Study of flood mitigation measures in the south-east of Mauritius

Establishment of hydrological and hydraulic models and simulation of hydrological scenarios for different events.

April. 2022 - Dec. 2023

MAURICE

Client

Ministry of National Infrastructure («National Development Unit»)

Partners
SETEC HYDRATEC,
SETEC MAURITIUS

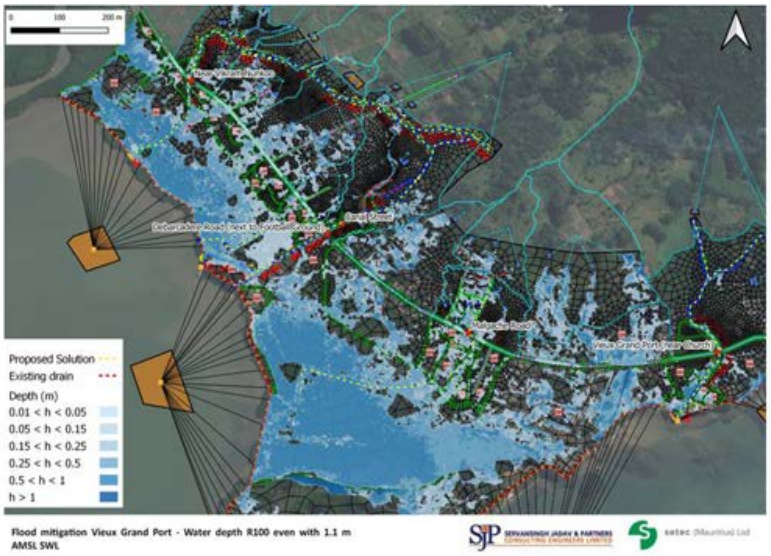
Lead Partner
Servansingh Jadav & Partners Consulting Engineers Limited

Type of Project
1D/2D river modelling, River

Setec group fees
34 400 €

Senior managers
E. LAHALLE (Hydraulics engineer),
S. MERAT (Hydraulics engineer),
M. KHADAROO (project leader),
H. CHEETAMUN (Study engineer)

Client's Address
Moorgate House-Sir William Newton Street
Port Louis-Republic of Mauritius



The Project

Following a period of intense rainfall in April 2021, flash floods occurred in the south east of the island, more pronounced along the coastal area between “Bambous Virieux” to the north and “Rivière des Créoles” to the south.

The Republic of Mauritius through the Ministry of National Infrastructure through the National Development Unit launched the emergency project which consists of consultancy services for the design, and management of flood mitigation measures in the South-East Region (“Rivière des Creoles, Vieux GrandPort, Bois Des Amourettes, Anse Jonchee, Bambous Virieux”).

The project addressed several issues:

- drainage infrastructure's needs to solve the flood problem,
- environmental issues to be taken into account.

The objectives of this project is to identify and prevent the risks of flooding, currently occurring in the south-eastern area of the island; and the implementation of the necessary services to reviewthe design and monitor appropriate long-termmitigation measures to address the flooding problem.

The main features of the project include:
Total linear modelling: 51.5 km
Total watershed area: 80.8 km²
Calculated flow (T=50y): ~ 2.4–28.9 m³/s

Our Services

The main elements of the mission are:

1. Hydrological and hydraulic analyses of the watersheds,
2. Production of hydrological and hydraulic models (1D/2D modelling) and simulation of hydrological scenarios of different return periods (from the 25 to 100-year event).
3. Identification of the causes of floods and their historical evolution,
4. Recommendation of mitigation measures and simulation of flood scenarios with proposed solutions taking into account the high tide
5. Mapping of flood zones and impacts,
6. Assessment of the hydraulic capacity of hydraulic works in the study area.

The project area is marked by steepy watersheds that generate runoff causing fast disorders due to the slope. It is served by a single coastal road which is impassable during heavy rains. Drainage infrastructure is poorly adapted; causing flooding of the road.

Setec Hydratec

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Study of flood mitigation measures in Rodrigues (Mauritius)

Establishment of hydrological and hydraulic models and simulation of hydrological scenarios for different return periods.

Jan. 2023 - Dec.2024

MAURITIUS

Client

MINISTRY OF NATIONAL INFRASTRUCTURE AND COMMUNITY DEVELOPMENT (National Development Unit - NDU)

Partners

SETEC HYDRATEC,
SETEC MAURITIUS

Lead Partner

Servansingh Jadav & Partners (Principal civil engineering consultant)

Consultancy Services fees

30 396 €

Assignment

Consulting expertise audit

Senior managers

F. TRANQUILLE (Project Director)

Client's Address

Sir Virgil Naz St, Port Louis

Highlights

Total linear modelling: : 7.5 km
Total watershed area : 11,29 km

The Project

Following a period of intense rainfall in January 2018 and in February 2019, “flash floods” occurred at Mourouck, Quatre Vents, Acasia, Port Mathurin, and Anse aux Anglais. The Republic of Mauritius through its Ministry of National Infrastructure and Community Development (National Development Unit) launches the project which consists of consultancy services for design, supervision and management of flood mitigation measures in the island of Rodrigues: Mourouck, Quatre Vents, Acasia, Port Mathurin, and Anse aux Anglais.

The project addresses several issues:

- drainage infrastructure needs to solve the flood problem,
- environmental issuesmust be taken into account.

The objective of this project is to identify and prevent the risks of flooding, currently occurring in the island; and the implementation of the necessary services to review the design and monitor appropriate long-term mitigation measures to address the flooding problem.

Our Services

The main elements of the mission are:

1. Hydrological and hydraulic analyzes of watersheds.
2. Production of hydrological and hydraulic models (1D/2D modelling) and simulation of hydrological scenarios of different return periods (from 25 to 100 years).
3. Identification of the real causes of floods,
4. Recommendation of mitigation measures and simulation of flood scenarios with proposed solutions taking into account high tide, storm surge and climate change.
5. Mapping of flood zones and impacts.
6. Assessment of the hydraulic capacity of crossing structures in the study area.

Preventing flood risks

The project areas are marked by the existence of slopes that undergo runoff generating fast disorders due to steep slopes. The drainage paths are poorly adapted, causing flooding direct to housing on and down the hills next to the sea where the lands are extremly flat. The latter are also impacted by the sea level that is a downstream boundary condition leading to an important impact in this context of peninsular environment.
Modelling with Hydra software.(https://hydra-software.net/)

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