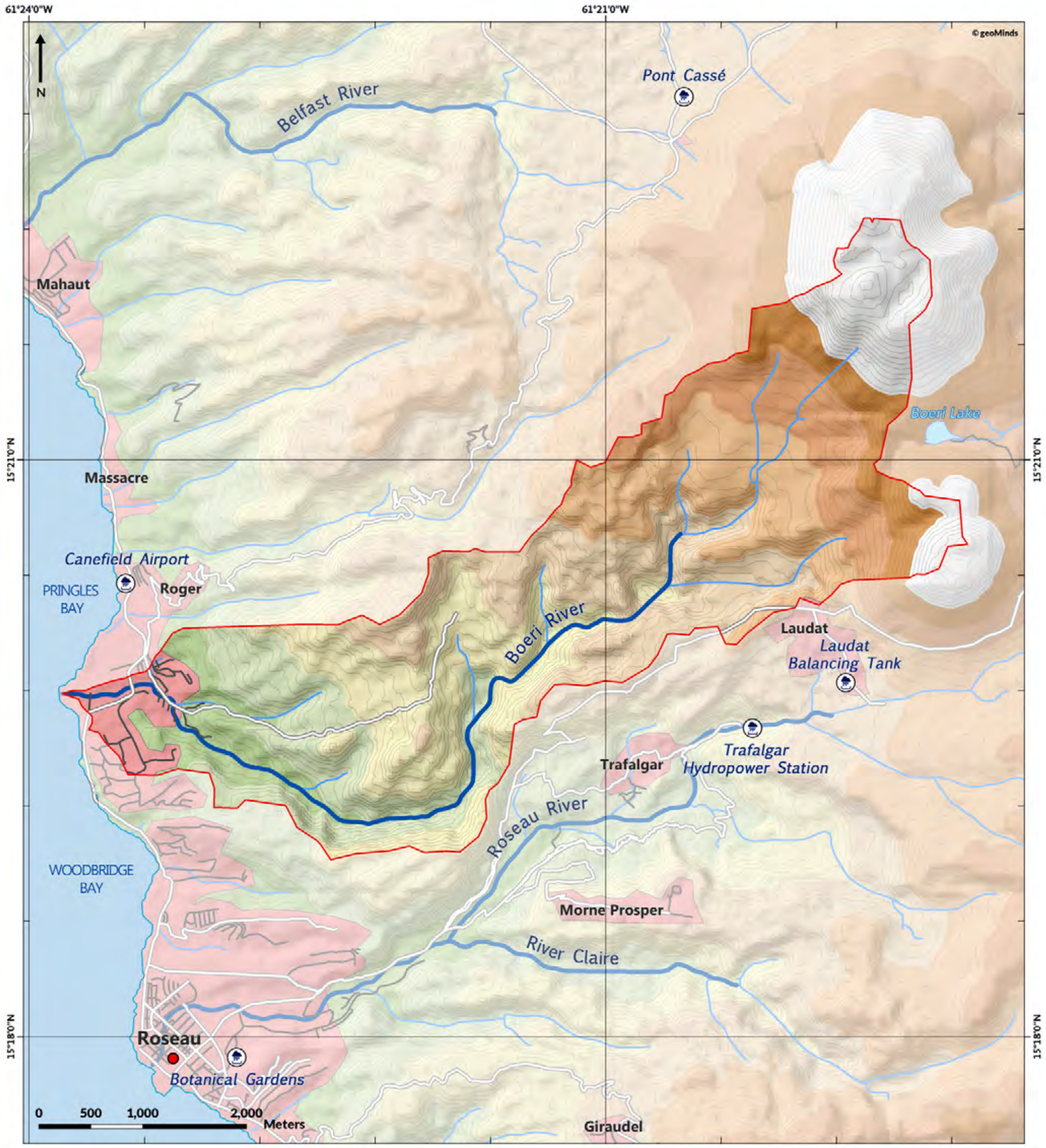
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

20. BOERI RIVER

20.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

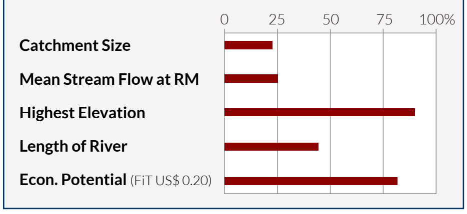
Facts about Catchment

Catchment Size:	17.23 km²
Length of Primary River:	7.28 km
Highest Elevation of Primary River:	513 m
Long-term Mean Stream Flow at River Mouth:	1.618 m³/s

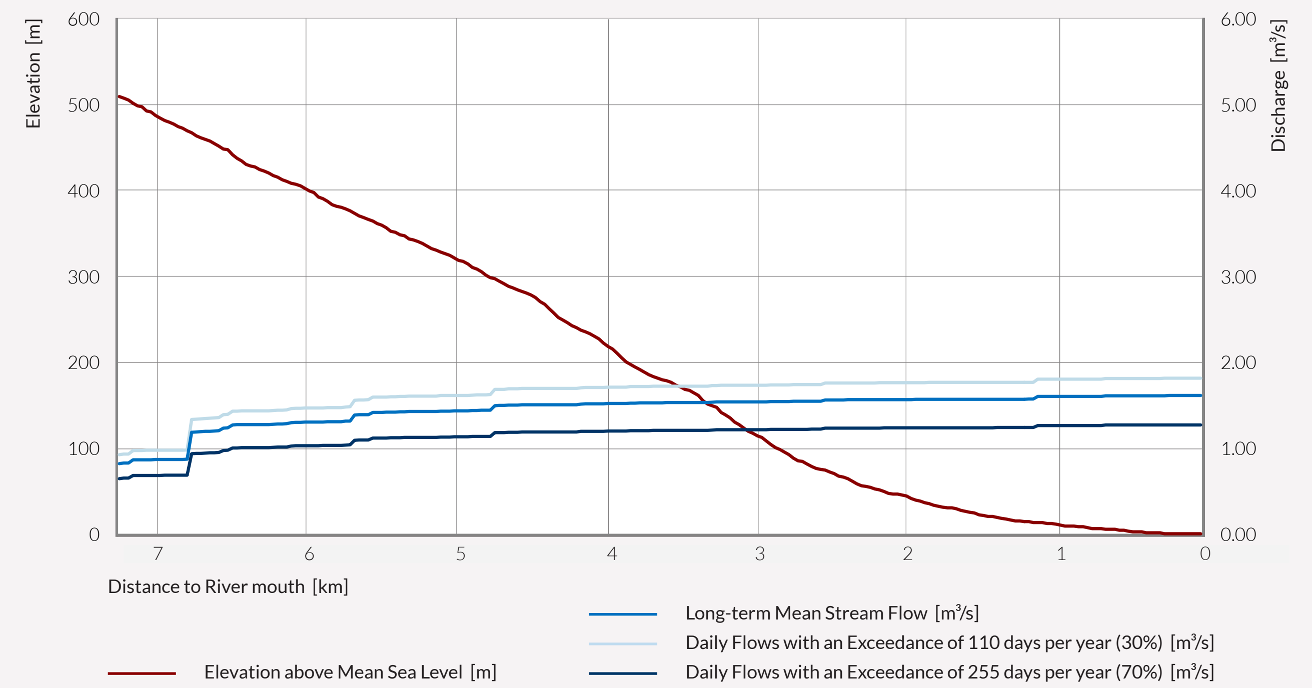
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Boeri River accumulates its waters from the highlands around Morne Macaque and Morne Trois Pitons north of the Roseau catchment on the west coast of Dominica. The catchment is about 17.23 km² and the Boeri River has a length of 7.28 km. Flowing into the Caribbean Sea south of the Canefield Airport, the Boeri River leads about 1.618 m³/s as an annual mean discharge at river mouth available for generating hydropower in an ecologically sustainable way. Having a maximum elevation drop of 513 m, several economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

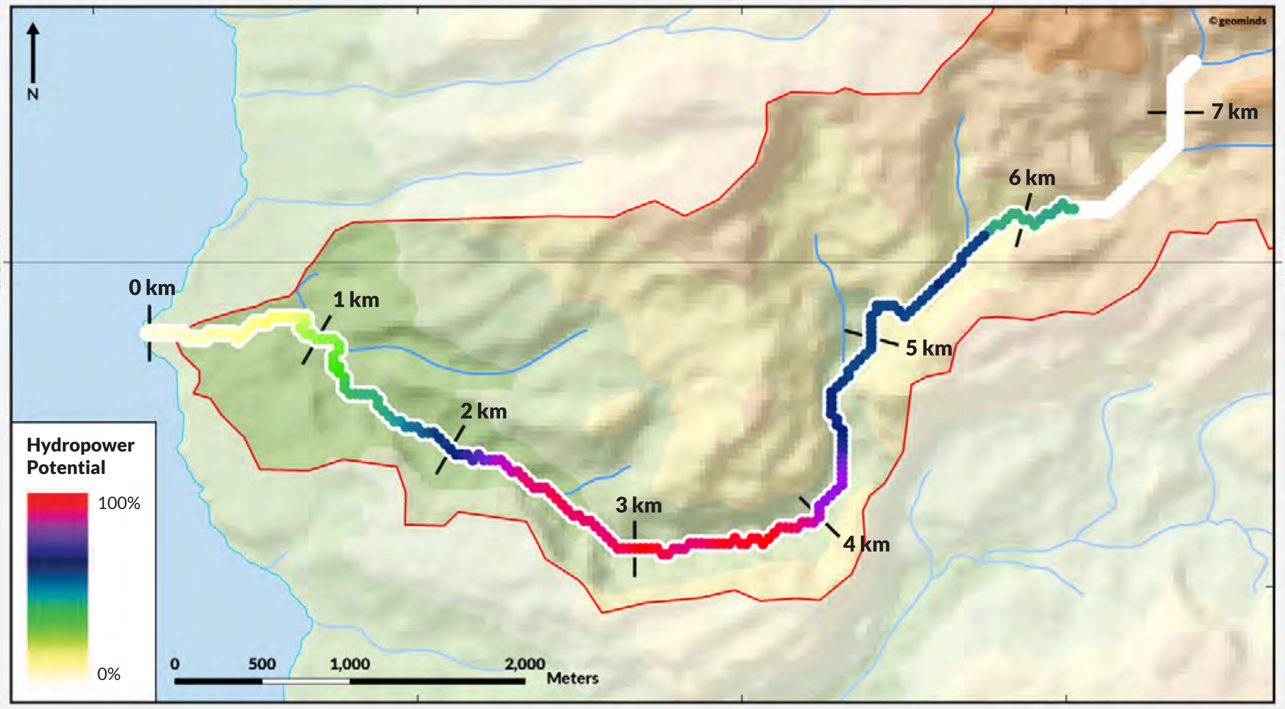
COUNTRY-WIDE RIVER RATING



20.2 • STREAM FLOW DISCHARGE ANALYSIS OF BOERI RIVER

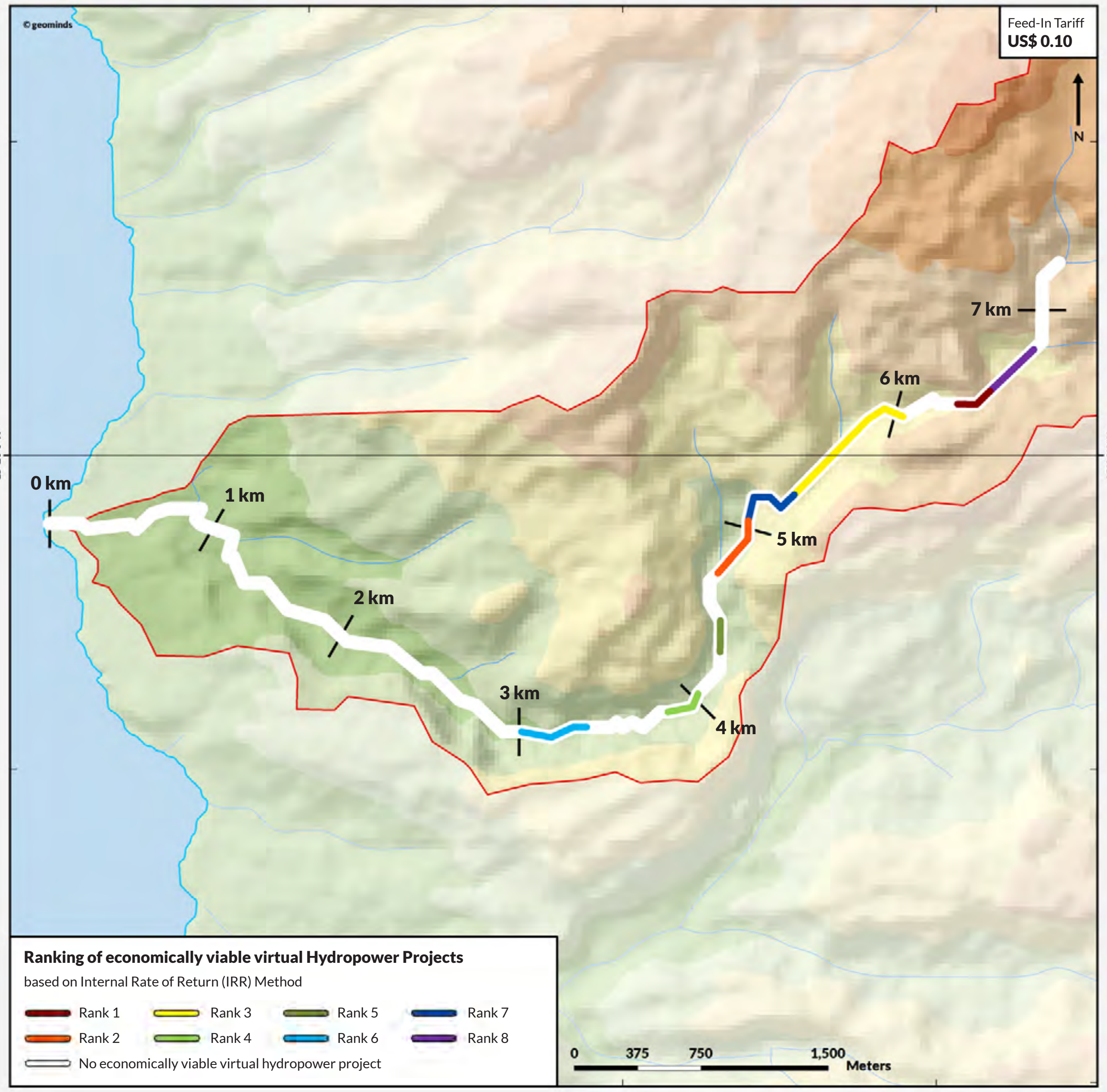


20.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

20.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

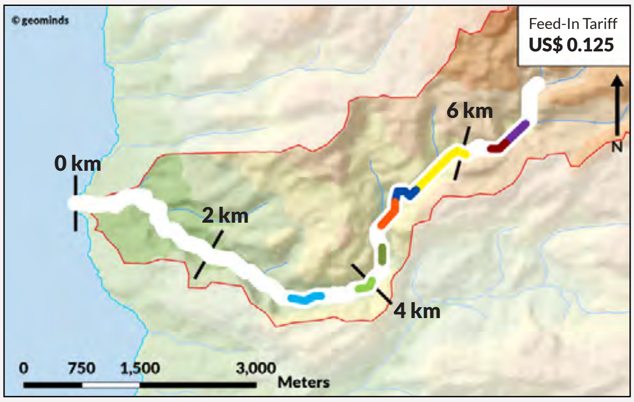


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

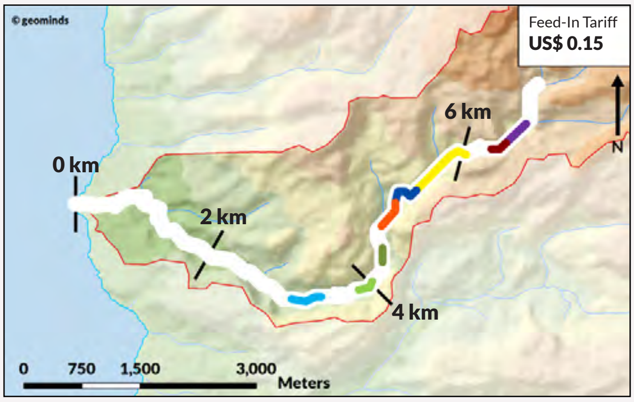
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	3.88%	205.22 kW	6.33 km	6.48 km	0.15 km	19 m	1.437 m³/s
2	3.86%	312.16 kW	4.74 km	5.01 km	0.27 km	26 m	1.619 m³/s
3	3.74%	575.98 kW	5.40 km	6.00 km	0.60 km	53 m	1.472 m³/s
4	3.70%	349.93 kW	3.84 km	4.02 km	0.18 km	27 m	1.714 m³/s
5	3.66%	296.14 kW	4.29 km	4.44 km	0.15 km	23 m	1.701 m³/s
6	3.54%	545.81 kW	3.03 km	3.36 km	0.33 km	42 m	1.729 m³/s
7	3.41%	293.55 kW	5.04 km	5.37 km	0.33 km	25 m	1.607 m³/s
8	3.20%	188.64 kW	6.51 km	6.72 km	0.21 km	19 m	1.343 m³/s

For more information and all setting parameters used for this calculation, see page 12.

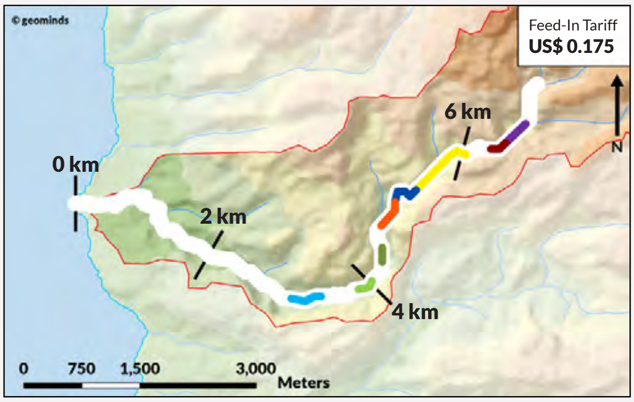
20.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



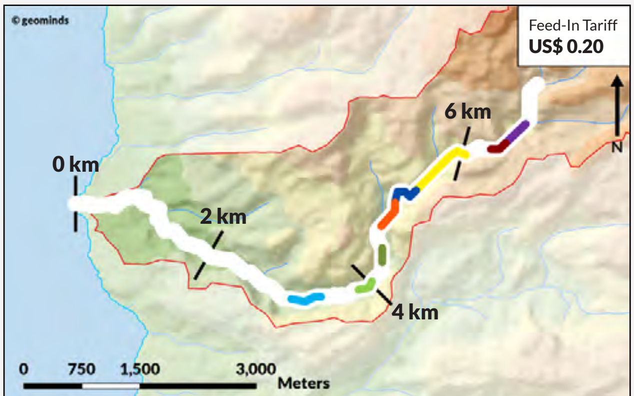
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.28%	205.22 kW	6.33 km	6.48 km
2	7.26%	312.16 kW	4.74 km	5.01 km
3	7.13%	575.98 kW	5.40 km	6.00 km
4	7.10%	349.93 kW	3.84 km	4.02 km
5	7.05%	296.14 kW	4.29 km	4.44 km
6	6.93%	545.81 kW	3.03 km	3.36 km
7	6.80%	293.55 kW	5.04 km	5.37 km
8	6.59%	188.64 kW	6.51 km	6.72 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.17%	205.22 kW	6.33 km	6.48 km
2	10.15%	312.16 kW	4.74 km	5.01 km
3	10.02%	575.98 kW	5.40 km	6.00 km
4	9.98%	349.93 kW	3.84 km	4.02 km
5	9.94%	296.14 kW	4.29 km	4.44 km
6	9.81%	545.81 kW	3.03 km	3.36 km
7	9.66%	293.55 kW	5.04 km	5.37 km
8	9.45%	188.64 kW	6.51 km	6.72 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.77%	205.22 kW	6.33 km	6.48 km
2	12.74%	312.16 kW	4.74 km	5.01 km
3	12.60%	575.98 kW	5.40 km	6.00 km
4	12.56%	349.93 kW	3.84 km	4.02 km
5	12.51%	296.14 kW	4.29 km	4.44 km
6	12.37%	545.81 kW	3.03 km	3.36 km
7	12.22%	293.55 kW	5.04 km	5.37 km
8	12.00%	188.64 kW	6.51 km	6.72 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	15.15%	205.22 kW	6.33 km	6.48 km
2	15.13%	312.16 kW	4.74 km	5.01 km
3	14.98%	575.98 kW	5.40 km	6.00 km
4	14.93%	349.93 kW	3.84 km	4.02 km
5	14.88%	296.14 kW	4.29 km	4.44 km
6	14.74%	545.81 kW	3.03 km	3.36 km
7	14.58%	293.55 kW	5.04 km	5.37 km
8	14.34%	188.64 kW	6.51 km	6.72 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7

Rank 2 · Rank 4 · Rank 6 · Rank 8

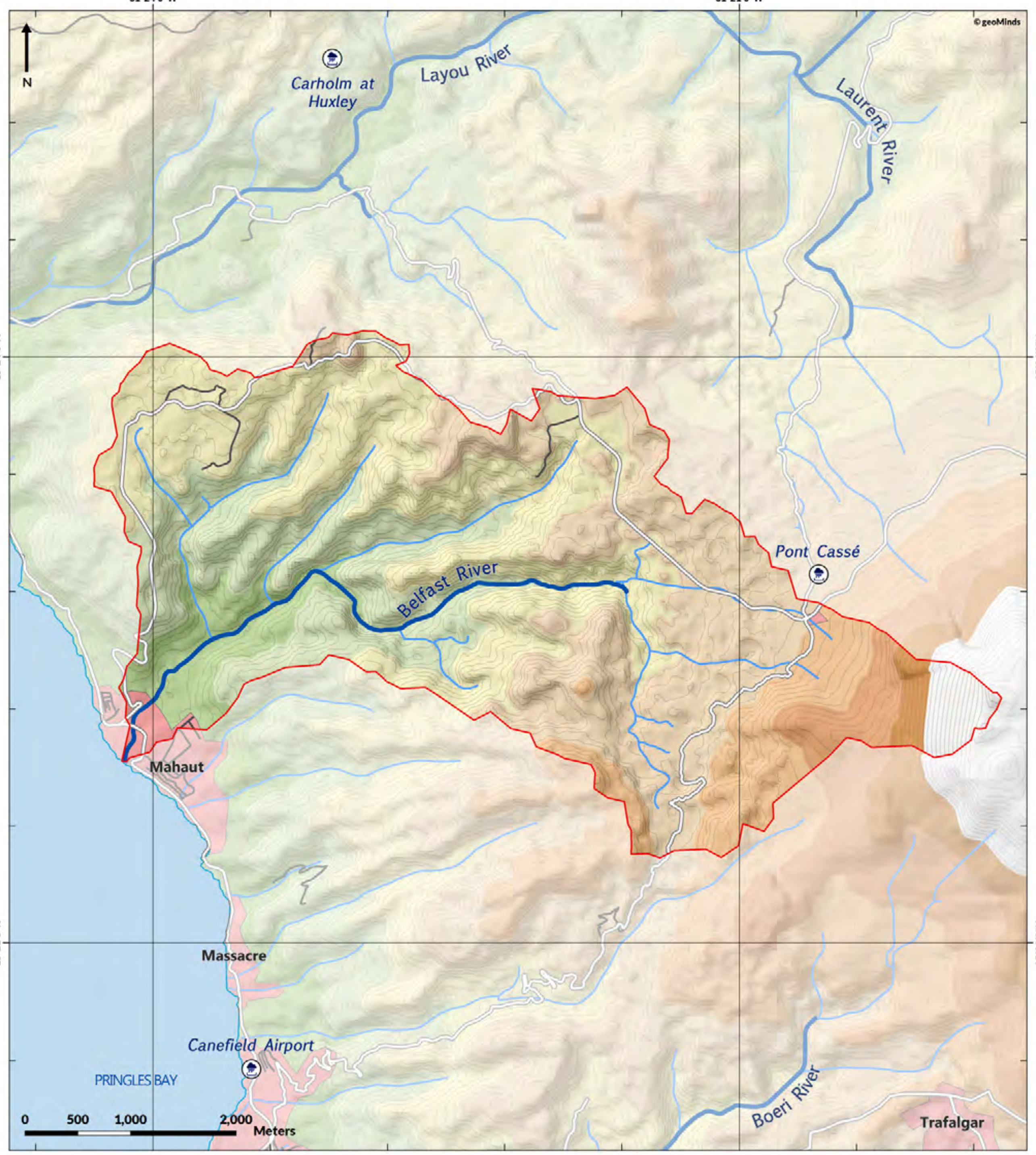
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

21. BELFAST RIVER

21.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 21.52 km²

Length of Primary River: . . . . 5.43 km

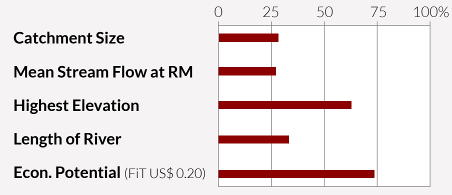
Highest Elevation of Primary River: . . . . 359 m

Long-term Mean Stream Flow at River Mouth: . . . . 1.744 m³/s

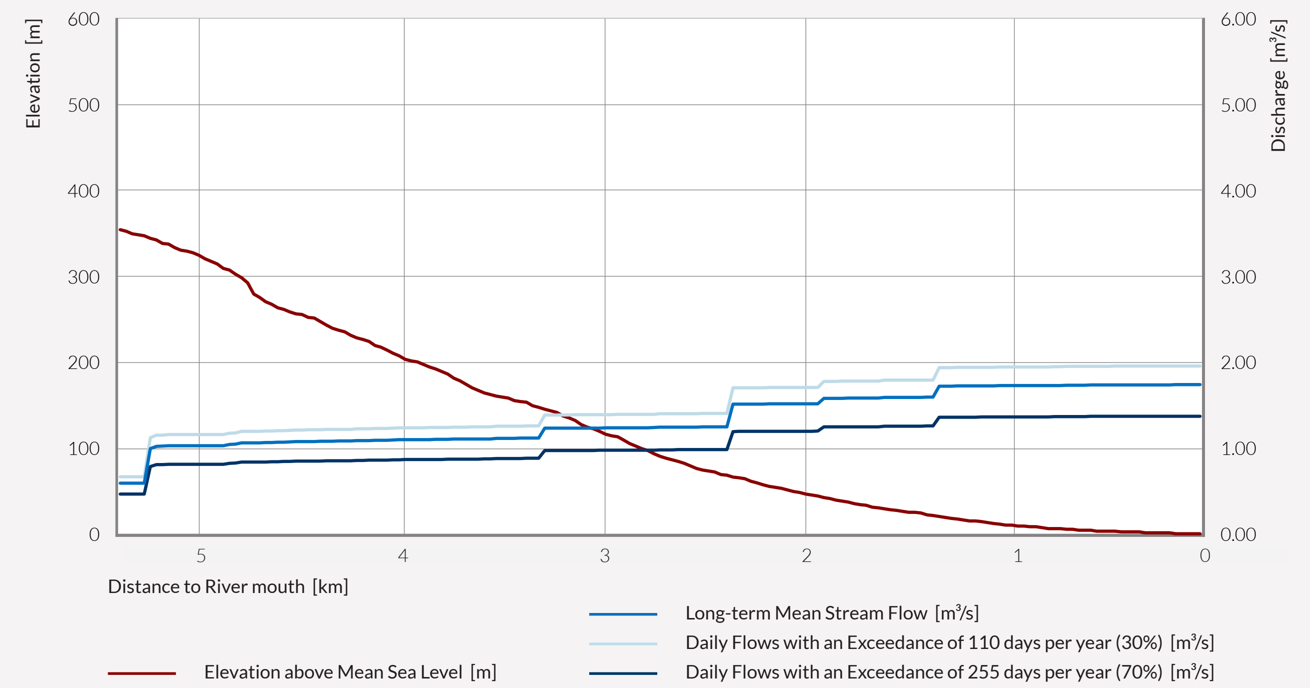
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Belfast River accumulates its waters from the central highlands around Morne Trois Pitons flowing into the Caribbean Sea north of the town of Mahaut. The mean annual discharge available for generating hydroelectric power in an ecologically sustainable way is about 1.744 m³/s. With 5.43 km, an elevation drop of 359 m and a catchment size of 21.52 km², the Belfast River provides several economically viable virtual hydropower projects applying a feed-in tariff of US$ 0.10.

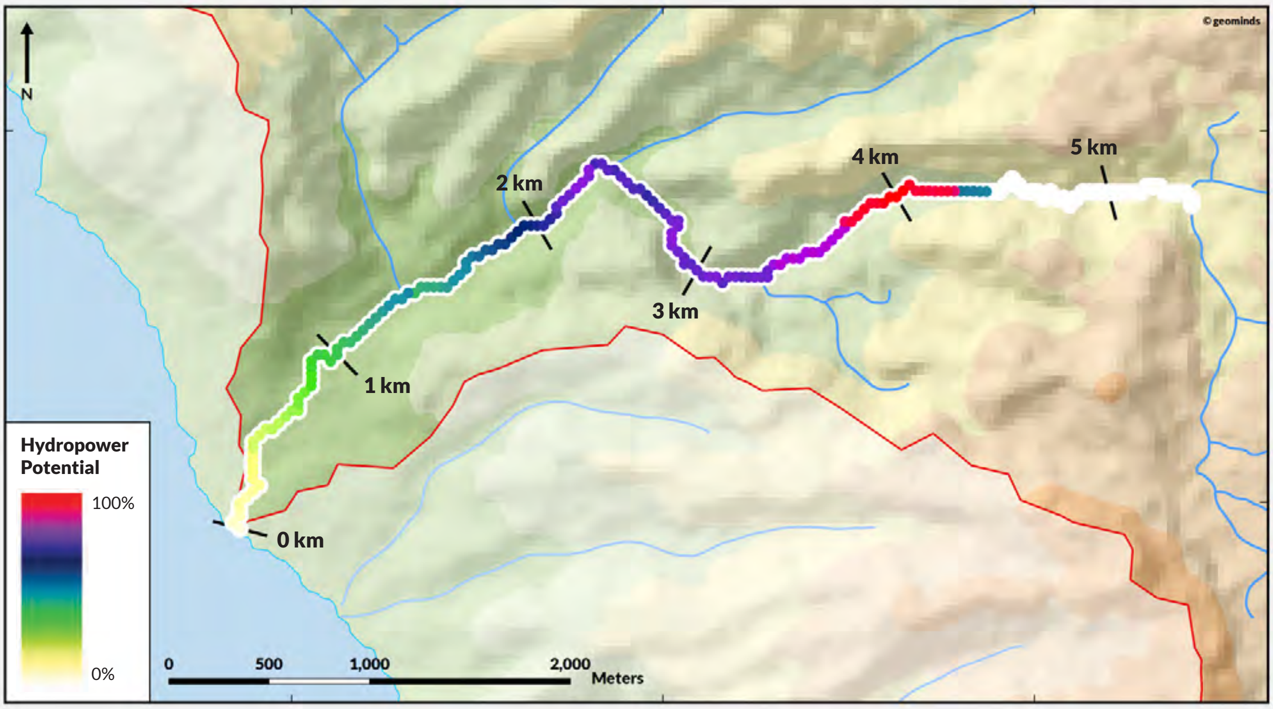
COUNTRY-WIDE RIVER RATING



21.2 • STREAM FLOW DISCHARGE ANALYSIS OF BELFAST RIVER



21.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



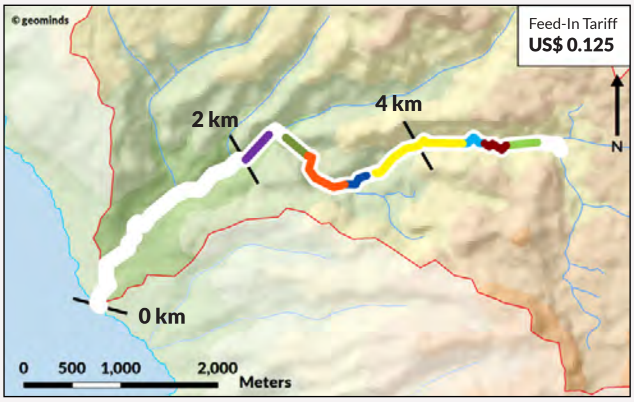
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

21.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

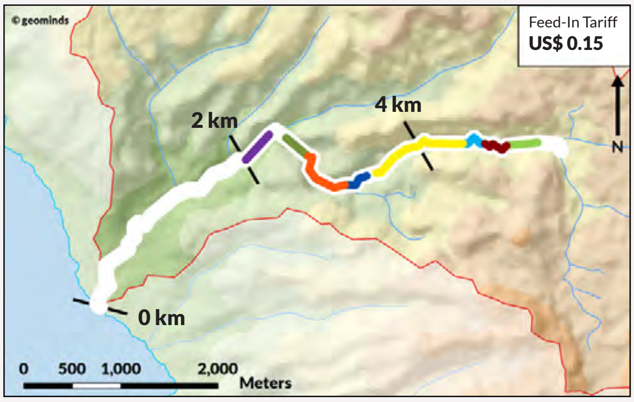
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	4.44%	334.25 kW	4.65 km	4.83 km	0.18 km	37 m	1.183 m^3/s
2	3.85%	528.12 kW	2.70 km	3.21 km	0.51 km	51 m	1.393 m^3/s
3	3.76%	790.31 kW	3.57 km	4.41 km	0.84 km	87 m	1.220 m^3/s
4	3.34%	242.62 kW	4.86 km	5.13 km	0.27 km	28 m	1.164 m^3/s
5	2.81%	144.10 kW	2.49 km	2.67 km	0.18 km	14 m	1.406 m^3/s
6	2.59%	133.40 kW	4.44 km	4.62 km	0.18 km	15 m	1.209 m^3/s
7	2.34%	137.70 kW	3.24 km	3.45 km	0.21 km	15 m	1.262 m^3/s
8	1.12%	184.55 kW	2.04 km	2.28 km	0.24 km	15 m	1.709 m^3/s

For more information and all setting parameters used for this calculation, see page 12.

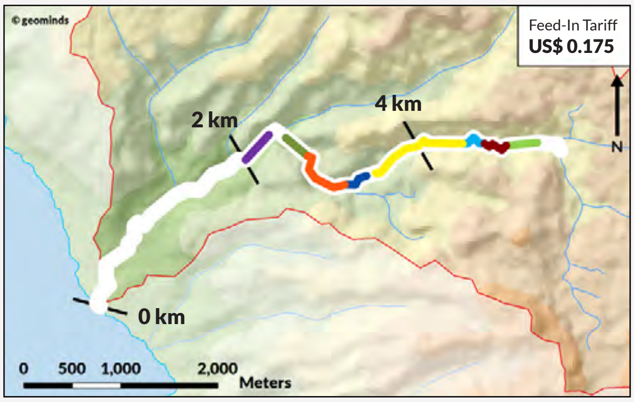
21.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



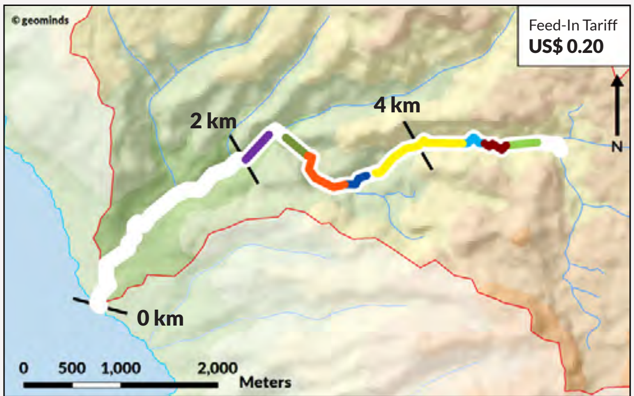
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.85%	334.25 kW	4.65 km	4.83 km
2	7.25%	528.12 kW	2.70 km	3.21 km
3	7.15%	790.31 kW	3.57 km	4.41 km
4	6.73%	242.62 kW	4.86 km	5.13 km
5	6.19%	144.10 kW	2.49 km	2.67 km
6	5.97%	133.40 kW	4.44 km	4.62 km
7	5.73%	137.70 kW	3.24 km	3.45 km
8	4.52%	184.55 kW	2.04 km	2.28 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.78%	334.25 kW	4.65 km	4.83 km
2	10.14%	528.12 kW	2.70 km	3.21 km
3	10.04%	790.31 kW	3.57 km	4.41 km
4	9.59%	242.62 kW	4.86 km	5.13 km
5	9.03%	144.10 kW	2.49 km	2.67 km
6	8.80%	133.40 kW	4.44 km	4.62 km
7	8.55%	137.70 kW	3.24 km	3.45 km
8	7.31%	184.55 kW	2.04 km	2.28 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.41%	334.25 kW	4.65 km	4.83 km
2	12.73%	528.12 kW	2.70 km	3.21 km
3	12.62%	790.31 kW	3.57 km	4.41 km
4	12.15%	242.62 kW	4.86 km	5.13 km
5	11.55%	144.10 kW	2.49 km	2.67 km
6	11.31%	133.40 kW	4.44 km	4.62 km
7	11.04%	137.70 kW	3.24 km	3.45 km
8	9.74%	184.55 kW	2.04 km	2.28 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	15.84%	334.25 kW	4.65 km	4.83 km
2	15.11%	528.12 kW	2.70 km	3.21 km
3	15.00%	790.31 kW	3.57 km	4.41 km
4	14.50%	242.62 kW	4.86 km	5.13 km
5	13.87%	144.10 kW	2.49 km	2.67 km
6	13.61%	133.40 kW	4.44 km	4.62 km
7	13.33%	137.70 kW	3.24 km	3.45 km
8	11.96%	184.55 kW	2.04 km	2.28 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

22. RAVINE NEIBA

22.1 • OVERVIEW MAP

Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

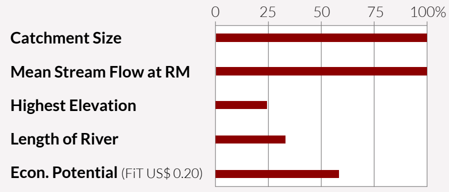
Facts about Catchment

Catchment Size:	76.35 km²
Length of Primary River:	5.40 km
Highest Elevation of Primary River:	138 m
Long-term Mean Stream Flow at River Mouth:	6.436 m³/s

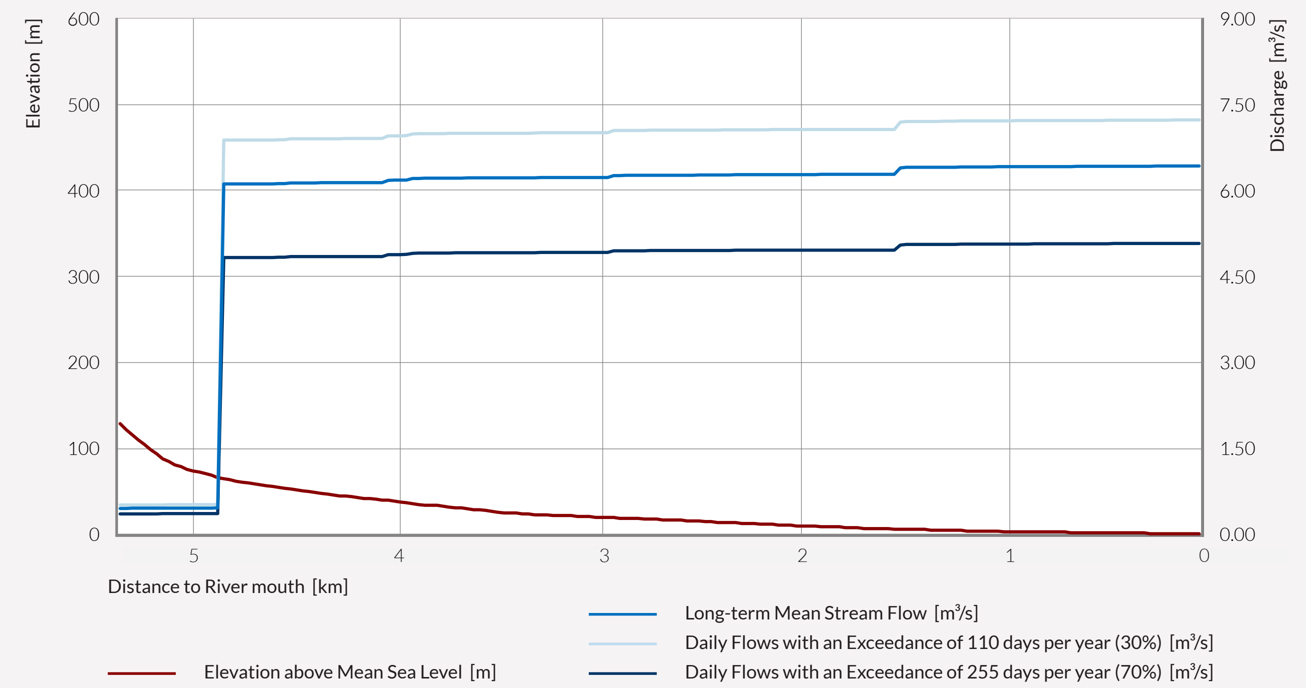
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Layou River, the Laurent River and the smaller Ravine Neiba form together the largest catchment on the island covering an area of about 76.35 km². The annual mean discharge at their river mouth on the west coast of Dominica is 6.436 m³/s. The Ravine Neiba has a length of about 5.40 km, including a joint-river section of more than 4.5 km and a maximum elevation of only 138 m. Due to the high amount of discharge in the joint-river section, several economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

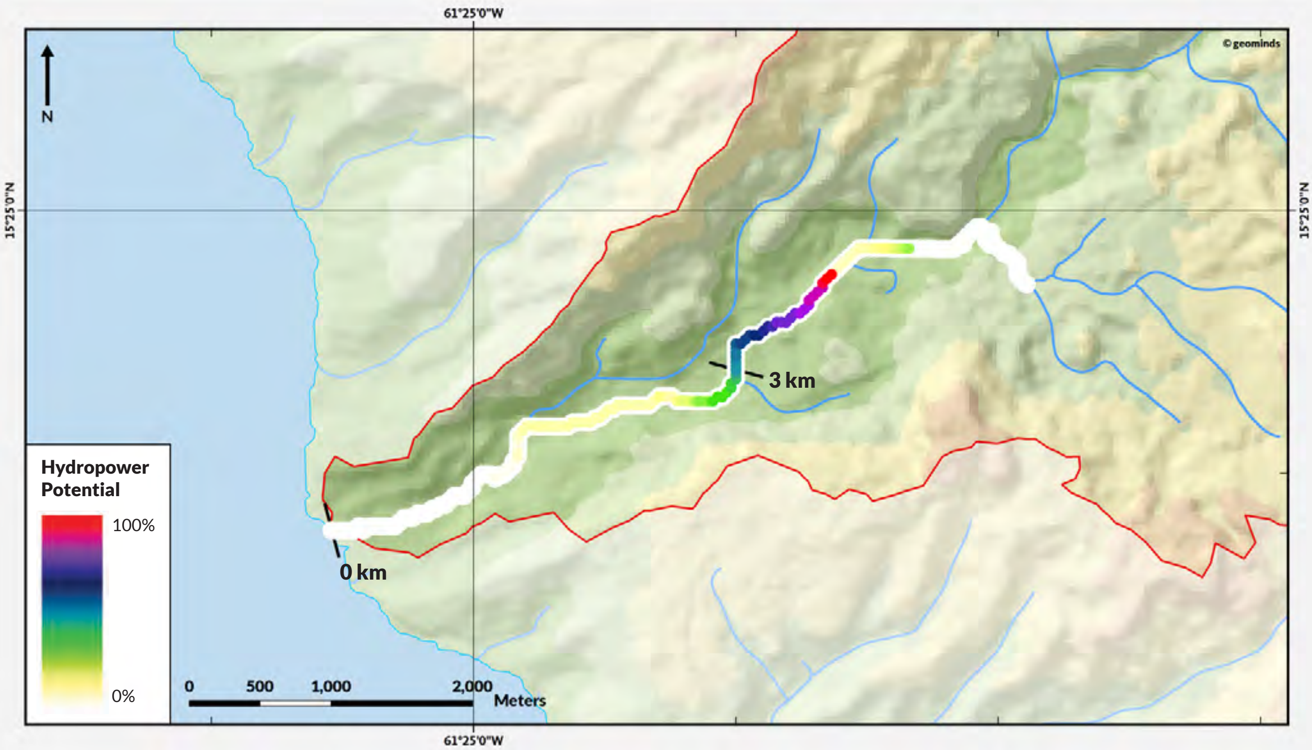
COUNTRY-WIDE RIVER RATING



22.2 • STREAM FLOW DISCHARGE ANALYSIS OF RAVINE NEIBA

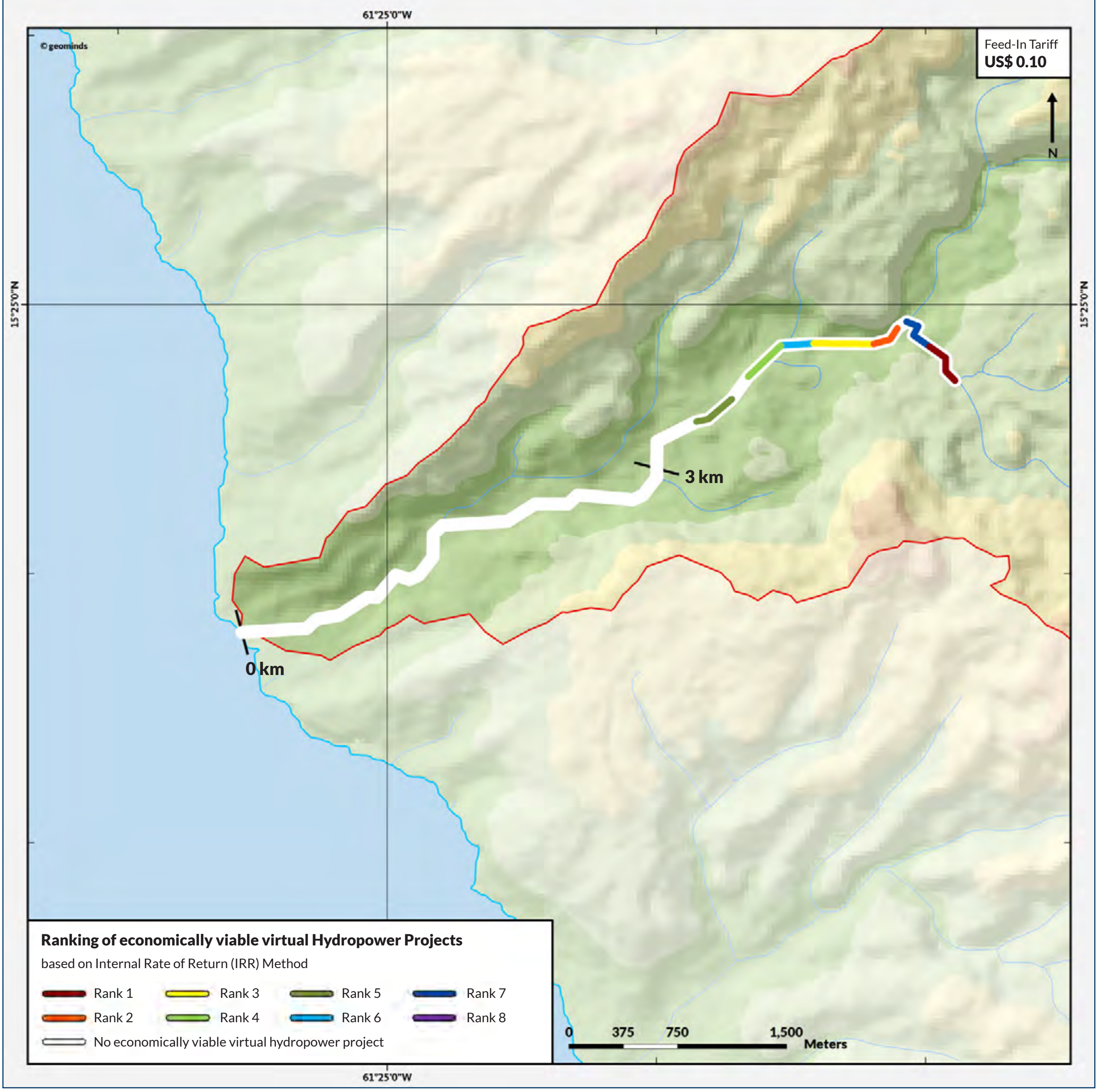


22.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

22.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

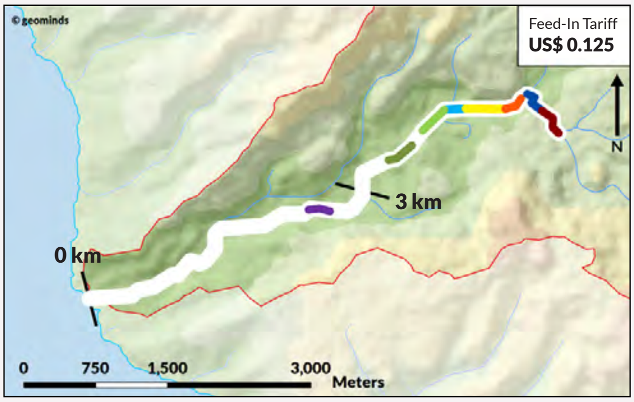


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

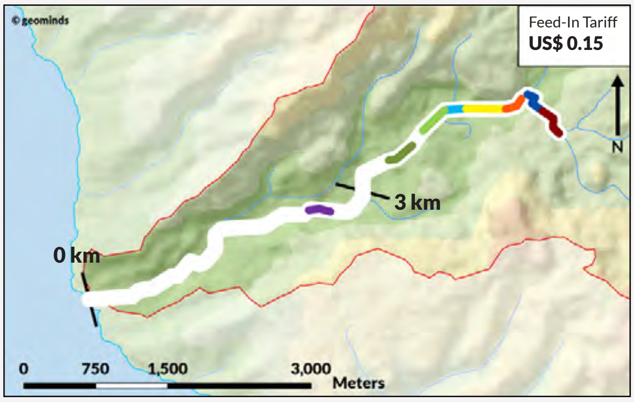
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	3.74%	196.62 kW	5.13 km	5.37 km	0.24 km	50 m	0.515 m³/s
2	2.95%	282.89 kW	4.65 km	4.80 km	0.15 km	6 m	6.887 m³/s
3	2.63%	549.96 kW	4.26 km	4.62 km	0.36 km	12 m	6.891 m³/s
4	2.46%	277.83 kW	3.84 km	4.02 km	0.18 km	6 m	6.963 m³/s
5	1.94%	271.30 kW	3.45 km	3.66 km	0.21 km	6 m	7.005 m³/s
6	1.70%	221.83 kW	4.05 km	4.23 km	0.18 km	5 m	6.915 m³/s
7	0.28%	60.93 kW	4.89 km	5.10 km	0.21 km	16 m	0.521 m³/s
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

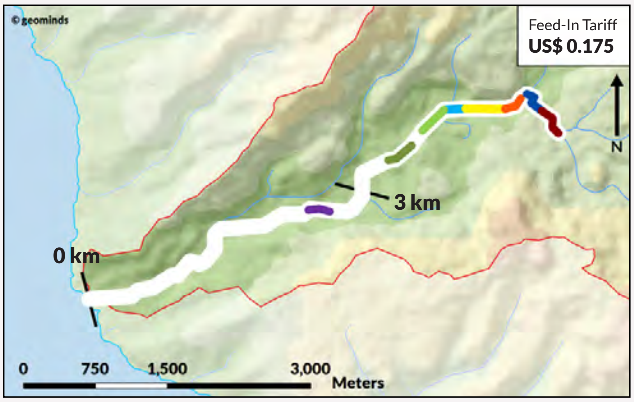
22.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



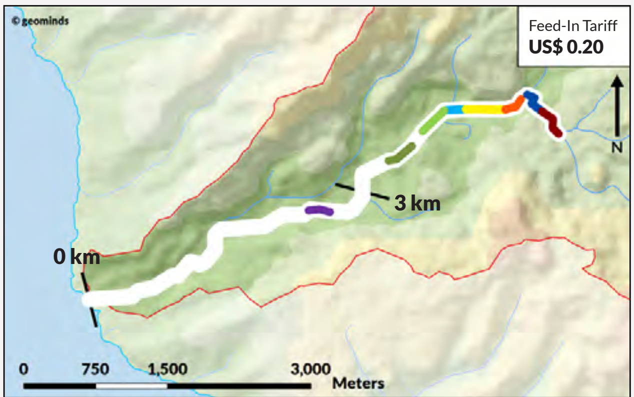
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	7.13%	196.62 kW	5.13 km	5.37 km
2	6.33%	282.89 kW	4.65 km	4.80 km
3	6.01%	549.96 kW	4.26 km	4.62 km
4	5.84%	277.83 kW	3.84 km	4.02 km
5	5.33%	271.30 kW	3.45 km	3.66 km
6	5.09%	221.83 kW	4.05 km	4.23 km
7	3.72%	60.93 kW	4.89 km	5.10 km
8	2.14%	116.01 kW	2.40 km	2.58 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	10.02%	196.62 kW	5.13 km	5.37 km
2	9.18%	282.89 kW	4.65 km	4.80 km
3	8.84%	549.96 kW	4.26 km	4.62 km
4	8.67%	277.83 kW	3.84 km	4.02 km
5	8.14%	271.30 kW	3.45 km	3.66 km
6	7.89%	221.83 kW	4.05 km	4.23 km
7	6.49%	60.93 kW	4.89 km	5.10 km
8	4.90%	116.01 kW	2.40 km	2.58 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.60%	196.62 kW	5.13 km	5.37 km
2	11.71%	282.89 kW	4.65 km	4.80 km
3	11.35%	549.96 kW	4.26 km	4.62 km
4	11.17%	277.83 kW	3.84 km	4.02 km
5	10.61%	271.30 kW	3.45 km	3.66 km
6	10.36%	221.83 kW	4.05 km	4.23 km
7	8.89%	60.93 kW	4.89 km	5.10 km
8	7.26%	116.01 kW	2.40 km	2.58 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	14.98%	196.62 kW	5.13 km	5.37 km
2	14.03%	282.89 kW	4.65 km	4.80 km
3	13.66%	549.96 kW	4.26 km	4.62 km
4	13.46%	277.83 kW	3.84 km	4.02 km
5	12.87%	271.30 kW	3.45 km	3.66 km
6	12.60%	221.83 kW	4.05 km	4.23 km
7	11.06%	60.93 kW	4.89 km	5.10 km
8	9.36%	116.01 kW	2.40 km	2.58 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1, Rank 2, Rank 3, Rank 4, Rank 5, Rank 6, Rank 7, Rank 8

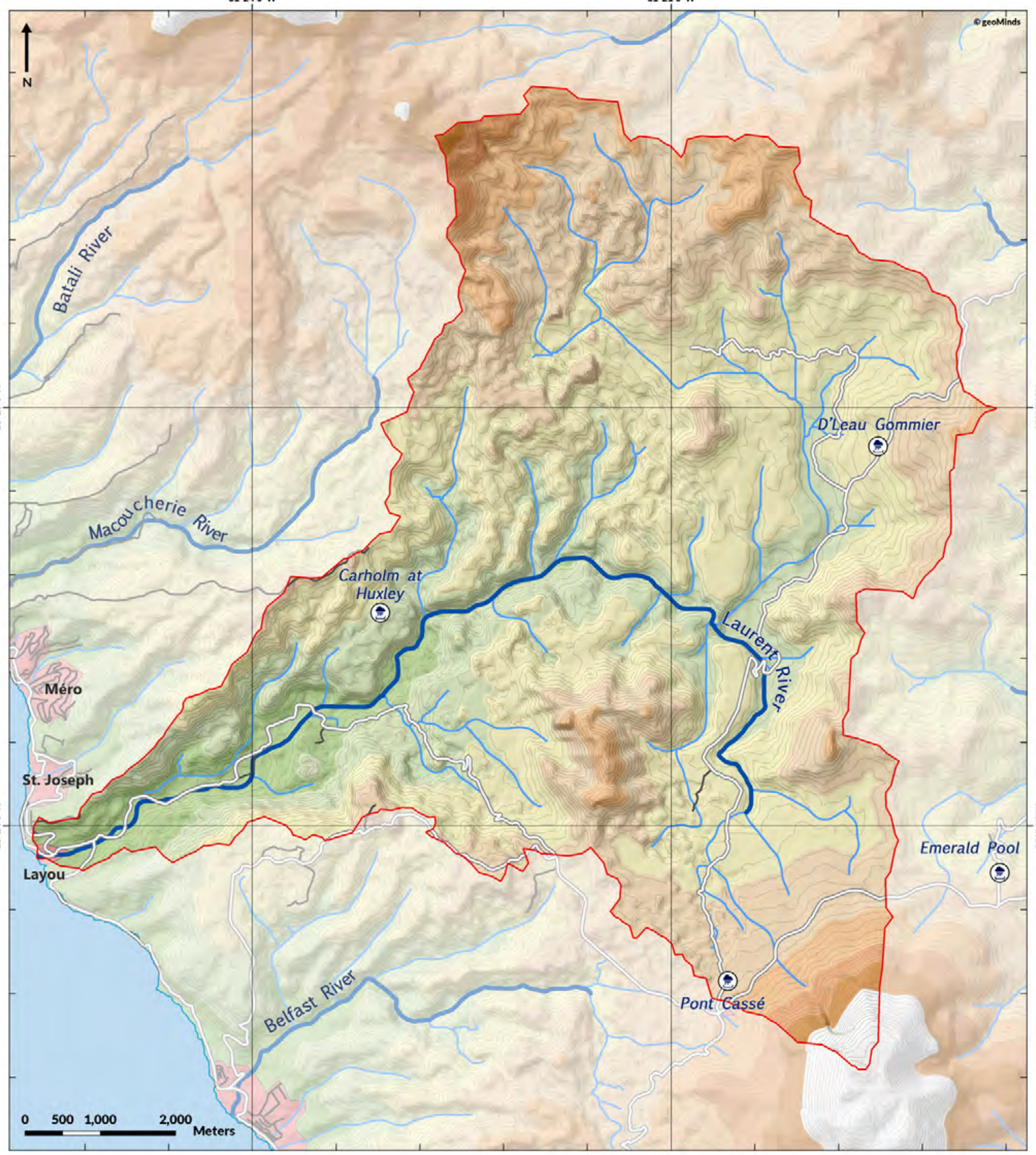
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

23. LAURENT RIVER

23.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

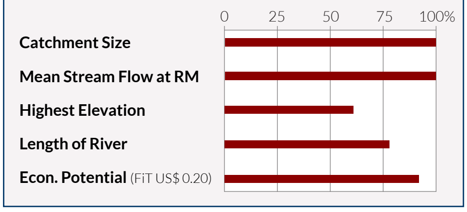
Facts about Catchment

Catchment Size:	76.35 km²
Length of Primary River:	12.74 km
Highest Elevation of Primary River:	348 m
Long-term Mean Stream Flow at River Mouth:	6.432 m³/s

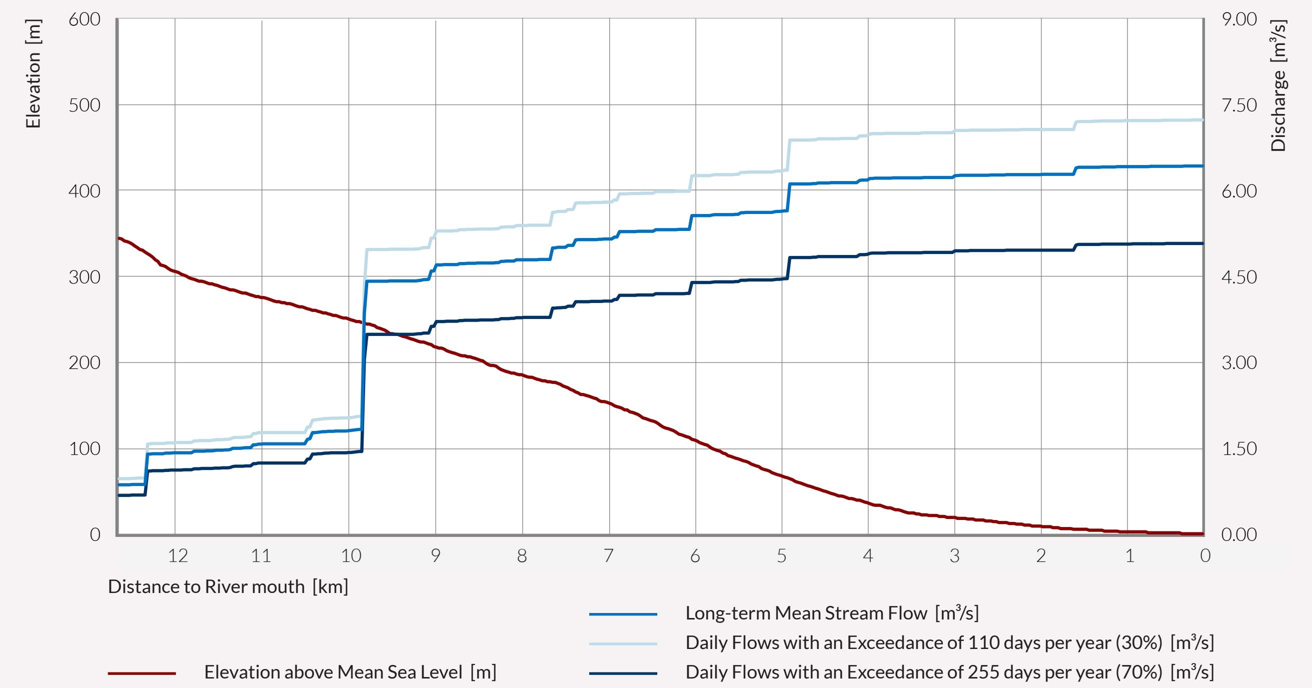
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Layou River, the Laurent River and the smaller Ravine Neiba form together the largest catchment on the island covering an area of about 76.35 km². The annual mean discharge at their river mouth on the west coast of Dominica is 6.436 m³/s. Exceeding 12 km in length, the Laurent River is the second longest river of all analyzed rivers and has a maximum elevation of 348 m. The joint-river section with the Layou River is about 10 km long. Several economically viable virtual hydropower projects were located in the joint-river section when applying a feed-in tariff of US$ 0.10.

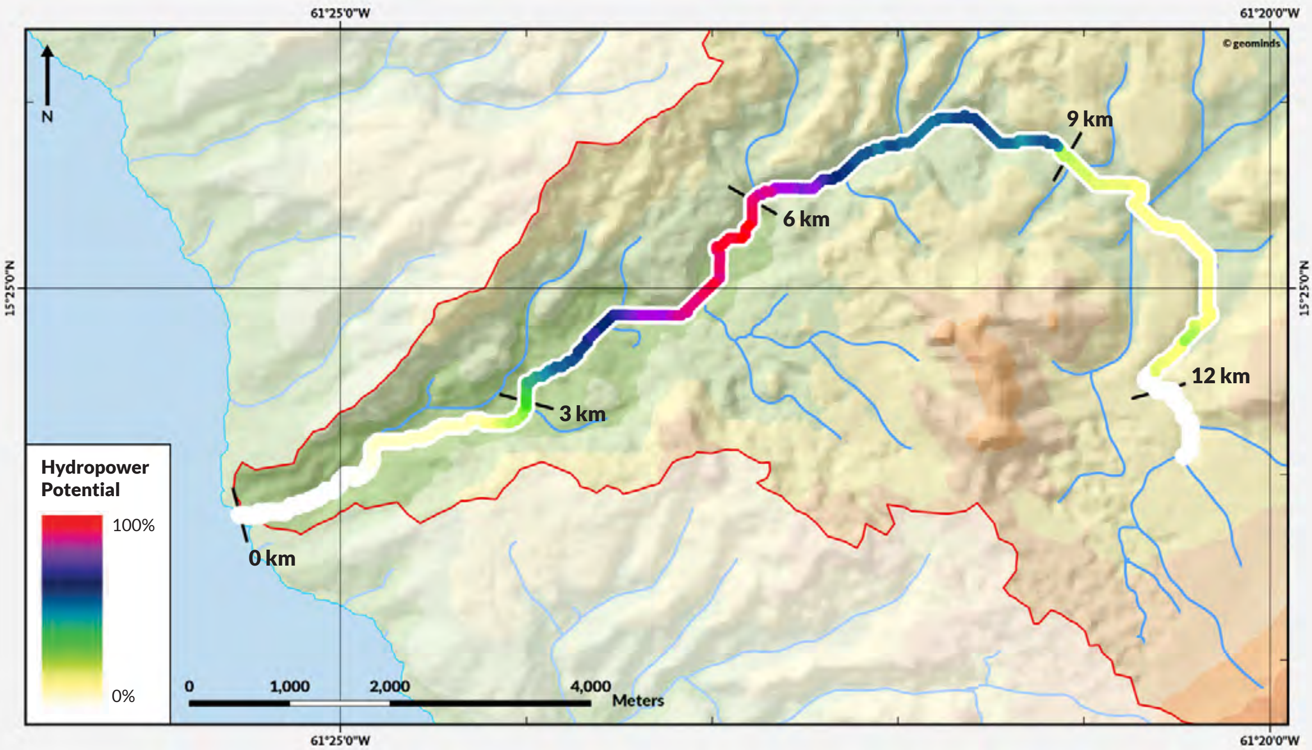
COUNTRY-WIDE RIVER RATING



23.2 • STREAM FLOW DISCHARGE ANALYSIS OF LAURENT RIVER

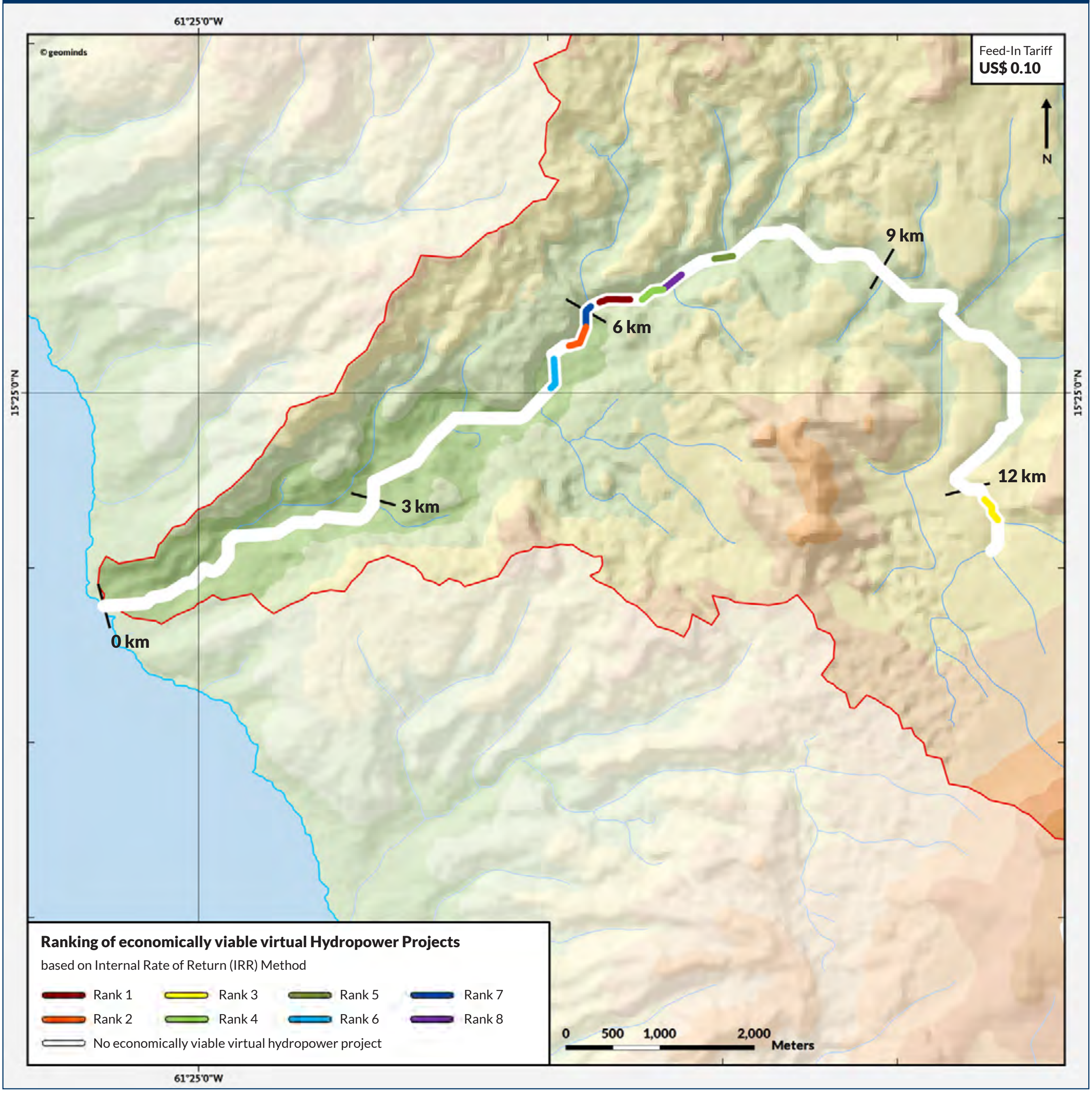


23.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

23.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

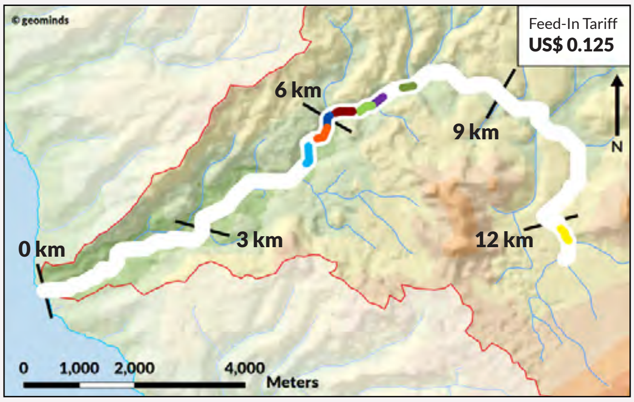


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

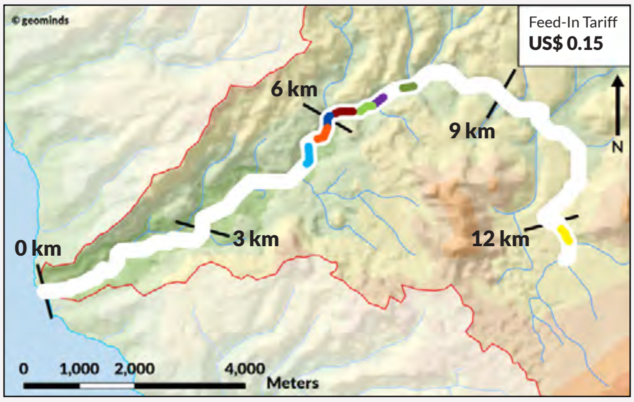
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	3.48%	592.48 kW	6.12 km	6.39 km	0.27 km	14 m	5.986 m³/s
2	3.46%	529.64 kW	5.55 km	5.79 km	0.24 km	12 m	6.268 m³/s
3	3.29%	174.48 kW	12.15 km	12.33 km	0.18 km	15 m	1.582 m³/s
4	3.27%	377.28 kW	6.54 km	6.72 km	0.18 km	9 m	5.953 m³/s
5	3.26%	322.10 kW	7.26 km	7.41 km	0.15 km	8 m	5.678 m³/s
6	3.21%	527.27 kW	5.04 km	5.31 km	0.27 km	12 m	6.328 m³/s
7	3.14%	306.32 kW	5.85 km	6.00 km	0.15 km	7 m	6.264 m³/s
8	2.97%	285.71 kW	6.75 km	6.90 km	0.15 km	7 m	5.843 m³/s

For more information and all setting parameters used for this calculation, see page 12.

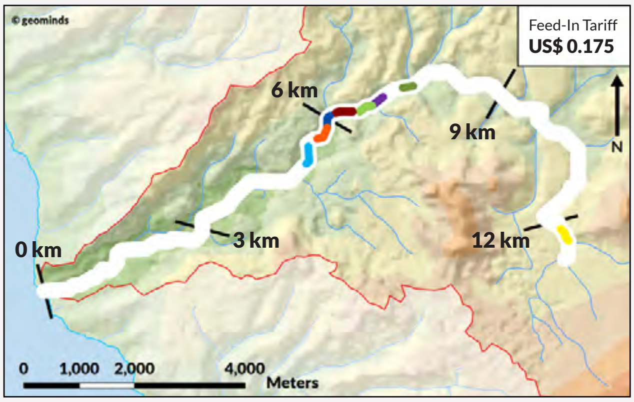
23.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



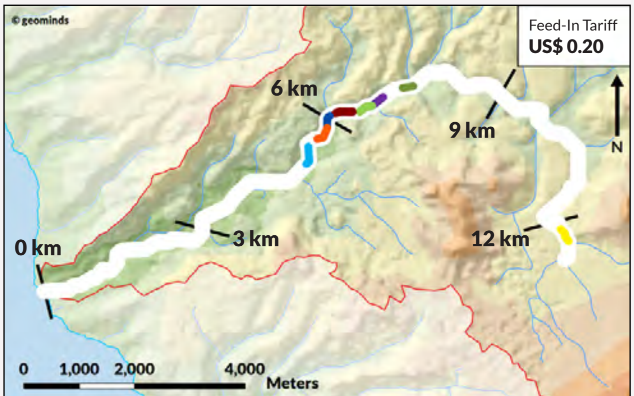
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.87%	592.48 kW	6.12 km	6.39 km
2	6.85%	529.64 kW	5.55 km	5.79 km
3	6.67%	174.48 kW	12.15 km	12.33 km
4	6.66%	377.28 kW	6.54 km	6.72 km
5	6.65%	322.10 kW	7.26 km	7.41 km
6	6.60%	527.27 kW	5.04 km	5.31 km
7	6.53%	306.32 kW	5.85 km	6.00 km
8	6.35%	285.71 kW	6.75 km	6.90 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.74%	592.48 kW	6.12 km	6.39 km
2	9.72%	529.64 kW	5.55 km	5.79 km
3	9.54%	174.48 kW	12.15 km	12.33 km
4	9.52%	377.28 kW	6.54 km	6.72 km
5	9.51%	322.10 kW	7.26 km	7.41 km
6	9.46%	527.27 kW	5.04 km	5.31 km
7	9.39%	306.32 kW	5.85 km	6.00 km
8	9.20%	285.71 kW	6.75 km	6.90 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.30%	592.48 kW	6.12 km	6.39 km
2	12.29%	529.64 kW	5.55 km	5.79 km
3	12.09%	174.48 kW	12.15 km	12.33 km
4	12.07%	377.28 kW	6.54 km	6.72 km
5	12.06%	322.10 kW	7.26 km	7.41 km
6	12.00%	527.27 kW	5.04 km	5.31 km
7	11.93%	306.32 kW	5.85 km	6.00 km
8	11.73%	285.71 kW	6.75 km	6.90 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	14.66%	592.48 kW	6.12 km	6.39 km
2	14.65%	529.64 kW	5.55 km	5.79 km
3	14.43%	174.48 kW	12.15 km	12.33 km
4	14.42%	377.28 kW	6.54 km	6.72 km
5	14.41%	322.10 kW	7.26 km	7.41 km
6	14.34%	527.27 kW	5.04 km	5.31 km
7	14.27%	306.32 kW	5.85 km	6.00 km
8	14.06%	285.71 kW	6.75 km	6.90 km

Ranking of economically viable virtual Hydropower Projects
based on Internal Rate of Return (IRR) Method

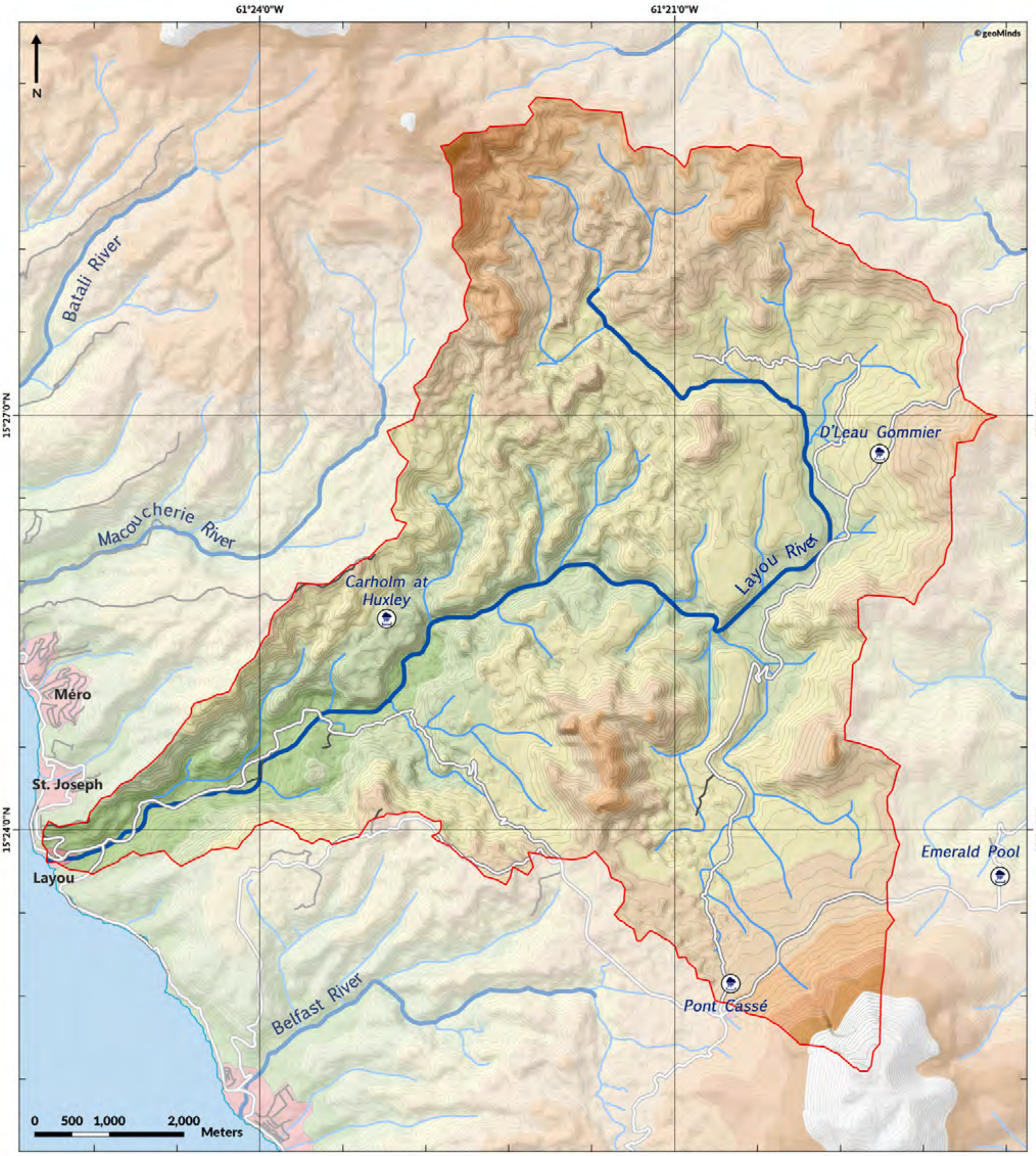
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

24. LAYOU RIVER

24.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 76.35 km²

Length of Primary River: . . . . 16.33 km

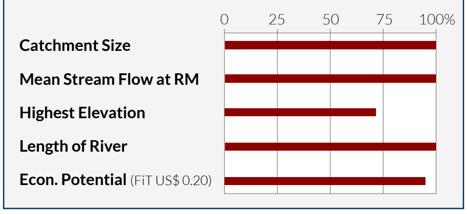
Highest Elevation of Primary River: . . . . 409 m

Long-term Mean Stream Flow at River Mouth: . . . . 6.436 m³/s

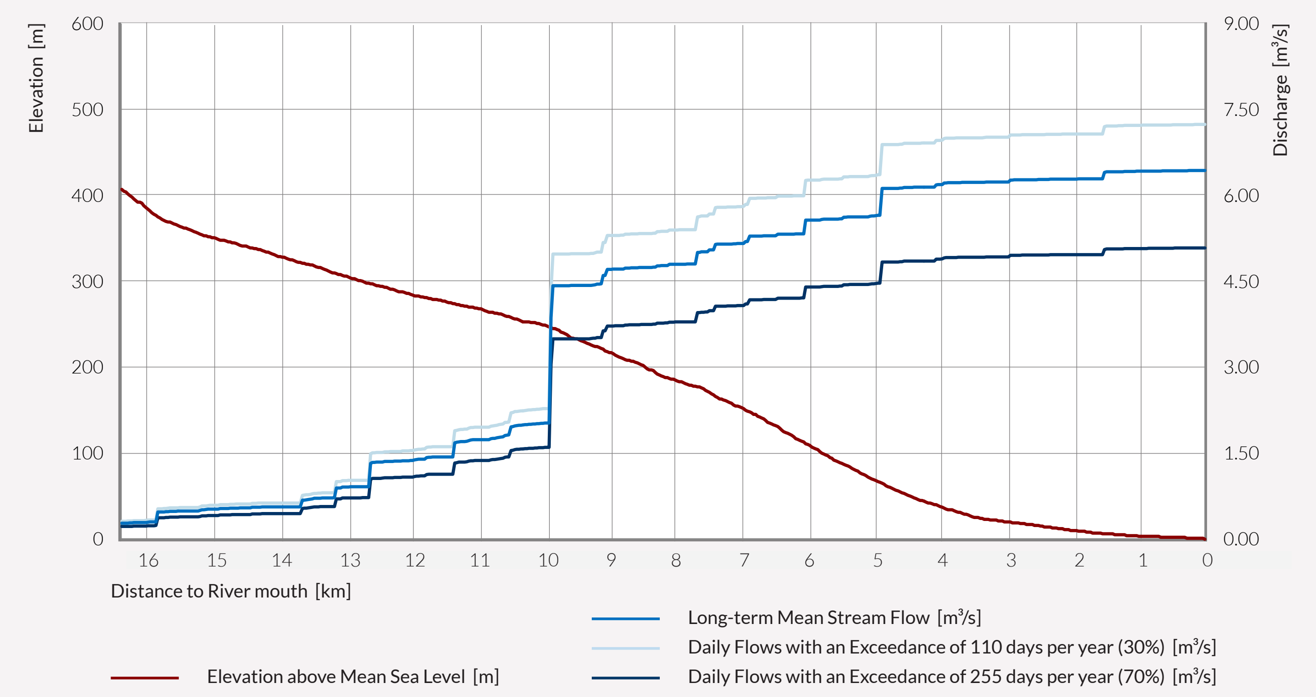
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Layou River, the Laurent River and the smaller Ravine Neiba form together the largest catchment on the island covering an area of about 76.35 km². The annual mean discharge at their river mouth on the west coast of Dominica is 6.436 m³/s. The Layou River is the longest (16.33 km) of all analyzed rivers and has a maximum elevation of 409 m. The joint-river section with the Laurent River is about 10 km long. Several economically viable virtual hydropower projects were located in the joint-river section when applying a feed-in tariff of US$ 0.10.

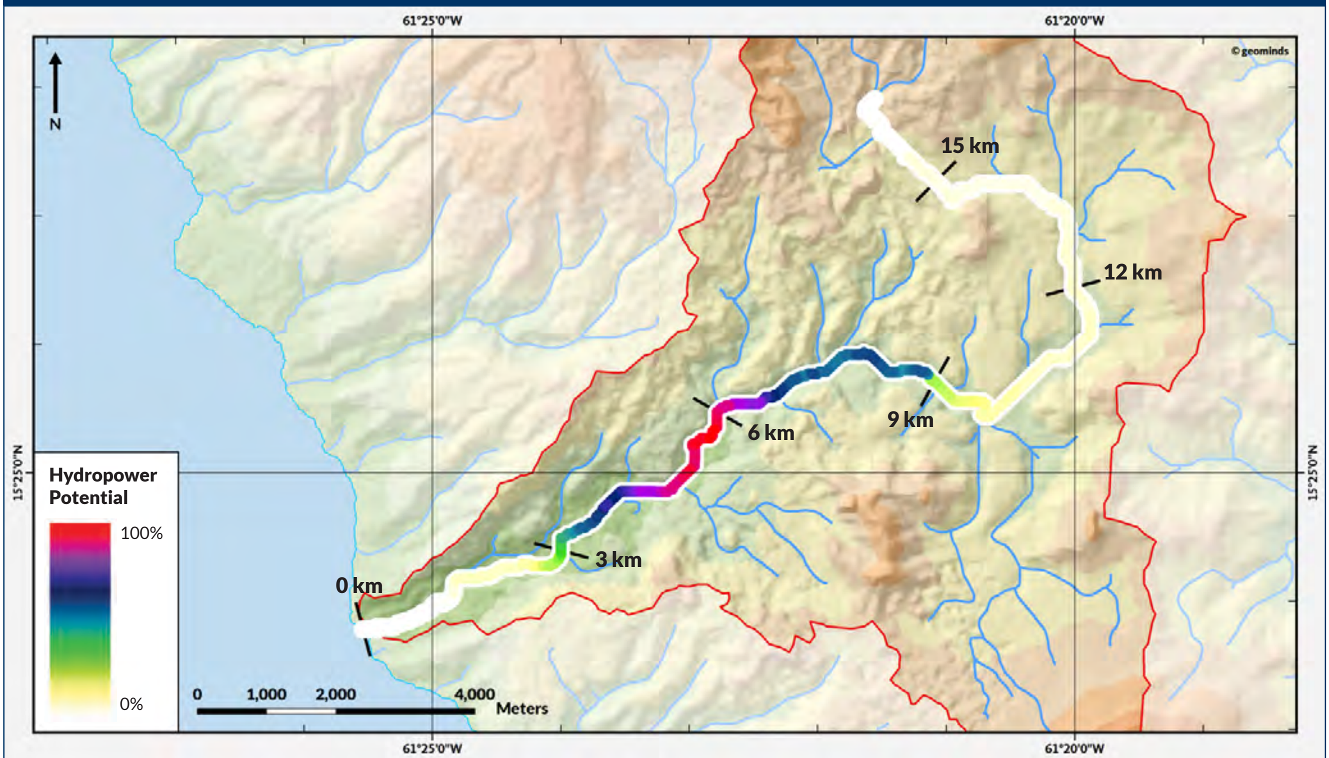
COUNTRY-WIDE RIVER RATING



24.2 • STREAM FLOW DISCHARGE ANALYSIS OF LAYOU RIVER



24.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

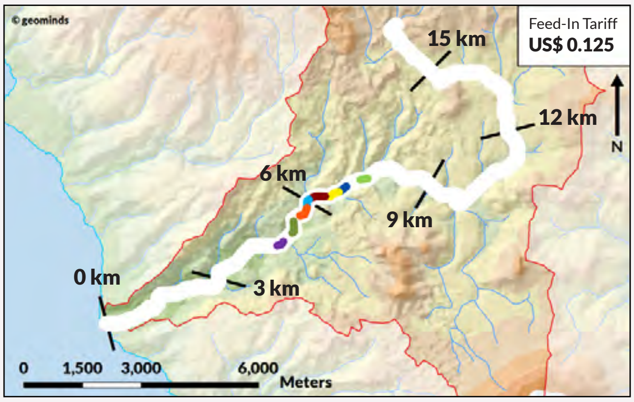
24.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

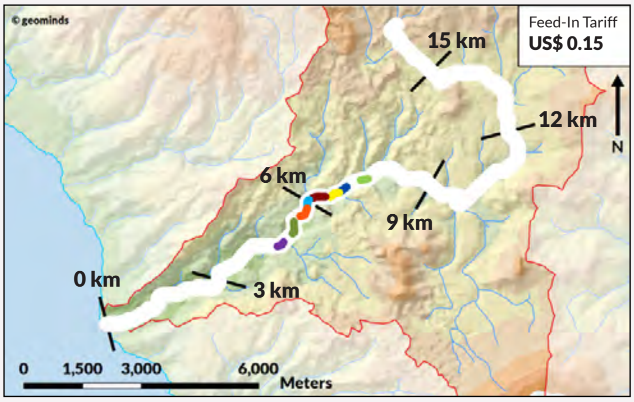
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	3.48%	592.48 kW	6.12 km	6.39 km	0.27 km	14 m	5.986 m^3/s
2	3.46%	529.64 kW	5.55 km	5.79 km	0.24 km	12 m	6.268 m^3/s
3	3.27%	377.28 kW	6.54 km	6.72 km	0.18 km	9 m	5.953 m^3/s
4	3.26%	322.10 kW	7.26 km	7.41 km	0.15 km	8 m	5.678 m^3/s
5	3.21%	527.27 kW	5.04 km	5.31 km	0.27 km	12 m	6.328 m^3/s
6	3.14%	306.32 kW	5.85 km	6.00 km	0.15 km	7 m	6.264 m^3/s
7	2.96%	285.71 kW	6.75 km	6.90 km	0.15 km	7 m	5.843 m^3/s
8	2.95%	282.89 kW	4.65 km	4.80 km	0.15 km	6 m	6.887 m^3/s

For more information and all setting parameters used for this calculation, see page 12.

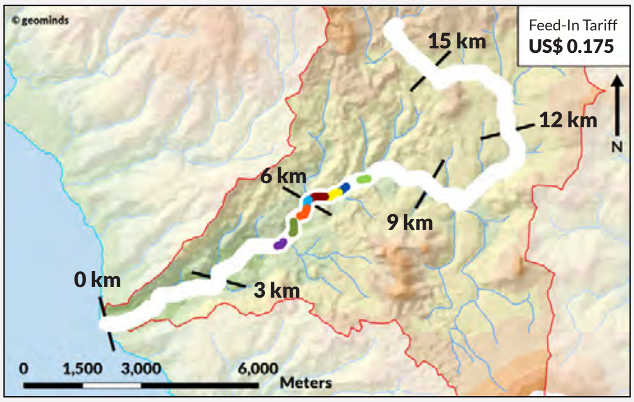
24.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



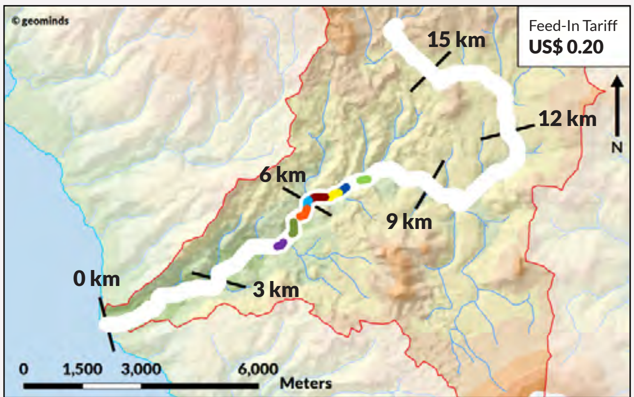
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.87%	592.48 kW	6.12 km	6.39 km
2	6.85%	529.64 kW	5.55 km	5.79 km
3	6.66%	377.28 kW	6.54 km	6.72 km
4	6.65%	322.10 kW	7.26 km	7.41 km
5	6.60%	527.27 kW	5.04 km	5.31 km
6	6.53%	306.32 kW	5.85 km	6.00 km
7	6.35%	285.71 kW	6.75 km	6.90 km
8	6.33%	282.89 kW	4.65 km	4.80 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	9.74%	592.48 kW	6.12 km	6.39 km
2	9.72%	529.64 kW	5.55 km	5.79 km
3	9.52%	377.28 kW	6.54 km	6.72 km
4	9.51%	322.10 kW	7.26 km	7.41 km
5	9.46%	527.27 kW	5.04 km	5.31 km
6	9.39%	306.32 kW	5.85 km	6.00 km
7	9.20%	285.71 kW	6.75 km	6.90 km
8	9.18%	282.89 kW	4.65 km	4.80 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	12.30%	592.48 kW	6.12 km	6.39 km
2	12.29%	529.64 kW	5.55 km	5.79 km
3	12.07%	377.28 kW	6.54 km	6.72 km
4	12.06%	322.10 kW	7.26 km	7.41 km
5	12.00%	527.27 kW	5.04 km	5.31 km
6	11.93%	306.32 kW	5.85 km	6.00 km
7	11.73%	285.71 kW	6.75 km	6.90 km
8	11.71%	282.89 kW	4.65 km	4.80 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	14.66%	592.48 kW	6.12 km	6.39 km
2	14.65%	529.64 kW	5.55 km	5.79 km
3	14.41%	377.28 kW	6.54 km	6.72 km
4	14.41%	322.10 kW	7.26 km	7.41 km
5	14.34%	527.27 kW	5.04 km	5.31 km
6	14.27%	306.32 kW	5.85 km	6.00 km
7	14.06%	285.71 kW	6.75 km	6.90 km
8	14.03%	282.89 kW	4.65 km	4.80 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

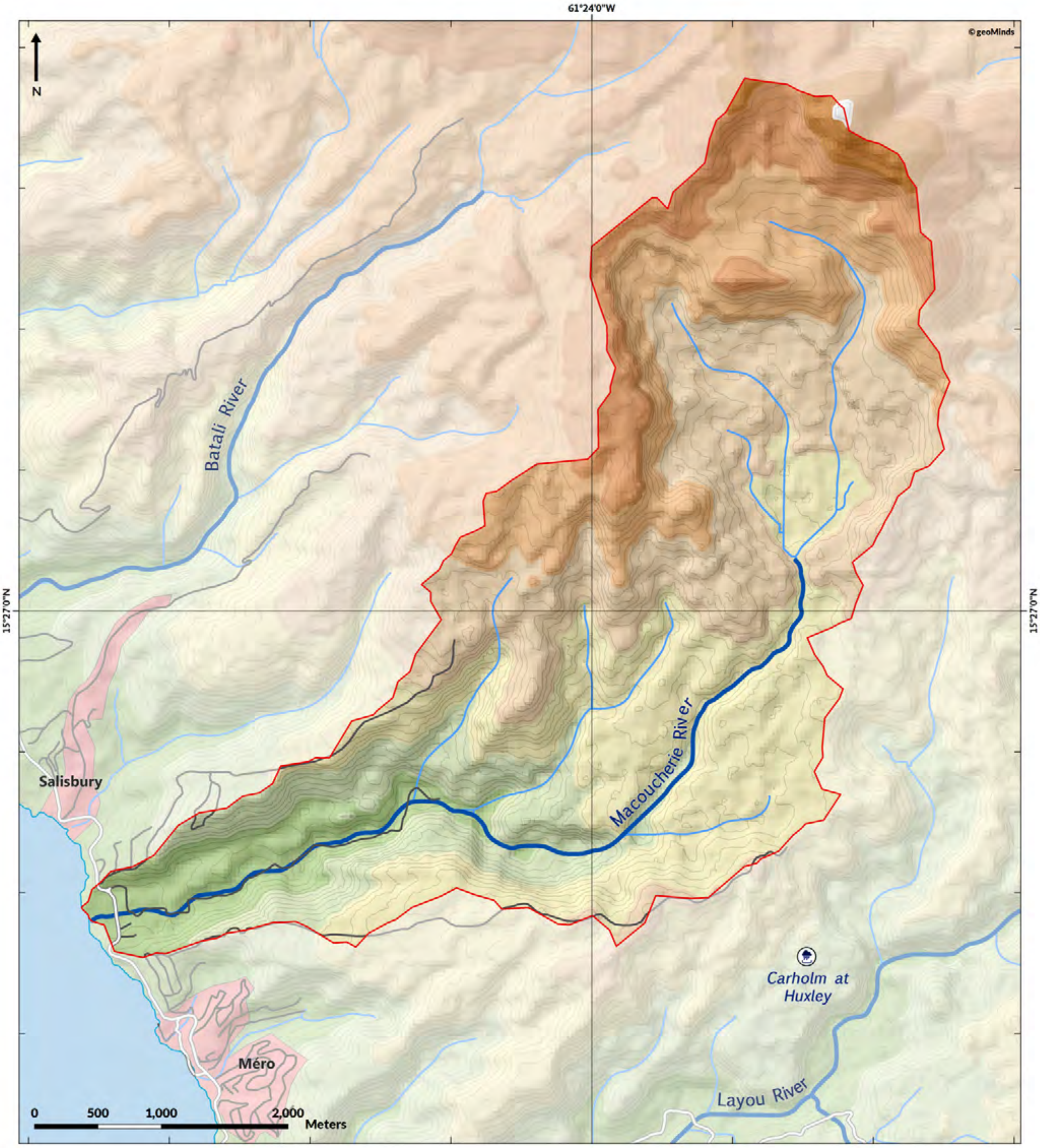
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

25. MACOUCHERIE RIVER

25.1 • OVERVIEW MAP



Elevation

	> 900
	750 - 900
	600 - 750
	450 - 600
	300 - 450
	150 - 300
	0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

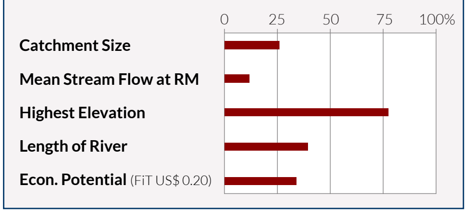
Facts about Catchment

Catchment Size:	19.77 km²
Length of Primary River:	6.43 km
Highest Elevation of Primary River:	442 m
Long-term Mean Stream Flow at River Mouth:	0.756 m³/s

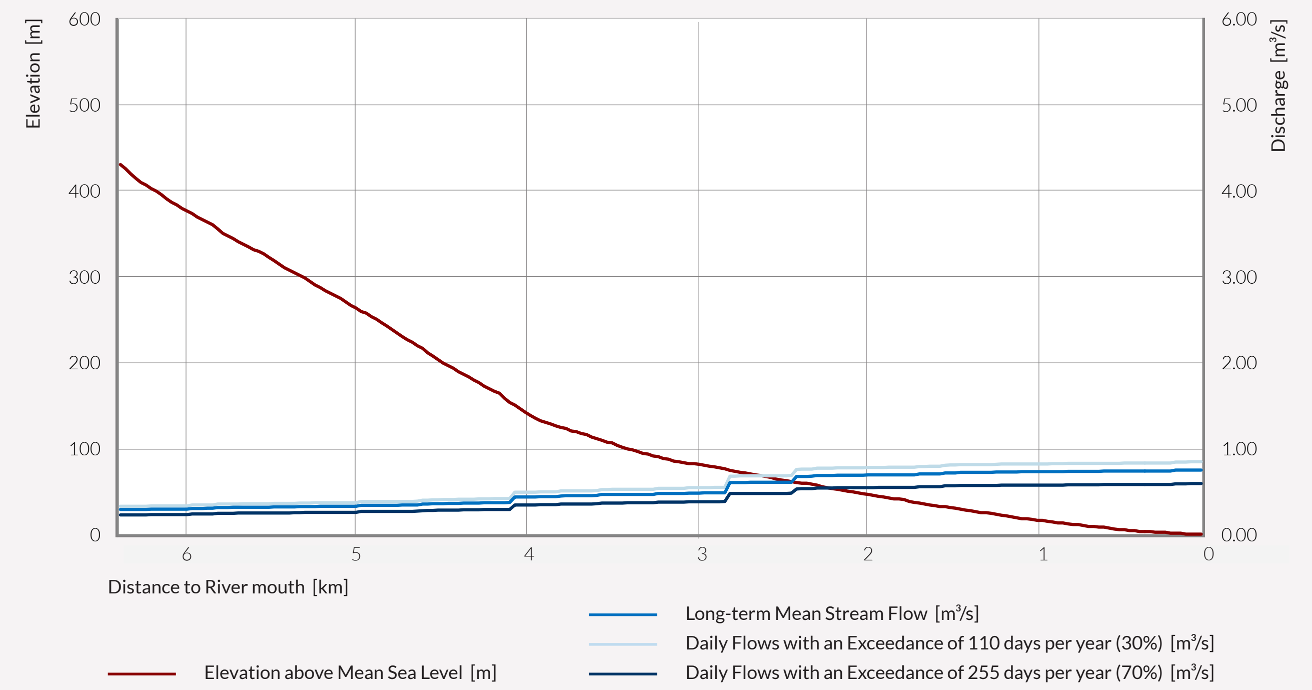
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Macoucherie River accumulates its waters from the central highlands around Mosquito Mountain. The size of the catchment is about 19.77 km² and the river has a length of 6.43 km. Flowing into the Caribbean Sea south of the town of Salisbury, the Macoucherie River leads about 0.756 m³/s as an annual mean discharge at its river mouth available for generating hydropower in an ecologically sustainable way. Having a maximum elevation drop of 442 m, six economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

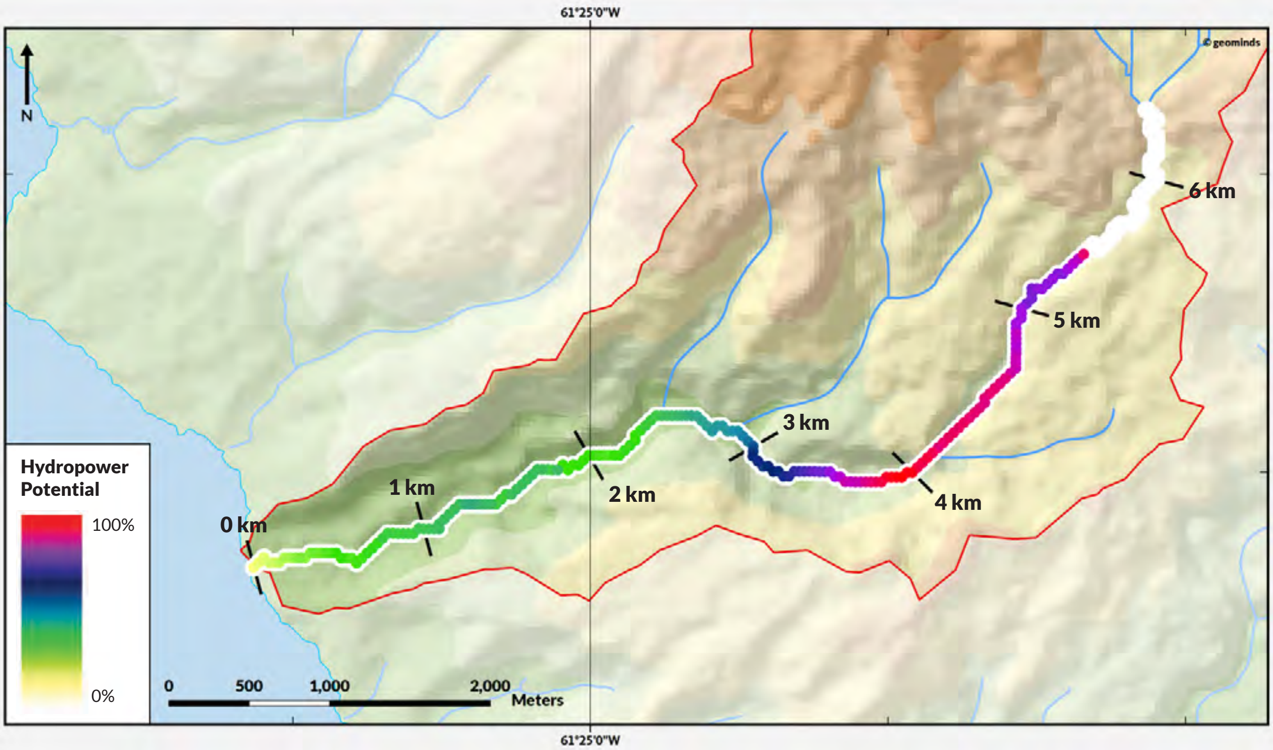
COUNTRY-WIDE RIVER RATING



25.2 • STREAM FLOW DISCHARGE ANALYSIS OF MACOUCHERIE RIVER

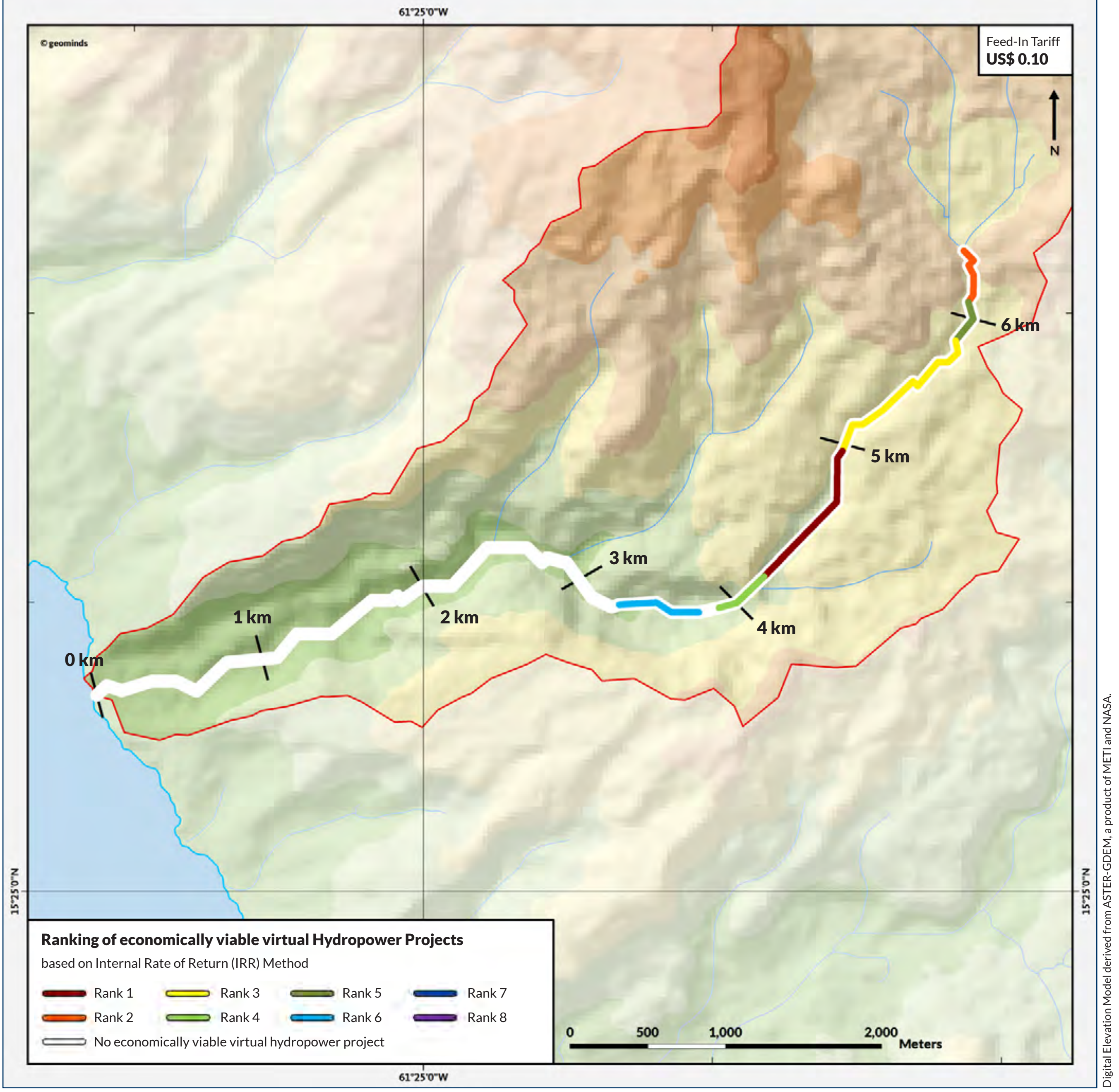


25.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

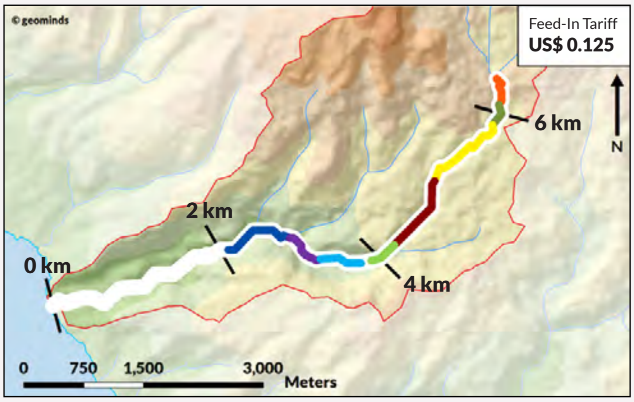
25.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL



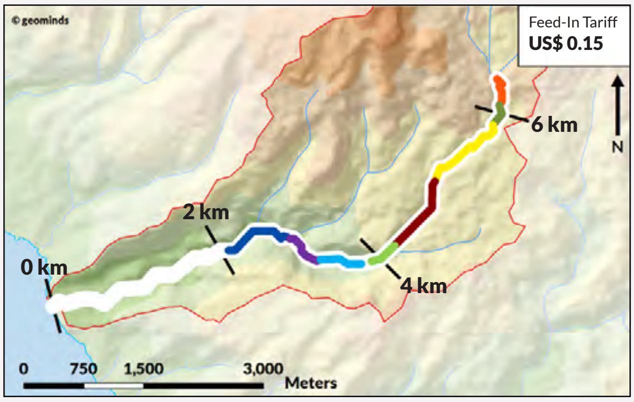
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.55%	265.37 kW	4.17 km	4.92 km	0.75 km	91 m	0.389 m^3/s
2	2.54%	128.73 kW	6.09 km	6.39 km	0.30 km	51 m	0.332 m^3/s
3	2.21%	271.82 kW	4.95 km	5.82 km	0.87 km	101 m	0.359 m^3/s
4	2.04%	101.98 kW	3.90 km	4.14 km	0.24 km	32 m	0.423 m^3/s
5	0.45%	57.91 kW	5.85 km	6.06 km	0.21 km	23 m	0.337 m^3/s
6	0.37%	107.19 kW	3.30 km	3.75 km	0.45 km	29 m	0.512 m^3/s
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

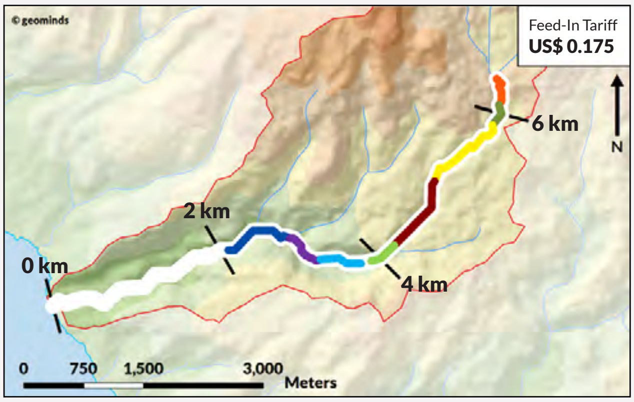
25.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



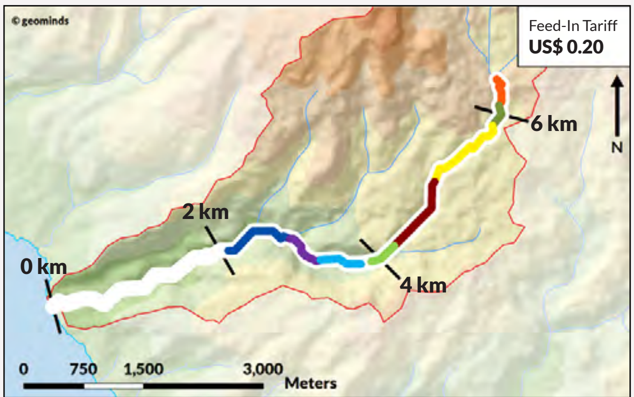
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	5.94%	265.37 kW	4.17 km	4.92 km
2	5.92%	128.73 kW	6.09 km	6.39 km
3	5.59%	271.82 kW	4.95 km	5.82 km
4	5.42%	101.98 kW	3.90 km	4.14 km
5	3.88%	57.91 kW	5.85 km	6.06 km
6	3.80%	107.19 kW	3.30 km	3.75 km
7	2.04%	135.16 kW	1.56 km	2.31 km
8	1.44%	79.05 kW	2.37 km	2.82 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.77%	265.37 kW	4.17 km	4.92 km
2	8.75%	128.73 kW	6.09 km	6.39 km
3	8.41%	271.82 kW	4.95 km	5.82 km
4	8.23%	101.98 kW	3.90 km	4.14 km
5	6.65%	57.91 kW	5.85 km	6.06 km
6	6.57%	107.19 kW	3.30 km	3.75 km
7	4.80%	135.16 kW	1.56 km	2.31 km
8	4.22%	79.05 kW	2.37 km	2.82 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.27%	265.37 kW	4.17 km	4.92 km
2	11.26%	128.73 kW	6.09 km	6.39 km
3	10.90%	271.82 kW	4.95 km	5.82 km
4	10.71%	101.98 kW	3.90 km	4.14 km
5	9.06%	57.91 kW	5.85 km	6.06 km
6	8.98%	107.19 kW	3.30 km	3.75 km
7	7.16%	135.16 kW	1.56 km	2.31 km
8	6.56%	79.05 kW	2.37 km	2.82 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.57%	265.37 kW	4.17 km	4.92 km
2	13.56%	128.73 kW	6.09 km	6.39 km
3	13.17%	271.82 kW	4.95 km	5.82 km
4	12.98%	101.98 kW	3.90 km	4.14 km
5	11.23%	57.91 kW	5.85 km	6.06 km
6	11.15%	107.19 kW	3.30 km	3.75 km
7	9.25%	135.16 kW	1.56 km	2.31 km
8	8.64%	79.05 kW	2.37 km	2.82 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7

Rank 2 · Rank 4 · Rank 6 · Rank 8

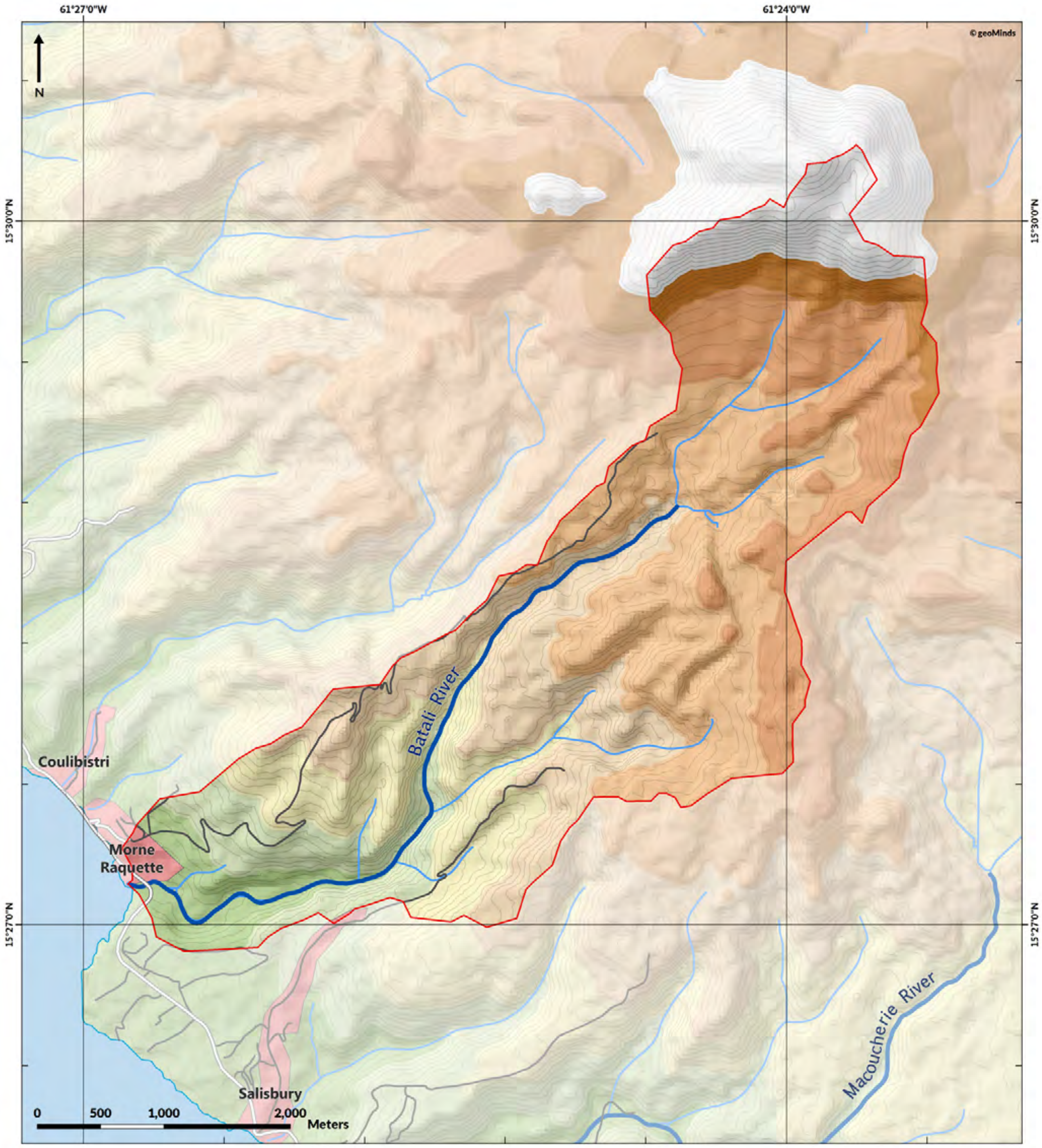
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

26. BATALI RIVER

26.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 14.83 km²

Length of Primary River: . . . . 5.52 km

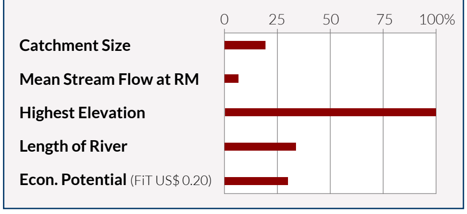
Highest Elevation of Primary River: . . . . 570 m

Long-term Mean Stream Flow at River Mouth: . . . . 0.420 m³/s

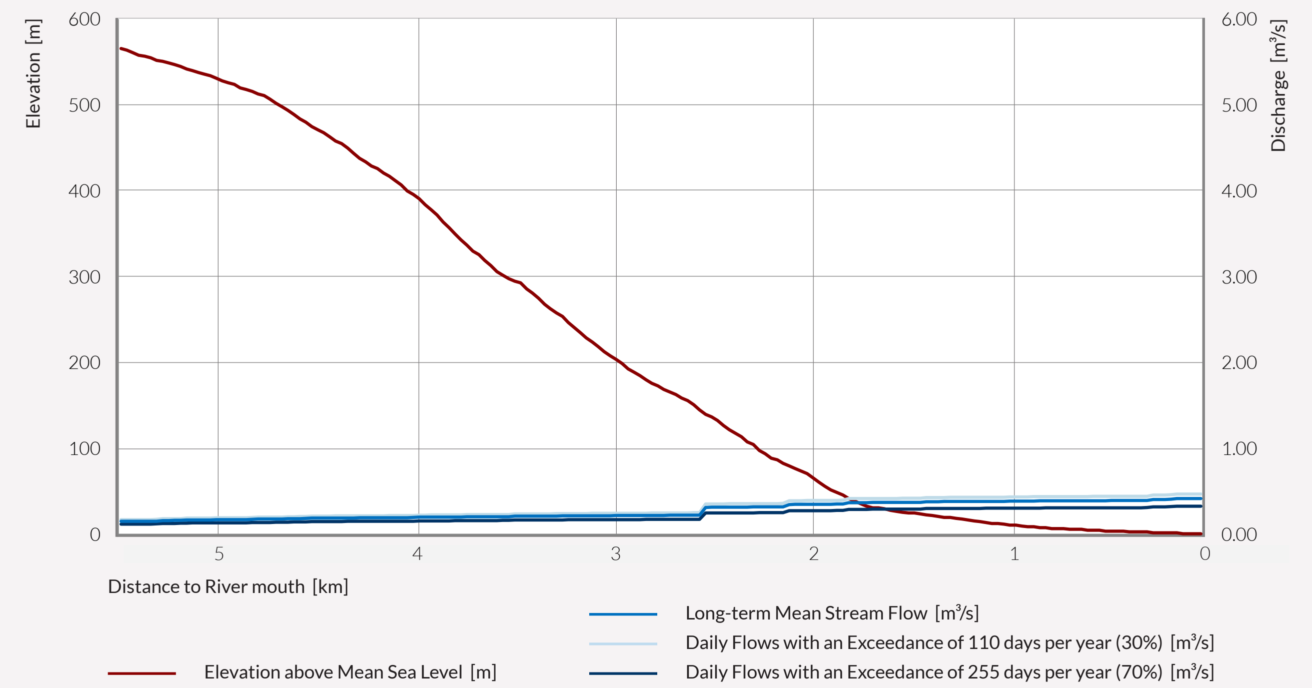
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Batali River has one of the steepest gradients of all analyzed rivers. It has a total length of 5.52 km and an elevation drop of 570 m. The catchment's size is about 14.83 km² accumulating waters from Mosquito Mountain and Morne Apion. The river flows into the Caribbean Sea south of Morne Raquette with an annual mean discharge available for generating hydropower in an ecologically sustainable way of about 0.420 m³/s. Only five economically viable virtual hydropower projects were located when applying a feed-in tariff of US$ 0.10.

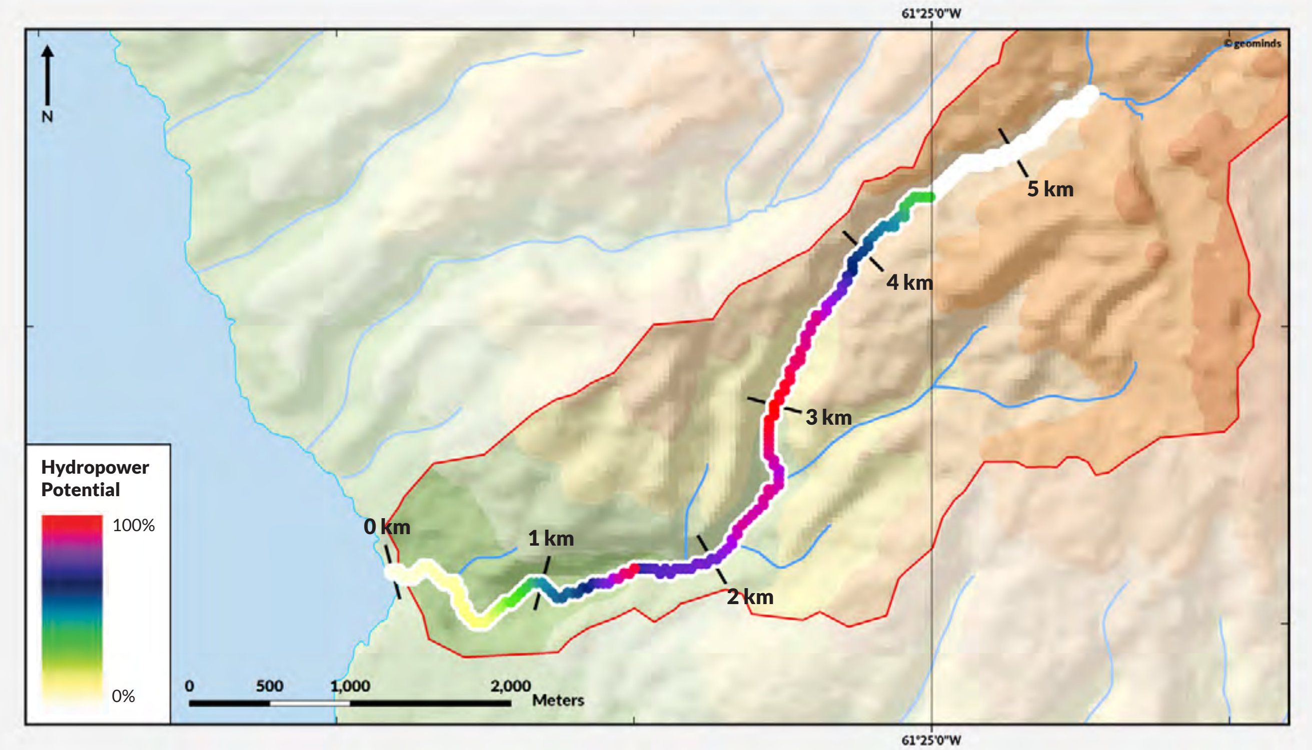
COUNTRY-WIDE RIVER RATING



26.2 • STREAM FLOW DISCHARGE ANALYSIS OF BATALI RIVER

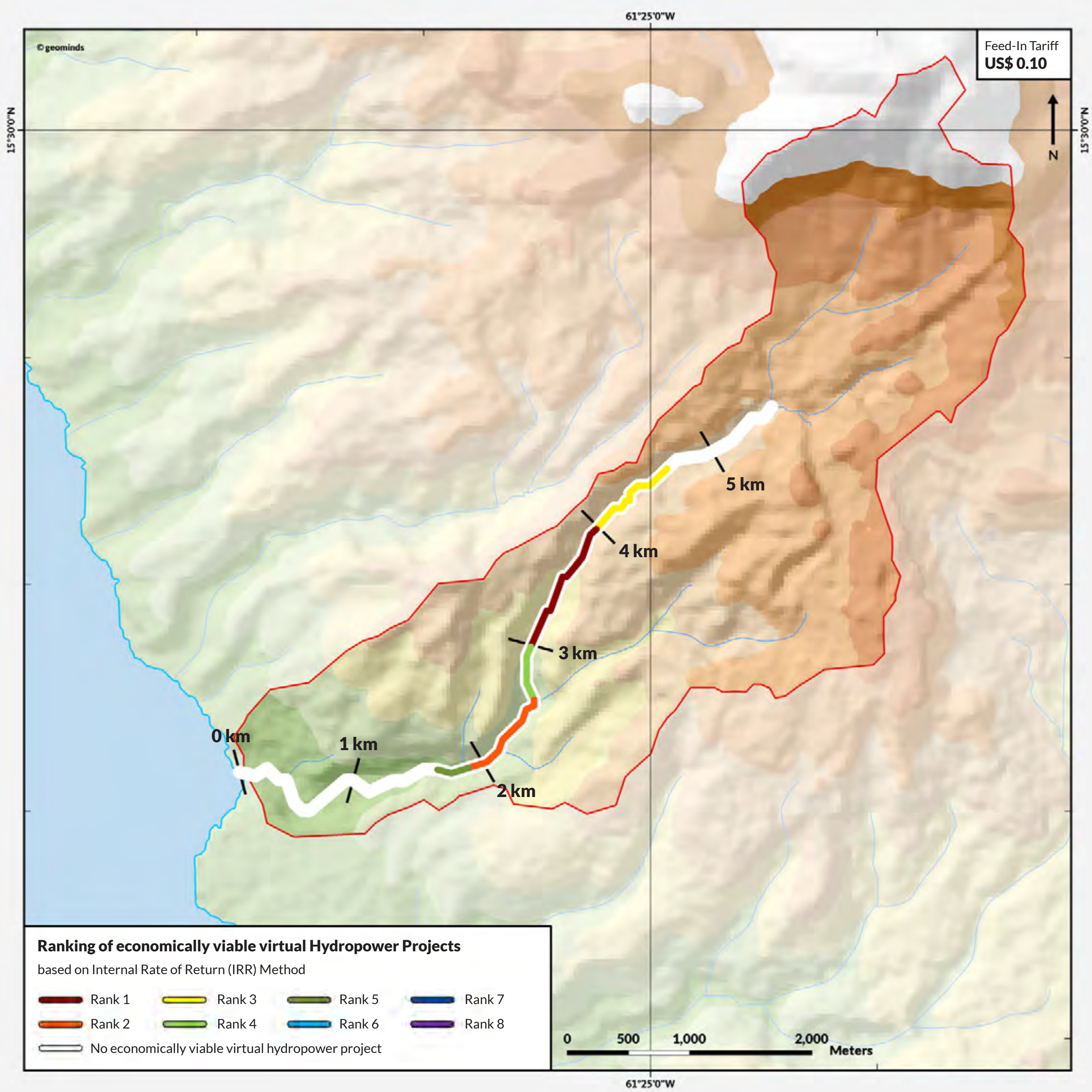


26.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

26.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

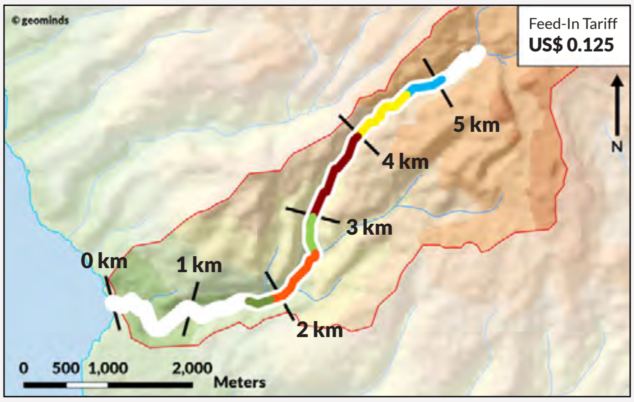


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

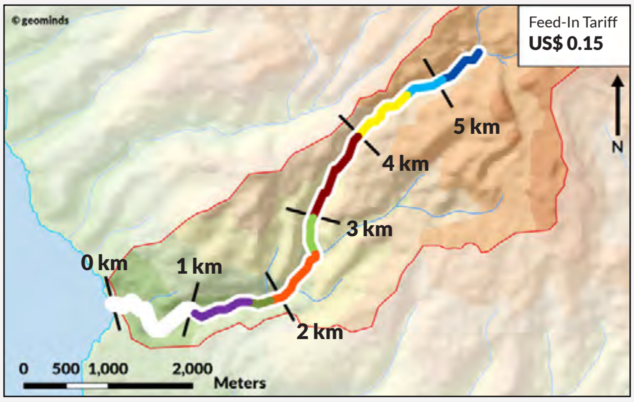
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	2.75%	316.80 kW	3.00 km	3.96 km	0.96 km	183 m	0.227 m³/s
2	2.68%	239.23 kW	1.92 km	2.55 km	0.63 km	89 m	0.356 m³/s
3	1.57%	154.66 kW	3.99 km	4.62 km	0.63 km	98 m	0.208 m³/s
4	1.27%	99.08 kW	2.58 km	2.97 km	0.39 km	53 m	0.248 m³/s
5	0.78%	62.21 kW	1.68 km	1.89 km	0.21 km	21 m	0.399 m³/s
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

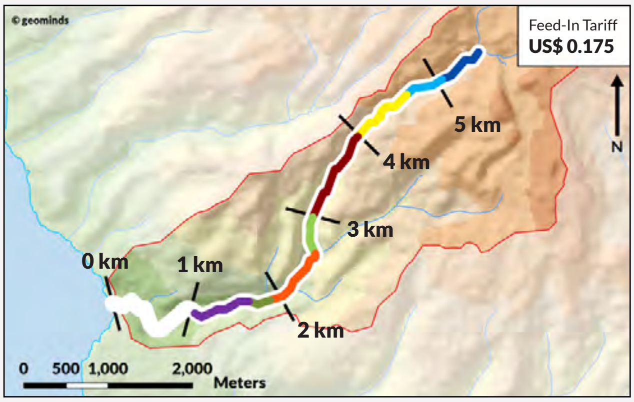
26.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



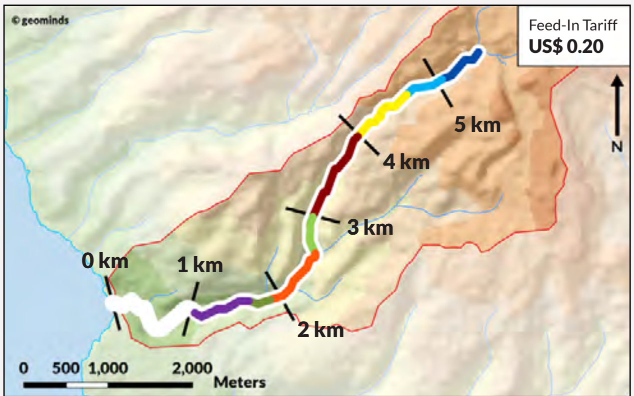
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.13%	316.80 kW	3.00 km	3.96 km
2	6.06%	239.23 kW	1.92 km	2.55 km
3	4.96%	154.66 kW	3.99 km	4.62 km
4	4.67%	99.08 kW	2.58 km	2.97 km
5	4.19%	62.21 kW	1.68 km	1.89 km
6	1.82%	52.09 kW	4.65 km	5.01 km
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.97%	316.80 kW	3.00 km	3.96 km
2	8.89%	239.23 kW	1.92 km	2.55 km
3	7.76%	154.66 kW	3.99 km	4.62 km
4	7.45%	99.08 kW	2.58 km	2.97 km
5	6.97%	62.21 kW	1.68 km	1.89 km
6	4.59%	52.09 kW	4.65 km	5.01 km
7	2.39%	43.33 kW	5.04 km	5.49 km
8	0.52%	49.83 kW	1.08 km	1.65 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.49%	316.80 kW	3.00 km	3.96 km
2	11.41%	239.23 kW	1.92 km	2.55 km
3	10.22%	154.66 kW	3.99 km	4.62 km
4	9.90%	99.08 kW	2.58 km	2.97 km
5	9.39%	62.21 kW	1.68 km	1.89 km
6	6.94%	52.09 kW	4.65 km	5.01 km
7	4.72%	43.33 kW	5.04 km	5.49 km
8	2.90%	49.83 kW	1.08 km	1.65 km



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	13.80%	316.80 kW	3.00 km	3.96 km
2	13.72%	239.23 kW	1.92 km	2.55 km
3	12.45%	154.66 kW	3.99 km	4.62 km
4	12.12%	99.08 kW	2.58 km	2.97 km
5	11.59%	62.21 kW	1.68 km	1.89 km
6	9.03%	52.09 kW	4.65 km	5.01 km
7	6.68%	43.33 kW	5.04 km	5.49 km
8	4.92%	49.83 kW	1.08 km	1.65 km

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 | Rank 3 | Rank 5 | Rank 7

Rank 2 | Rank 4 | Rank 6 | Rank 8

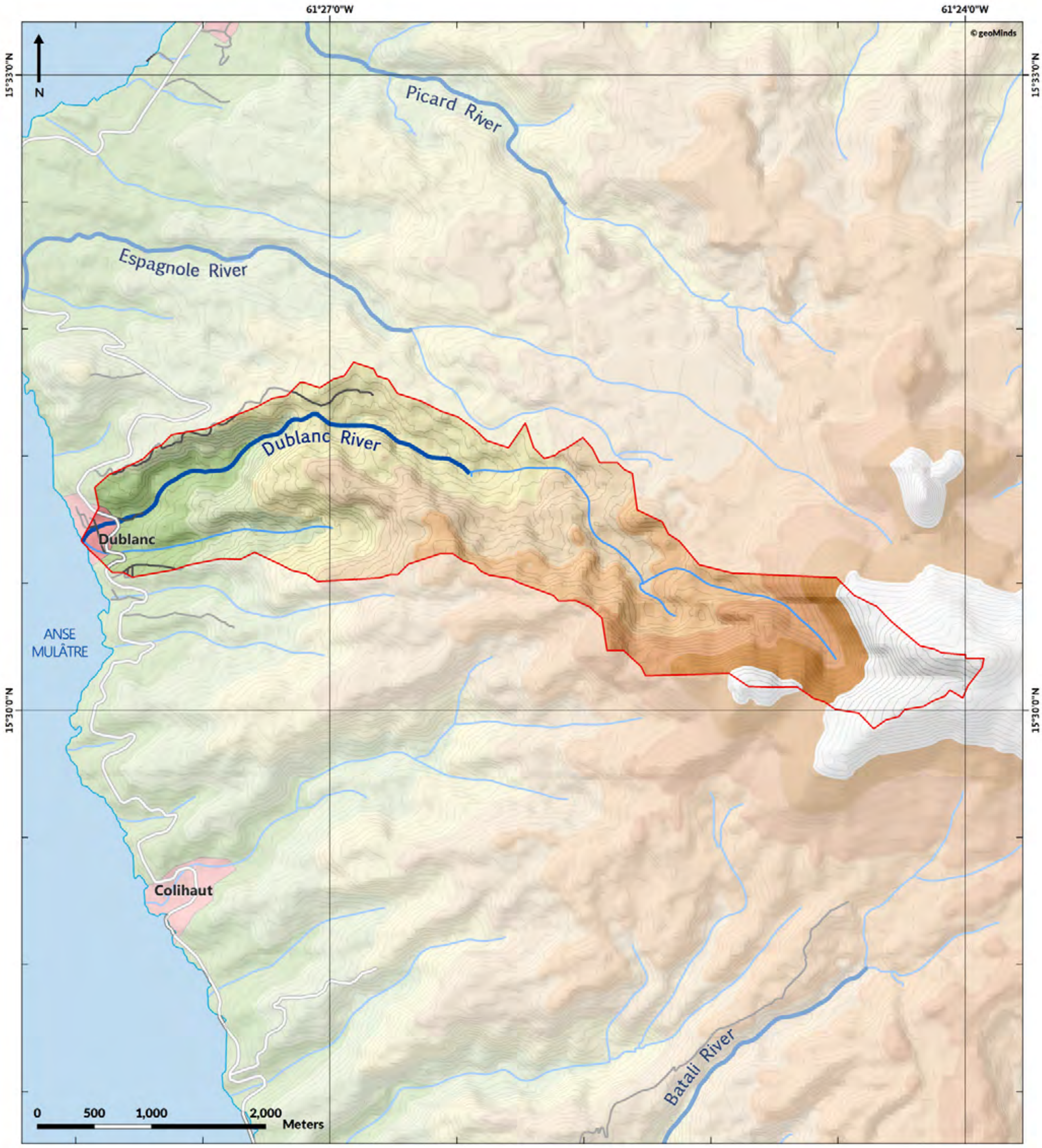
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

27. DUBLANC RIVER

27.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

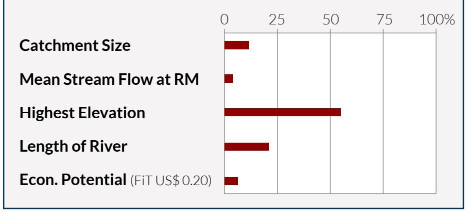
Facts about Catchment

Catchment Size:	8.76 km²
Length of Primary River:	3.44 km
Highest Elevation of Primary River:	314 m
Long-term Mean Stream Flow at River Mouth:	0.140 m³/s

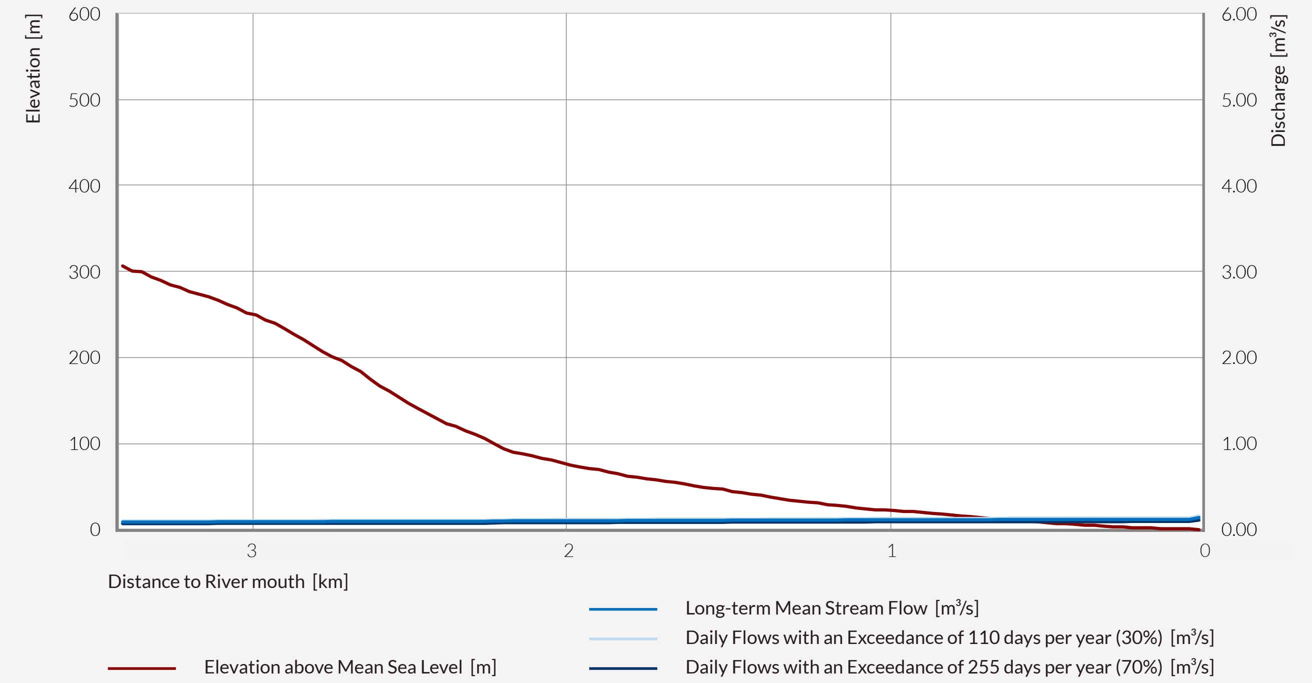
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Dublanc catchment accumulates its waters from the mountainious region west of Morne Diablotins. The river flows 3.44 km into Anse Mulâtre at the westerly coast of Dominica leading just about 0.140 m³/s as an annual mean discharge at the river mouth. Having a maximum elevation drop of 314 m, only one economically viable virtual hydropower project was located applying a feed-in tariff of US$ 0.10.

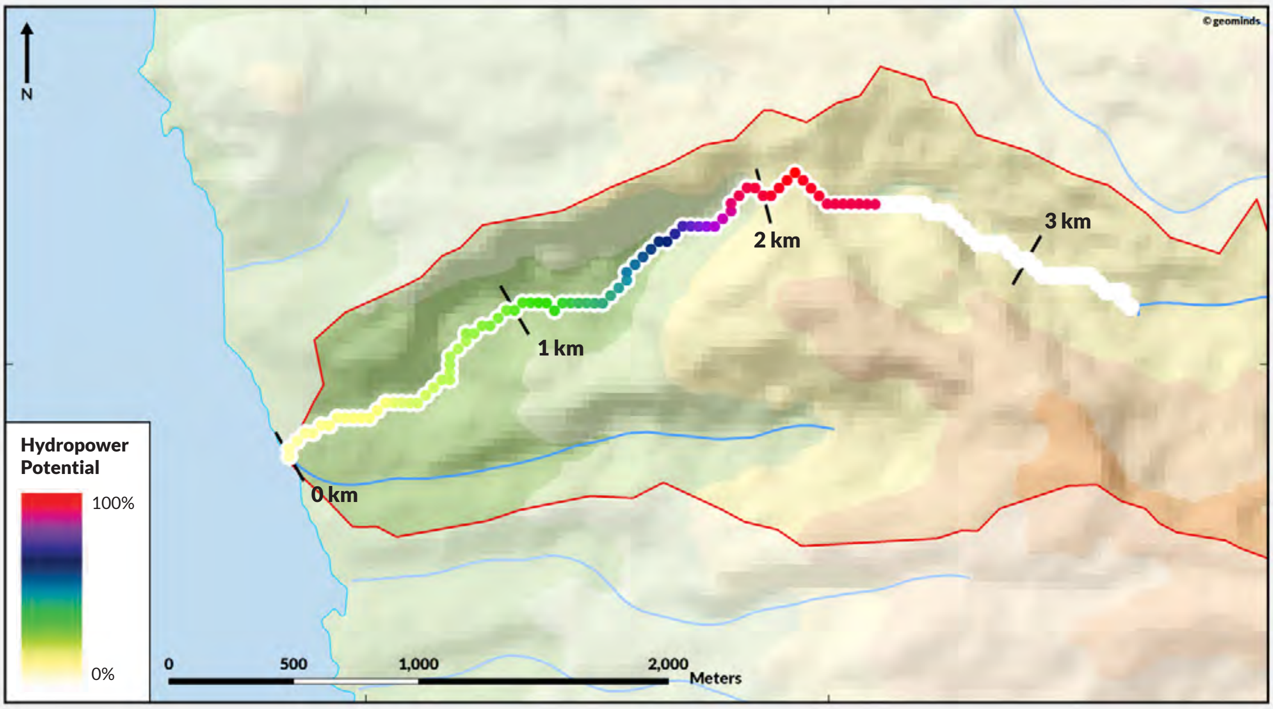
COUNTRY-WIDE RIVER RATING



27.2 • STREAM FLOW DISCHARGE ANALYSIS OF DUBLANC RIVER

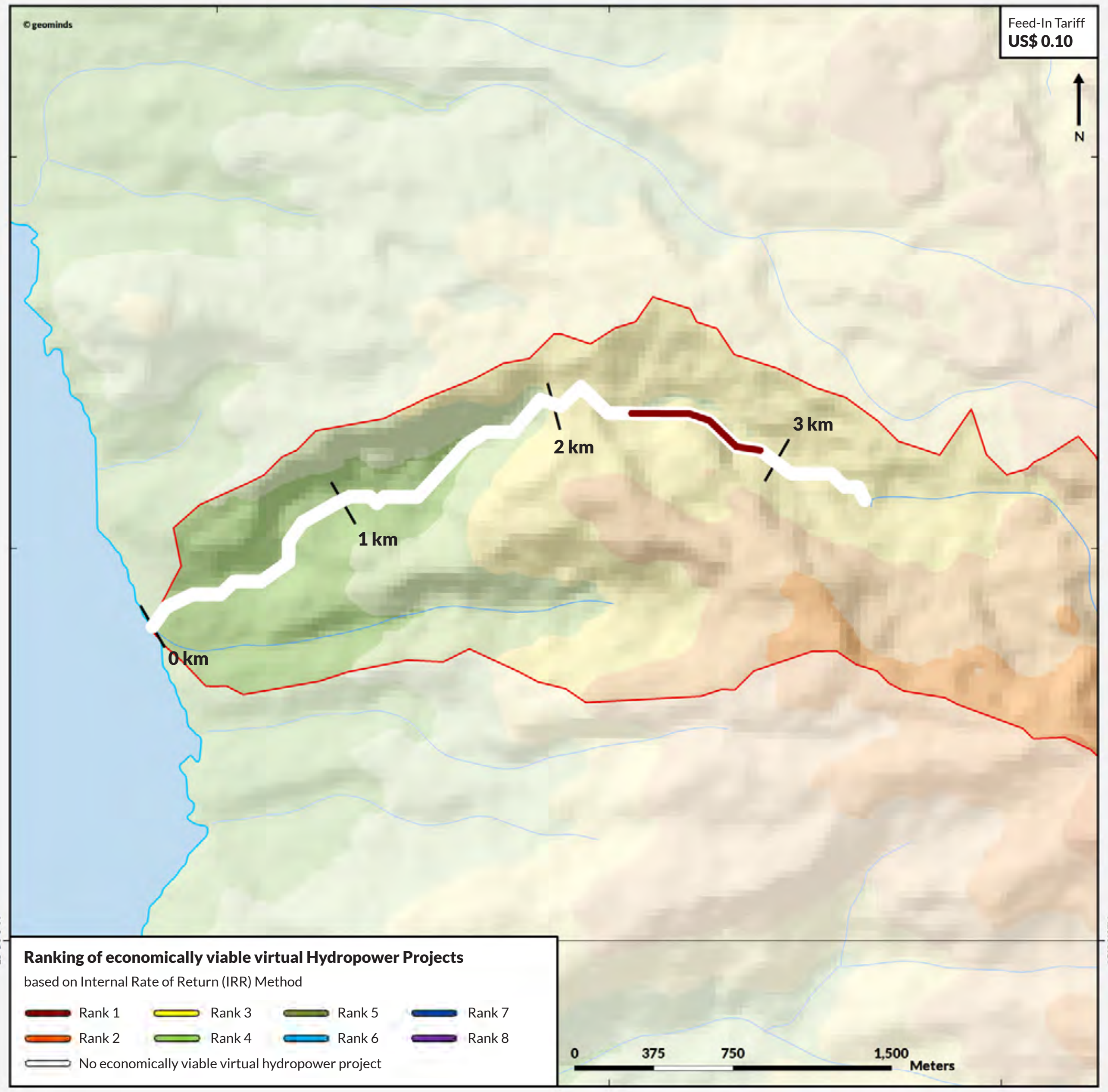


27.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

27.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

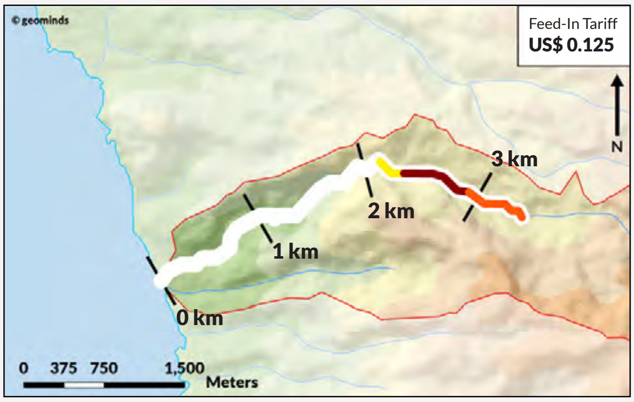


Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

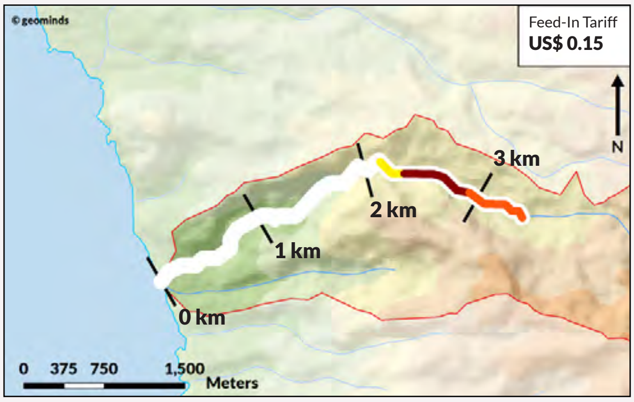
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	0.31%	92.72 kW	2.37 km	2.91 km	0.54 km	117 m	0.104 m³/s
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

For more information and all setting parameters used for this calculation, see page 12.

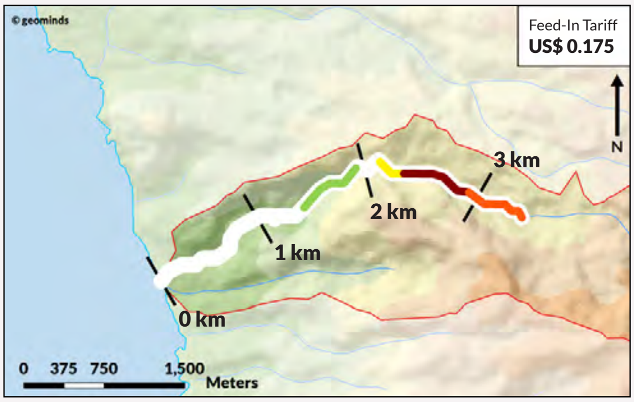
27.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



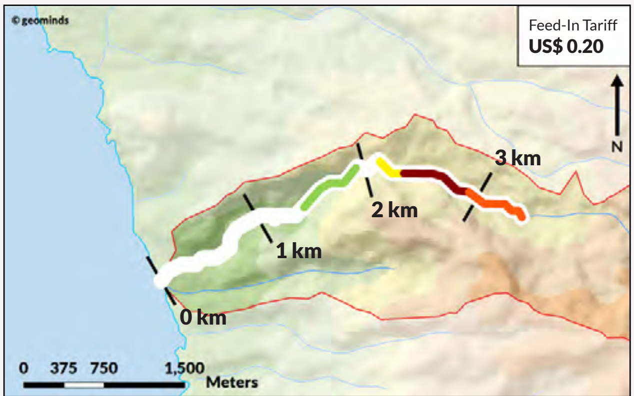
Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	3.75%	92.72 kW	2.37 km	2.91 km
2	1.02%	51.61 kW	2.94 km	3.42 km
3	0.15%	24.14 kW	2.16 km	2.34 km
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.52%	92.72 kW	2.37 km	2.91 km
2	3.81%	51.61 kW	2.94 km	3.42 km
3	2.98%	24.14 kW	2.16 km	2.34 km
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.92%	92.72 kW	2.37 km	2.91 km
2	6.14%	51.61 kW	2.94 km	3.42 km
3	5.31%	24.14 kW	2.16 km	2.34 km
4	1.84%	45.00 kW	1.29 km	2.13 km
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	11.09%	92.72 kW	2.37 km	2.91 km
2	8.21%	51.61 kW	2.94 km	3.42 km
3	7.36%	24.14 kW	2.16 km	2.34 km
4	3.87%	45.00 kW	1.29 km	2.13 km
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 · Rank 3 · Rank 5 · Rank 7
Rank 2 · Rank 4 · Rank 6 · Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

28. ESPAGNOLE RIVER

1.1 • OVERVIEW MAP

Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 10.30 km²

Length of Primary River: . . . . 3.95 km

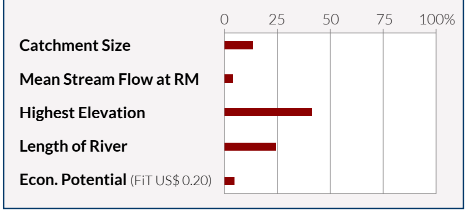
Highest Elevation of Primary River: . . . . 236 m

Long-term Mean Stream Flow at River Mouth: . . . . 0.133 m³/s

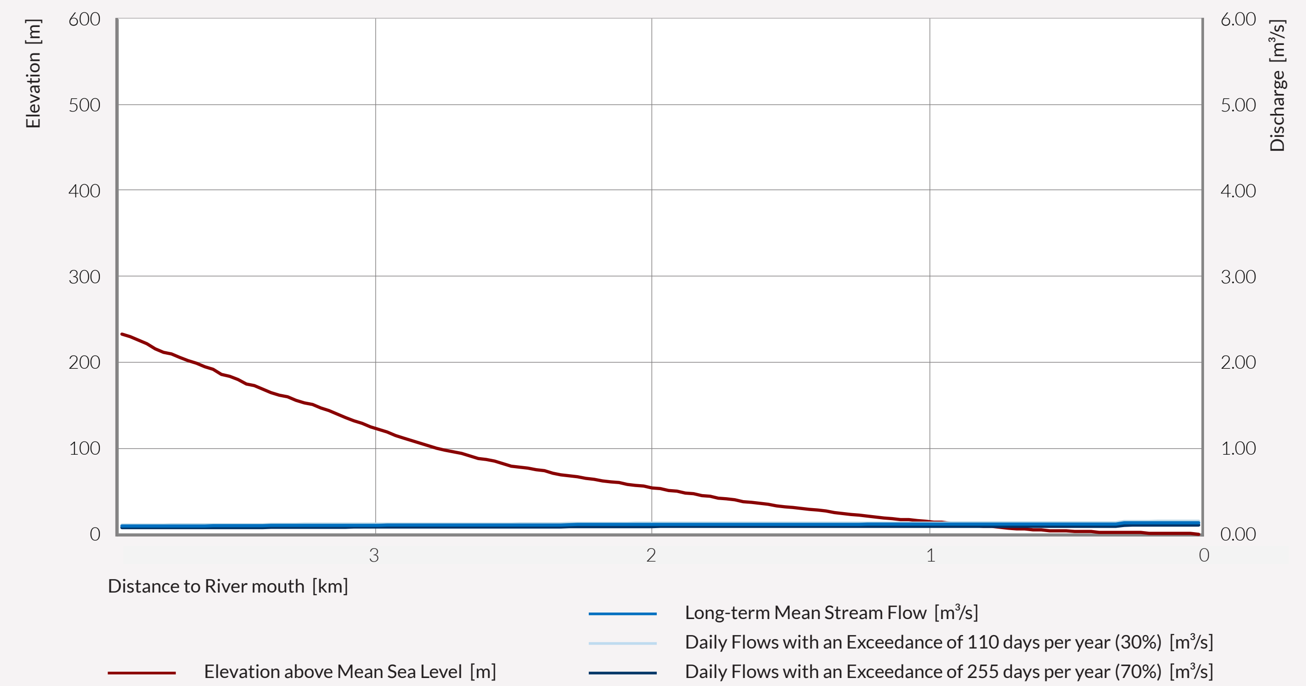
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Espagnole River accumulates its waters north of the Dublanc catchment on the north westerly coast of Dominica with a total catchment size of 10.30 km². The river itself has a length of 3.95 km and an elevation drop of 236 m, flowing into the Caribbean Sea south of Pointe Ronde. The rather small amount of mean annual discharge available for generating hydroelectric power in an ecologically sustainable way (0.133 m³/s at the river mouth), only leads to economically viable virtual hydropower projects when applying feed-in tariffs of at least US$ 0.125.

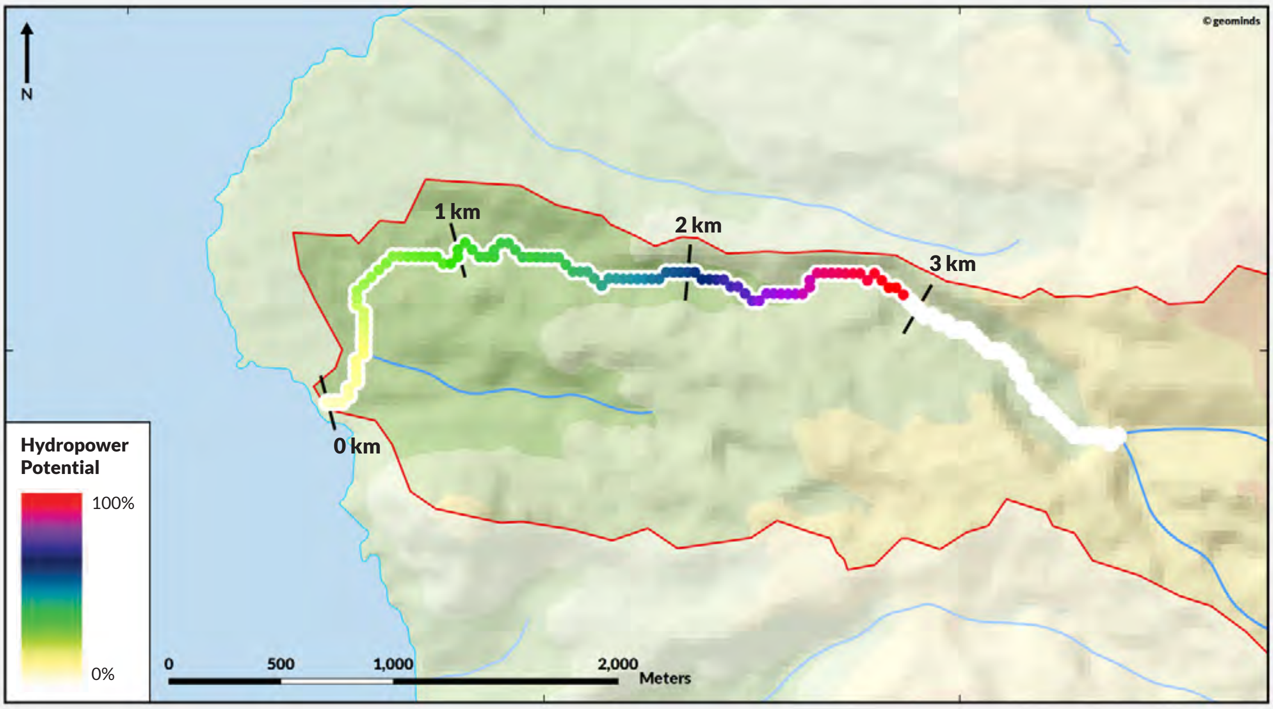
COUNTRY-WIDE RIVER RATING



28.2 • STREAM FLOW DISCHARGE ANALYSIS OF ESPAGNOLE RIVER



28.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

28.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

No economically viable virtual hydropower project was located!

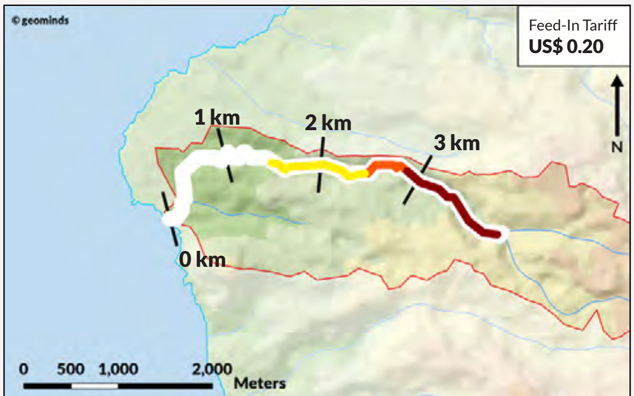
For more information and all setting parameters used for this calculation, see page 12.

28.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	1.13%	92.06 kW	2.91 km	3.87 km
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	3.92%	92.06 kW	2.91 km	3.87 km
2	0.65%	28.73 kW	2.49 km	2.88 km
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.25%	92.06 kW	2.91 km	3.87 km
2	3.03%	28.73 kW	2.49 km	2.88 km
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.32%	92.06 kW	2.91 km	3.87 km
2	5.05%	28.73 kW	2.49 km	2.88 km
3	1.58%	36.92 kW	1.53 km	2.43 km
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

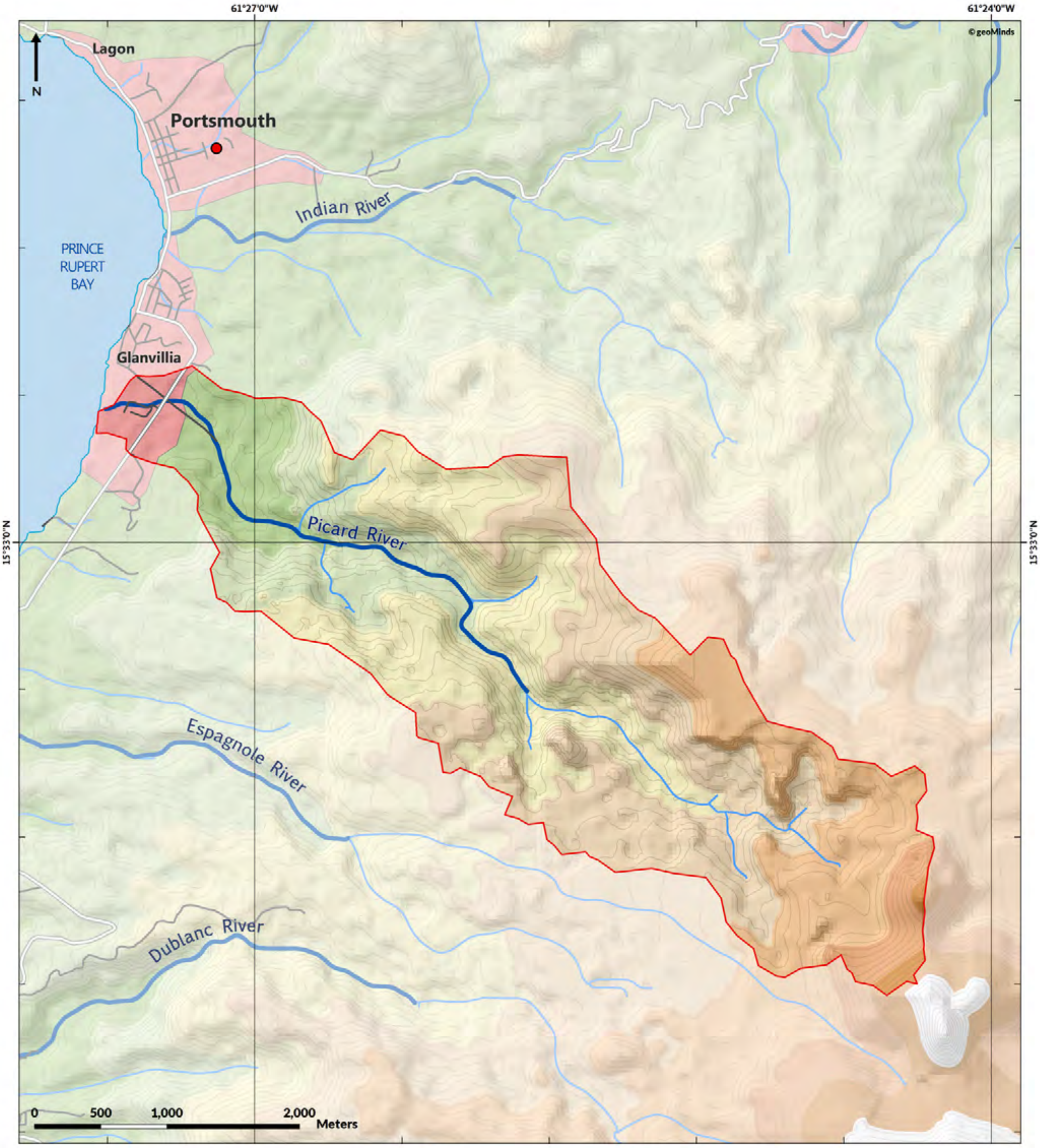
Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

29. PICARD RIVER

1.1 • OVERVIEW MAP



Elevation

- > 900
- 750 - 900
- 600 - 750
- 450 - 600
- 300 - 450
- 150 - 300
- 0 - 150 m

Urban Area and Roads

- Major Village
- Settlements
- Major Roads
- Minor Roads and Tracks

Water Resources

- Primary Streams
- Secondary Streams
- Catchment Boundary
- Rainfall Gauging Station

Facts about Catchment

Catchment Size: . . . . 10.69 km²

Length of Primary River: . . . . 4.05 km

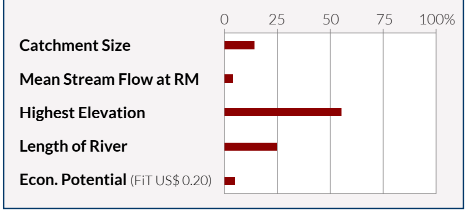
Highest Elevation of Primary River: . . . . 316 m

Long-term Mean Stream Flow at River Mouth: . . . . 0.117 m³/s

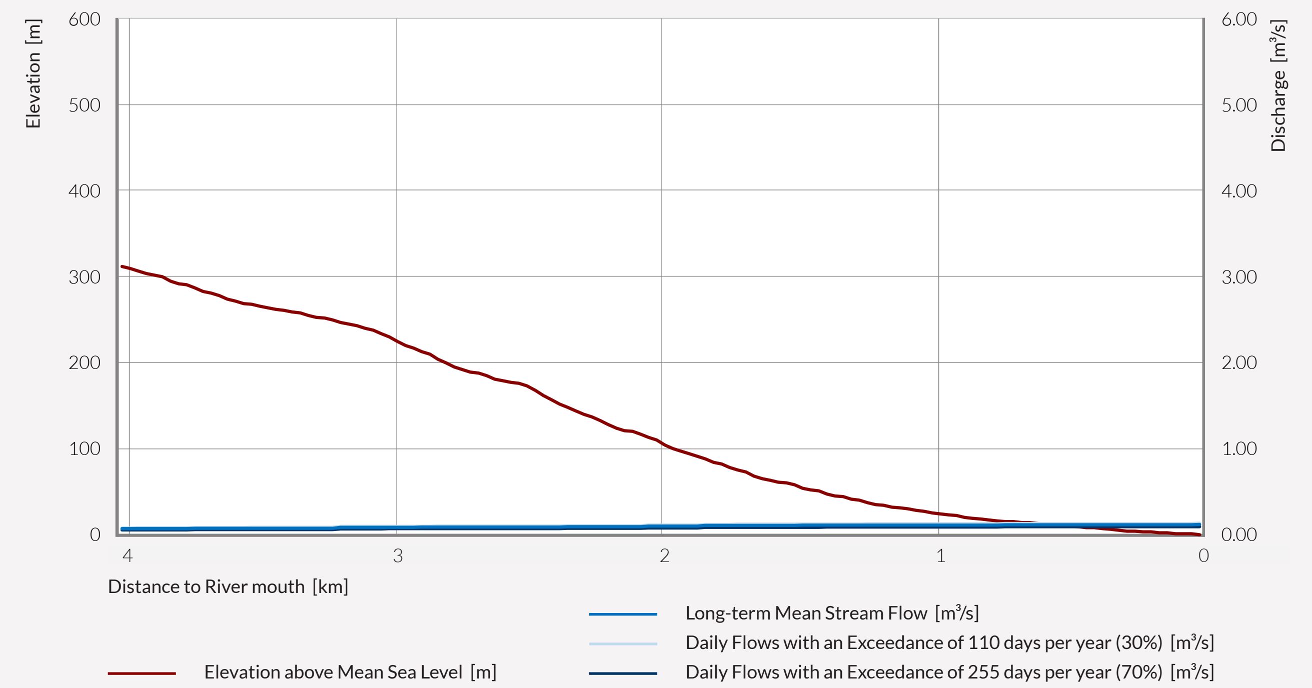
Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

The Picard River accumulates its waters south of Morne Turner Ridge from a catchment area of about 10.69 km². The river has a length of 4.05 km and an elevation drop of 316 m. Flowing into the Caribbean Sea at the town of Glanivillia, south of Portsmouth, the Picard River leads a mean annual discharge available for generating hydroelectric power in an ecologically sustainable way of 0.117 m³/s at the river mouth. Economically viable virtual hydropower projects were located only when applying feed-in tariffs of at least US$ 0.125.

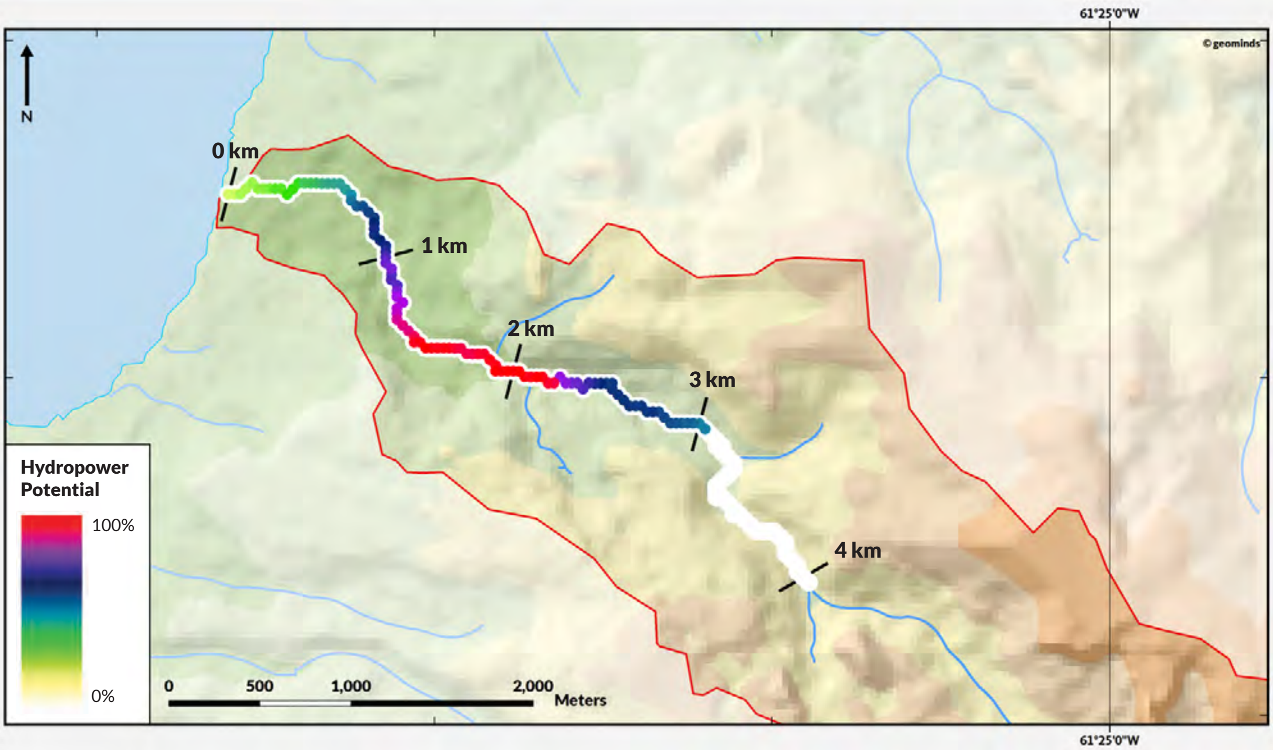
COUNTRY-WIDE RIVER RATING



29.2 • STREAM FLOW DISCHARGE ANALYSIS OF PICARD RIVER

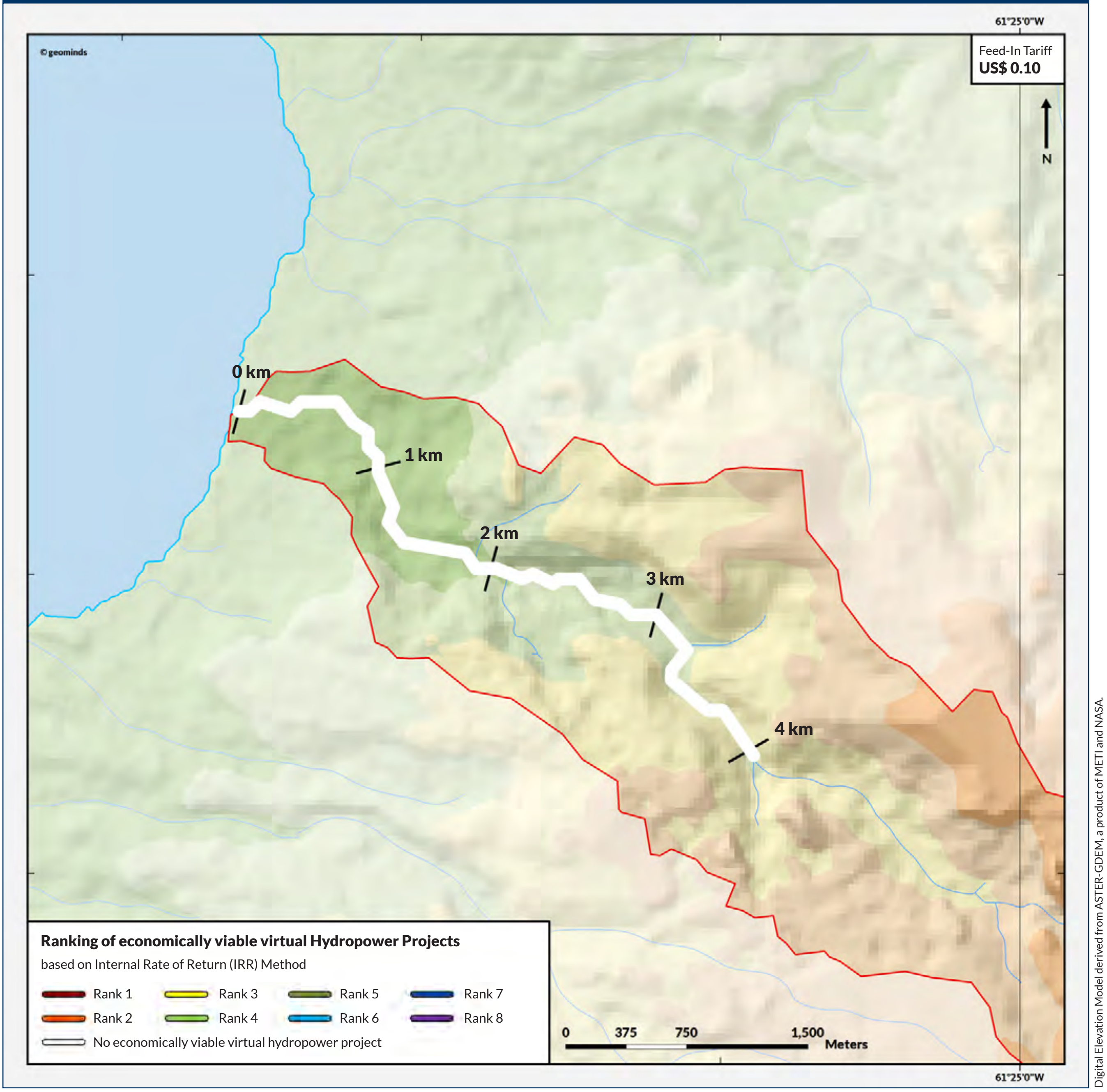


29.3 • OVERVIEW OF NORMALIZED TECHNICAL HYDROPOWER POTENTIAL



Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

29.4 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL

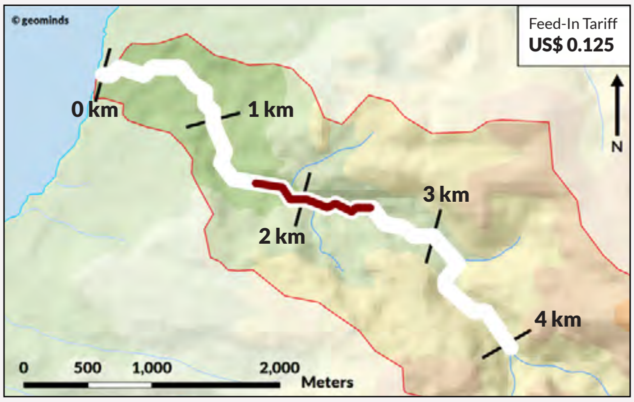


Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake	Length of Penstock	Gross Head	Daily Flows, exceeded on 110 days per year
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-

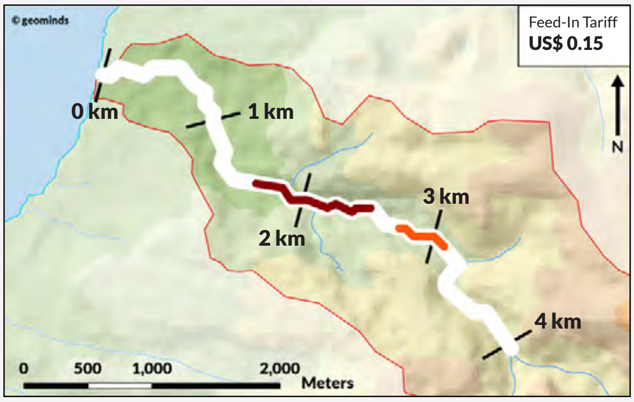
No economically viable virtual hydropower project was located!

For more information and all setting parameters used for this calculation, see page 12.

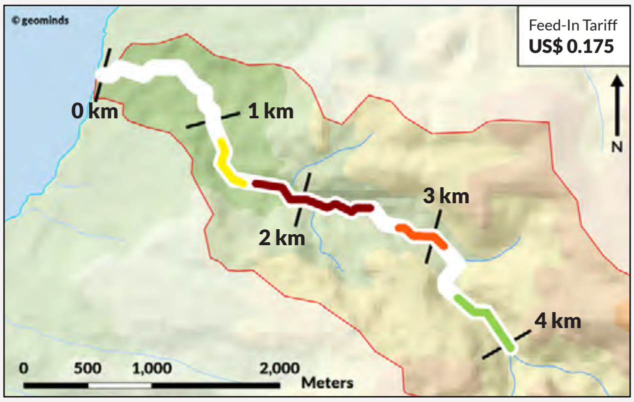
29.5 • ANALYSIS OF ECONOMICALLY VIABLE HYDROPOWER POTENTIAL WITH RISING FEED-IN TARIFF



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	0.91%	79.08 kW	1.65 km	2.49 km
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	3.70%	79.08 kW	1.65 km	2.49 km
2	2.65%	30.93 kW	2.76 km	3.06 km
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-



Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	6.04%	79.08 kW	1.65 km	2.49 km
2	4.98%	30.93 kW	2.76 km	3.06 km
3	1.82%	22.20 kW	1.20 km	1.53 km
4	1.23%	26.92 kW	3.54 km	4.02 km
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Rank	IRR	Hydropower Potential	Location of Powerhouse	Location of Intake
1	8.10%	79.08 kW	1.65 km	2.49 km
2	6.97%	35.18 kW	2.70 km	3.06 km
3	3.85%	22.20 kW	1.20 km	1.53 km
4	3.28%	26.92 kW	3.54 km	4.02 km
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

Ranking of economically viable virtual Hydropower Projects

based on Internal Rate of Return (IRR) Method

Rank 1 Rank 3 Rank 5 Rank 7
Rank 2 Rank 4 Rank 6 Rank 8
No economically viable virtual hydropower project

For more information and all setting parameters used for this calculation, see page 12.

Digital Elevation Model derived from ASTER-GDEM, a product of METI and NASA.

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APPENDIX

Table of Contents

A 01 - Comprehensive Overview of all Calculation Parameters

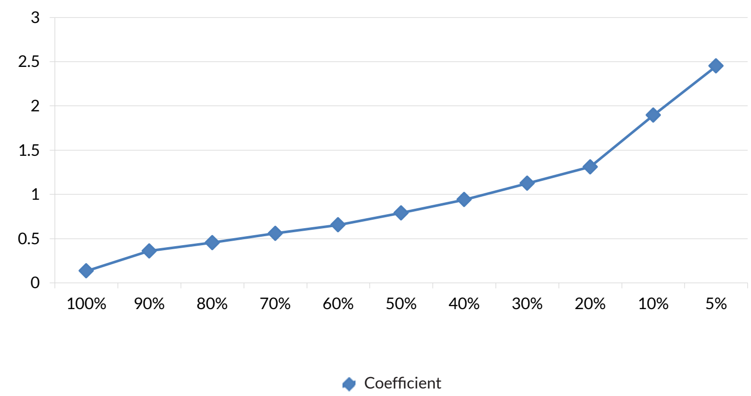
Local and regional experts, government agencies, manufactures and suppliers were consulted to provide input data for the analysis of the economical viable hydropower potential of Saint Lucia. All received information was carefully evaluated and used to create mean values for the calculations as follows:

TECHNICAL AND PHYSICAL PARAMETERS		
Hydraulic Losses	Fricton losses occuring in the water conduit	0.5 m/100 m
Ecologic Minimum Flow	Minimum amount of water remaining in the river for ecological reasons	25%
Gravity	Strength of the gravitational field in Saint Lucia	9.78 m/s²
Density of Water	Density of water is set to be 1,000 kg/m³	1,000 kg/m³
Plant Efficiency	Energy conversion losses occurring in the process of electricity generation using turbines, generators and related equipment	80%
Capacity Factor	Ratio of the annual hours the virtual hydropower plant is operated at full design capacity in relation to annual hours (8,760 hours)	50%

DETERMINING THE DESIGN DISCHARGE

The predicted discharge amount used for hydropower calculations for the analysis in this report is expected to be available statistically at 30% of days per year. The synthetically generated flow duration curve represents coefficients which allow estimating the exceedance probability in relation to the amount of the long-term mean annul stream flow.

Synthetically generated Flow Duration Curve



Percentage of Days	Days Exceeding	Coefficient
100%	365	0.135
90%	328.5	0.360
80%	292	0.455
70%	255.5	0.560
60%	219	0.655
50%	182.5	0.790
40%	146	0.940
30%	109.5	1.125
20%	73	1.310
10%	36.5	1.895
5%	18.25	2.450

ESTIMATING THE THEORETICAL TECHNICAL HYDROPOWER POTENTIAL

$$P = (h_{geo} - h_{loss}) \cdot (Q - Q_{eco}) \cdot g \cdot \rho \cdot \eta$$

h_{geo} = geodetic head between virtual intake and virtual powerhouse [m]
h_{loss} = hydraulic losses resulting from friction [m]
Q = long-term mean stream flow at virtual intake [m³/s]
Q_{eco} = minimum amount of water remaining in the river for ecological reasons [m³/s]
g = gravity [9.78 m/s²; constant]
ρ = density of water [1,000kg/m³; constant]
η = plant efficiency [%]

ECONOMIC BASE PARAMETERS		
Project Lifetime	Years of operation	25 years
Operation and Maintenance Costs	Operation and Maintenance Costs as a percentage of the total Project Development Costs	5%
Feed-In Tariff	Amount of money per unit that a generator of electricity is remunerated for feeding-in electricity to the public grid	US$ 0.10

PROJECT DEVELOPMENT COSTS		
Base Costs	Costs covering preliminary studies, designs and all costs that occur in any event when developing a project	US$ 30,000
Costs for electro-mechanical Equipment	Costs for the entire electro-mechanical equipment, site access infrastructure, grid connection and the construction of the powerhouse (excluding costs for the penstock) correlate with the design capacity of the plant	US$ 3,333 per installed kW
Costs for the Penstock	Costs of the penstock are dependent on the individual length, the material used and its diameter. In addition, costs for construction, site preparation as well as shipment and transportation costs occur.	
→ **Penstock Material Costs**	Calculations based on GFPR penstock material; costs are dependent on the available design stream flow to allow flow velocities in the penstock from 1.5 - 2.5 m/s:	

Available Design Stream Flow at virtual Intake *[m³/s]*	Penstock Diameter *[mm]*	Costs for Penstock *per m*
0.106 - 0.177	300	US$ 103.73
0.188 - 0.314	400	US$ 122.55
0.295 - 0.491	500	US$ 144.79
0.424 - 0.707	600	US$ 171.54
0.577 - 0.962	700	US$ 201.73
0.954 - 1.590	900	US$ 281.36
1.696 - 2.827	1200	US$ 465.81
2.651 - 4.418	1500	US$ 768.87

→ **Penstock Construction Costs**	Costs are based on local wage levels according to skill level and working time of personnel	

Cost Indicators for Labour/Construction		
Type of Labour/Construction Machinery	*Workload per m Penstock [h]*	*Hourly Cost Rate*
Use of a Crane	0.25	US$ 130.00
Excavation	0.25	US$ 92.25
Foreman	0.10	US$ 16.60
Skilled Worker	0.33	US$ 7.38
Unskilled Worker	0.66	US$ 6.27

PROJECT DEVELOPMENT COSTS (cont'd)

→ **Penstock Foundation Material Costs**

Foundation material costs are dependent on the diameter of the penstock and are calculated based on local prices for concrete and steel.

Costs for Reinforced Concrete Foundations	
Costs for Concrete per m^3	US$ 200.00
Costs for Steel per t	US$ 3,000.00

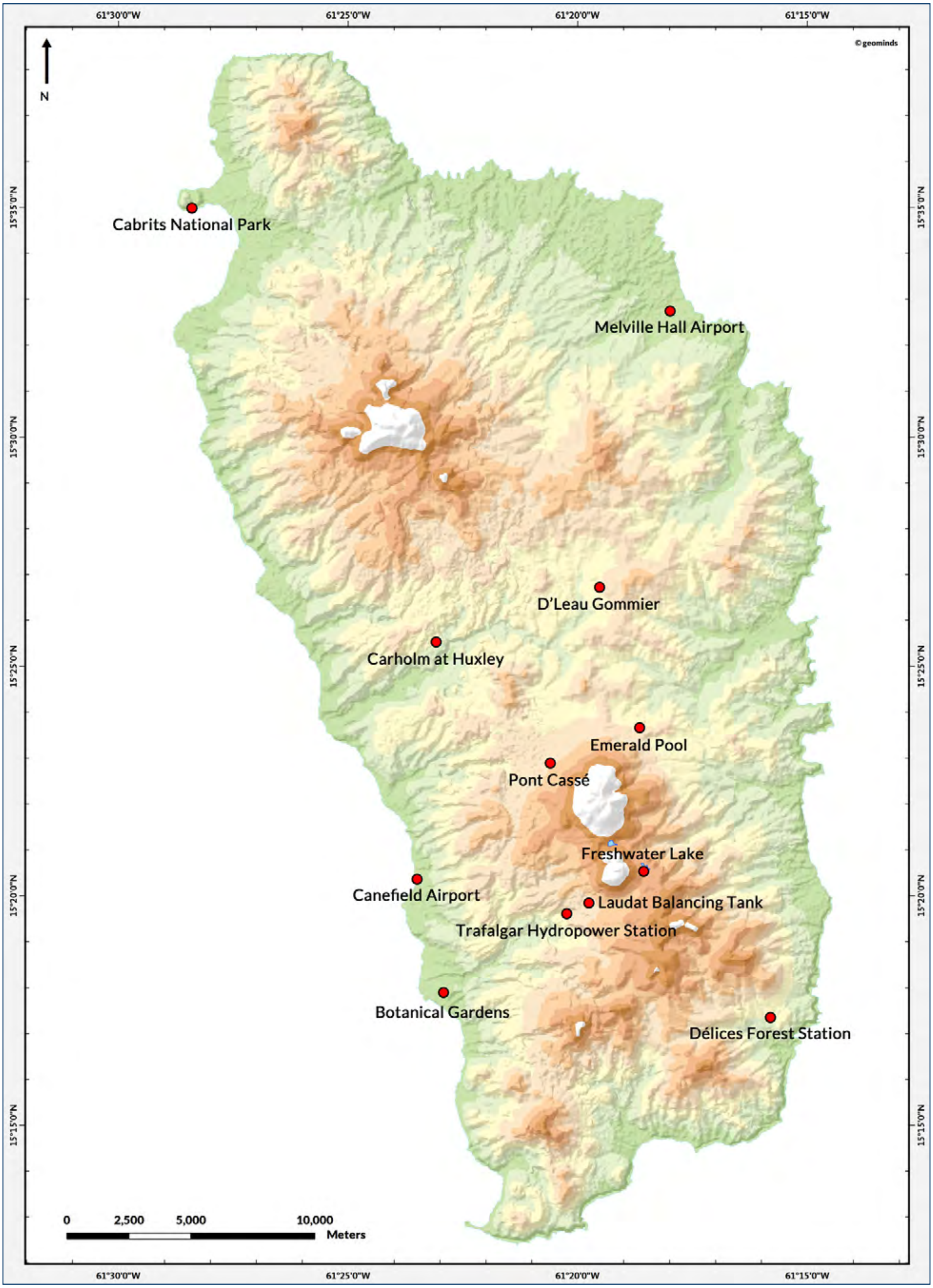
Penstock Diameter [mm]	Reinforced Concrete Foundation per 6m Penstock length Volume [m^3]	Cost per Unit
300	0.027	US$ 111.83
400	0.035	US$ 115.47
500	0.044	US$ 119.38
600	0.054	US$ 123.58
700	0.064	US$ 128.06
900	0.086	US$ 137.87
1200	0.124	US$ 154.72
1500	0.168	US$ 174.11

→ **Penstock Overseas Shipment Costs**

Costs for shipment are dependent on amount of segments fitting in a 20' container and includes land transport. US$ 1,355.88

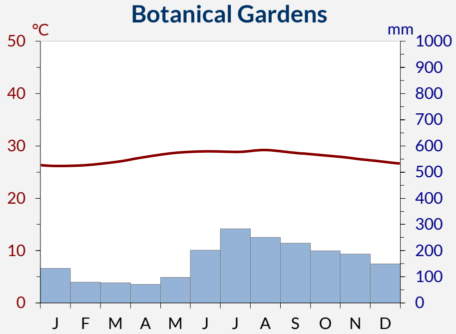
Penstock Diameter [mm]	Penstock Units per Container Quantity
300	52
400	27
500	18
600	15
700	7
900	5
1200	1
1500	1

A 02 - Long-term Rainfall Data of Dominica

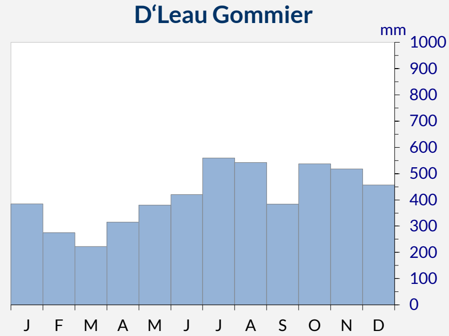


CLIMATE CHARTS OF THE RAINFALL GAUGING STATION NETWORK OF DOMINICA

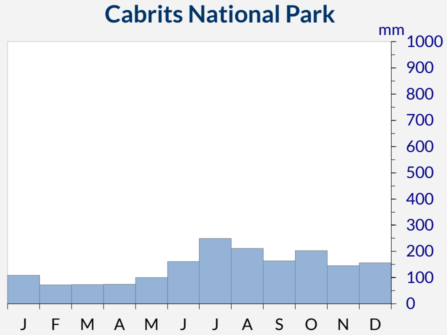
Botanical Gardens



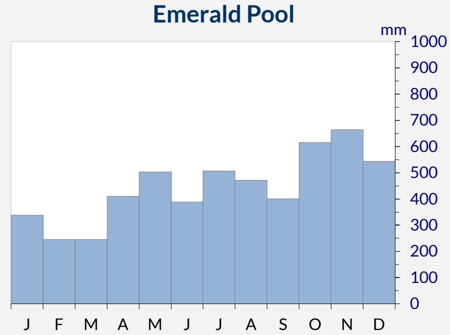
D'Leau Gommier



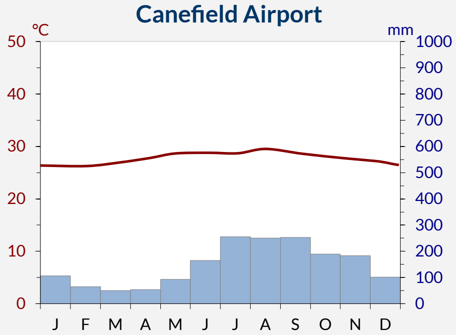
Cabrits National Park



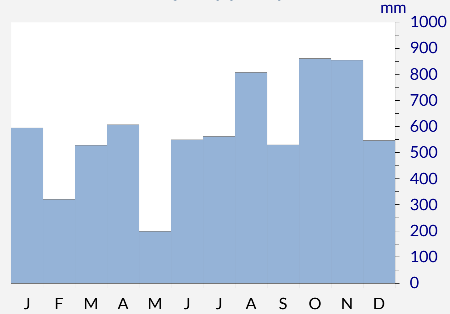
Emerald Pool



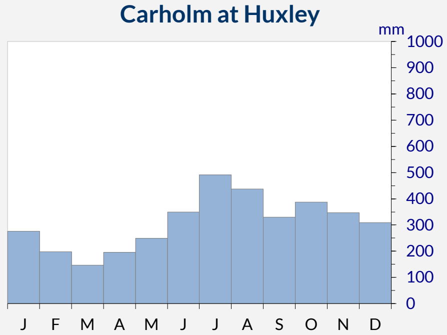
Canefield Airport



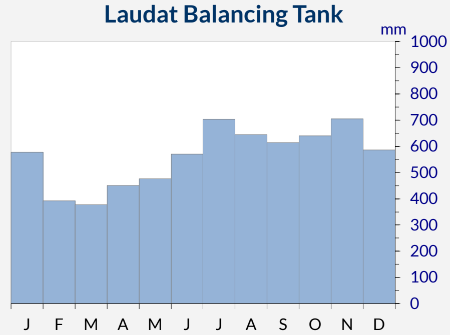
Freshwater Lake



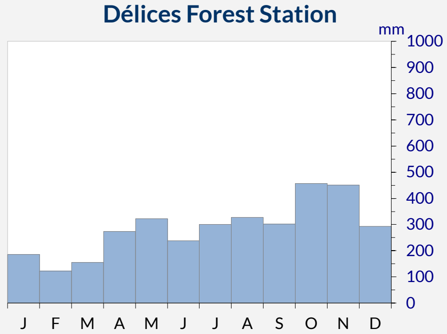
Carholm at Huxley



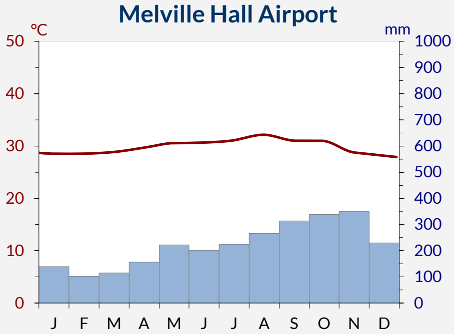
Laudat Balancing Tank



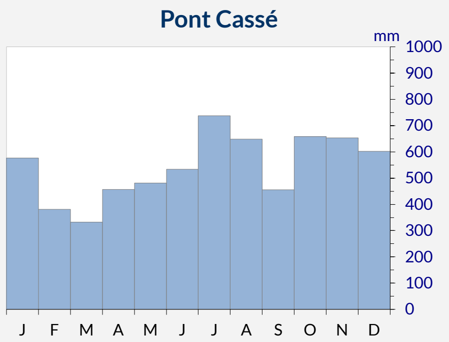
Délices Forest Station

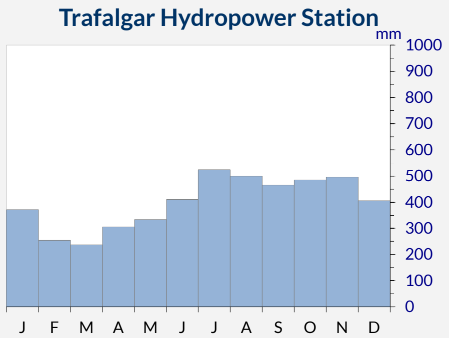


Melville Hall Airport

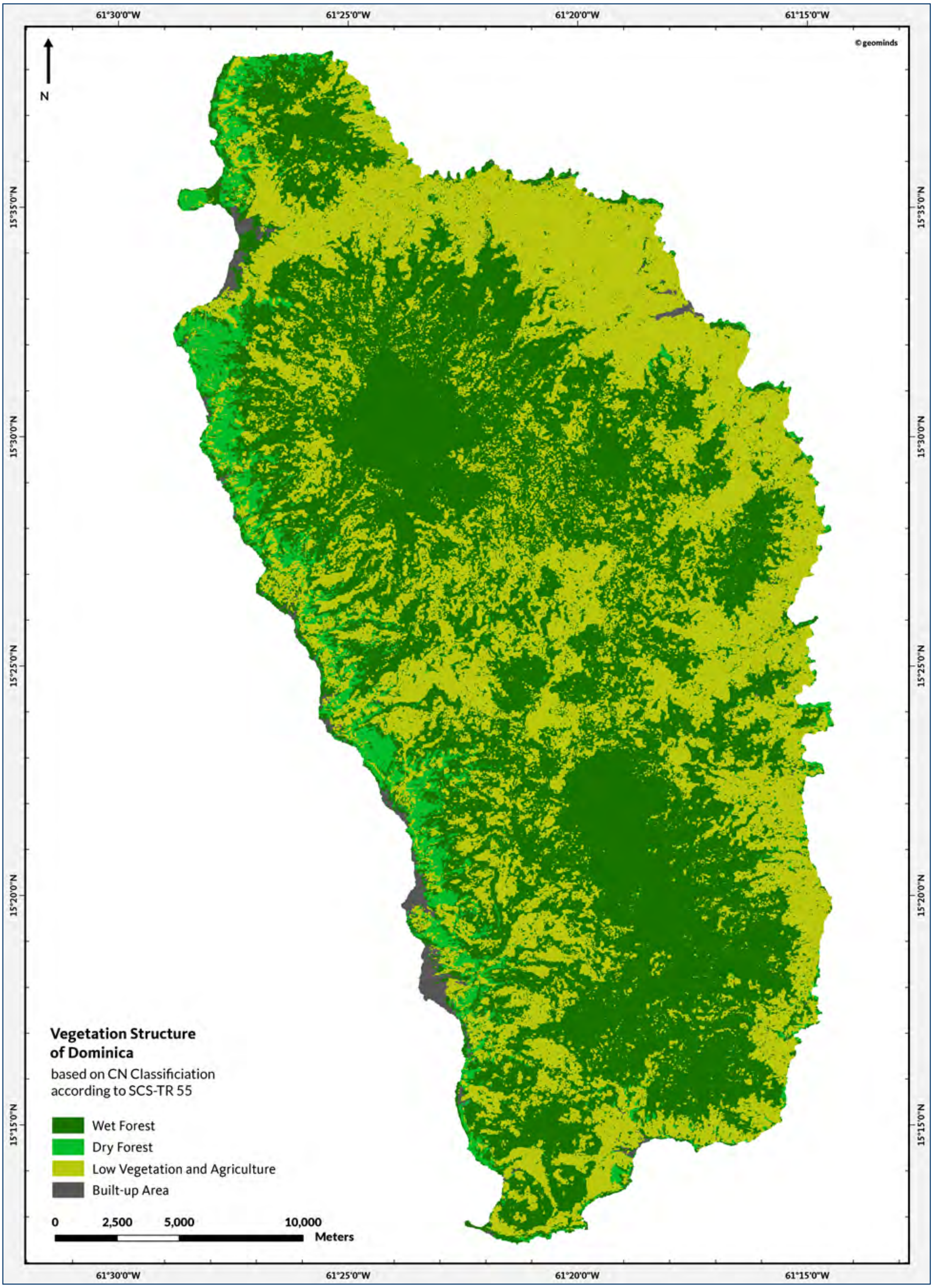


CLIMATE CHARTS OF THE RAINFALL GAUGING STATION NETWORK OF DOMINICA (cont'd)





A 03 - Vegetation Structure Classification Map of Dominica



A 04 - Soil Classification Map of Dominica