

REGIONAL DISASTER VULNERABILITY REDUCTION PROJECT
Terms of Reference (ToR)

For

**The Development of an integral wastewater management strategy and effluent
regulatory standards for St. Vincent and the Grenadines**
SVGRDVRP – CS-CQS-3

1. BACKGROUND

The Government of Saint Vincent and the Grenadines (GoSVG) is part of an Organisation of Eastern Caribbean States (OECS) Regional Disaster Vulnerability Reduction Project (RDVRP), which aims to reduce its vulnerability to natural hazards and climate change. The regional project is financed through grants and credits received from the World Bank and the Climate Investment Fund's Pilot Program for Climate Resilience.

Under component 1 of this programme, titled "Climate Vulnerability, Risk Assessments and Risk Reduction", the GoSVG has identified a number of priority investments, one of which is to strengthen institutions for climate change adaptation and disaster risk reduction.

Considering the important role of near shore coral reefs and other coastal ecosystems as the main natural line of defence against storm surges and other climate related coastal impacts, protecting their integrity and functioning through the implementation of environmental quality objectives for coastal areas is key for climate change adaptation. These ecosystems are threatened by pollution from point and non-point sources of both land-based and marine origin, which at the same time poses major public health related risks. Point sources include storm water drains, greywater discharge pipelines and sewerage outfalls, while non-point sources include soakaways and agricultural run-off. Therefore, developing an integral wastewater management strategy and regulatory standards for effluent discharges, is part of broader national efforts towards instituting ridge-to-reef management that addresses coastal stressors in an integrated manner, as outlined in the National Ocean Policy and Strategic Action Plan (NOPSAP)¹.

Throughout SVG, sewage collection mainly consists of septic tanks for on-site collection and soak-away systems for disposal of effluent². Sludge is collected by private vacuum trucks which dispose of it at the Diamond Landfill, where it is treated via a series of drying lagoons. This applies to both domestic households and commercial premises such as hotels. Only central Kingstown and a small area in Arnos Vale are connected to a sewerage network which was constructed in the early 1970's. The system consists of 5.8 km of PVC sewers ranging in size from 150 mm (6") to 600 mm (24"), flowing via gravity. There is no pre-treatment of the collected sewage prior to marine disposal via a 400 mm diameter PVC outfall. This marine outfall is approximately 1500m (4800 ft) long. It was designed to discharge sewage outside of the Kingstown Bay and into the open sea where currents and natural attenuation should eliminate any threat to human health and marine ecosystems.¹ However, sewage is pumped into the sea only 300m (100 ft) off the nearest bay³ at a depth of 40m; therefore, additional assessment of this point source may be merited. Outside of Kingstown, there are a few industrial plants located in Campden Park, most of which manufacture

¹ See NOPSAP Objective 6, Action 6.3 and Objective 7, Action 7.3.

² "Regional Sectoral Overview of Wastewater Management in the Wider Caribbean Region. Situational Analysis" prepared by UNEP-CEP/RCU in 2010.

³ Recent studies have shown that due to the depth of the outfall at the location of the break and the quantity and duration of the sewage pumping regime, environmental impacts to date have been minimal. This is due mainly to the high dilution factor which is achieved on discharge of the sewage, and the distance of the break from the shoreline is luckily adequate. Usual signs of negative environmental impacts are minimal, e.g. there are very few signs of non-biodegradable deposits on Edinboro beach (nearest coastline) and bathing water standards are marginally acceptable as compared to European and EPA standards. Marine life also still appears to be thriving in this area (UNEP-CEP, 2010, p.156).

food products, and only a few larger resorts (>100 rooms), which have small package treatment plants. The quality of effluent discharged from these systems is not regularly monitored.

In the South Coast of mainland St. Vincent, there are a number of beaches bounded by hotels, and the area is also densely populated. Most of these hotels have some form of septic tank and soakaway system but this is problematic due to the close proximity to the coastline and resultant high-water table at many of these locations.⁴ In all cases, sullage (grey water) from kitchens and bathrooms of these hotels is discharged directly to sea or into storm water drains. This results in a heavily stressed marine environment in this area. There has been a significant decline in live coral cover in this area and bathing water quality is at times sub-optimal⁵.

Human activities taking place along inland streams also have an impact on coastal water quality in many locations. Livestock, particularly pig farming, typically takes place close to streams which provide a ready supply of water for cleaning and easy discharge of slurry. This is a common practice in SVG. Although the Physical Planning regulations have provisions for addressing this problem, enforcement mechanisms are weak. Similarly, settlements located along river banks, especially squatter settlements, are another source of pollution. Inadequate sanitation, improperly sited septic systems, and the discharge of grey water into drains and streams must be addressed in order to reduce the land-based sources of marine pollution which are degrading coastal water quality. In addition, soil erosion and poor management of storm water runoff from human activities (agriculture, roads, and developments) in various parts of watersheds can result in the transport of fine sediment and suspended organic particles to streams, rivers, and shorelines, where it can be carried to beaches, seagrass meadows, and coral reefs.⁶ Nutrients and pesticides can also have impacts on marine ecosystem health by favouring the growth of macroalgae at the expense of coral, and by weakening reef foundation species by exposure to herbicides.

On the marine side, wastewater discharges from yachts and other vessels is also of concern, particularly in marine protected areas such as the Tobago Cays Marine Park. Most ports in SVG lack reception facilities for sewage and the law does not prohibit the discharge of black-water within a specified minimum distance from the shore.

Overall, SVG lacks a comprehensive legal and regulatory framework for wastewater management. However, both the National Economic and Social Development Plan, and the National Ocean Policy speak to the need for improved wastewater management. There are also several existing and draft policies and laws related to physical planning and environmental health, which are relevant to the development of effluent standards and regulations. Among these are the draft Environmental Protection (Effluents Limitation) Regulations and Environmental Management (Pollution) Regulations 2009 which were developed under the 10th European Development Fund Project, and the draft Environmental Impact Assessment (EIA) proposals (controls, enforcement and related activities).

2. OBJECTIVES

The objectives of this consultancy are:

⁴ There is no updated hydrological map available for SVG.

⁵ Phillips, M., Woodley, C., May, A. & White, A. n.d. *Strengthening Management Capacity at the South Coast Marine Conservation Area (SCMCA) and the Tobago Cays Marine Park (TCMP) in St. Vincent and the Grenadines (SVG): Baseline Assessment Report*. Unpublished Report.

⁶ In a recent assessment of coral reef health in Saint Lucia, sediment runoff from human activities and developments was found to be one of the main detrimental factors impacting coral, due to increase in turbidity, reduction in light for photosynthesis, and smothering of coral reef organisms: *Preparation of Guidelines and Coral Reef Enhancement Plan for Point Sable Environmental Protection Area*. Draft Report by CREOCEAN Consultants for Saint Lucia Disaster Vulnerability Reduction Project, October 2018.

- A. To identify and characterize the point and non-point sources of water pollution and their effects on the environmental quality of coastal waters in SVG, in order to propose an integral strategy to adequately manage and monitor wastewater and reduce marine pollution, taking into consideration the environmental, economic and technical feasibility of the proposal.
- B. Based on the results from objective A, to develop a legal framework for wastewater management, including wastewater effluents regulatory standards, for St. Vincent and the Grenadines.

These objectives will contribute to enhance the Government's institutional capacity to protect public health from waterborne diseases, and to safeguard the integrity and functioning of the near shore coral reefs and other coastal ecosystems by reducing the input of excessive nutrients (eutrophication) due to improper wastewater disposal.

3. SCOPE

The development of a legal and regulatory framework for wastewater management in St. Vincent and the Grenadines is part of the government's broader policy thrust towards strengthening coastal zone management for climate resilience. The scope of services for this consultancy includes: (i) the development of a methodology for characterization of coastal water bodies in SVG and piloting application of the methodology in 3 Priority Pollution Watch Sites (PPWS)⁷; (ii) the development of environmental quality objectives for coastal waters in SVG; (iii) the identification of the point and non-point sources of water pollution and an integral wastewater management strategy; and, (iv) the development of updated draft effluent regulations containing limit values, institutional arrangements for compliance, monitoring and enforcement, penalties, etc.

4. TASKS

Part A: Identification of the point and non-point sources of water pollution impacting the environmental quality of coastal waters in SVG and an integral wastewater management strategy to reduce marine pollution

Task A1: Development and piloting of a methodology for characterization of coastal water bodies in SVG.

The consultant will conduct a critical review of relevant literature as well as consultations with relevant stakeholders in order to determine the most appropriate (technically and economically feasible) methodology for characterizing coastal water bodies in SVG. The consultant may reference international technical guidance documents such as those developed under the European Union Water Framework Directive or US Clean Water Act, but must ensure that the suggested methodology/ procedures recommended are technically and economically feasible given local circumstances.

In order to check the feasibility of the proposed methodology, the consultant will pilot the methodology in 3 PPWS in SVG. These characterization pilots should include the development of a *pressure inventory* identifying all point and non-point sources of pollution (inland, coastal and offshore) at these PPWS, and estimations of the total amount and sources of effluents entering these bodies. Additionally, it should provide at least preliminary estimates of source loading at rivers and streams, and identify where more detailed watershed studies are required to address diffuse, non-point sources of pollution such as runoff from rivers and streams that carry sediments and nutrients.

⁷ Given that some coastal areas in St. Vincent and the Grenadines (SVG) are under greater pressure from human development, or are more sensitive to pollution than others, the government will be identifying a list of a Priority Pollution Watch Sites (PPWS) and developing and implementing monitoring plans for these PPWS.

Task A2: Development of environmental quality objectives for coastal waters in SVG

The consultant will develop environmental quality objectives for coastal waters in SVG, focusing on nutrient pollution and pathogens⁸ that pose significant public health and environmental risks. These environmental quality objectives must consider the following: i) stakeholder values as well as relevant international guidelines such as the World Health Organisation Guidelines for Safe Recreational Water Environments and the United Nations Environment Programme's Caribbean Environment Programme Environmental Quality Criteria for Coastal Zones in the Wider Caribbean Region; and ii) the anthropogenic sources of pollution in relation to the "natural" background levels of key parameters that are not subject to management, taking into consideration "reference values" obtained from proximal or similar sites where there is minimal human influence; and iii) the establishment of an easy-to-understand status indicator system which can be used to regularly advise the public on the quality status of bathing waters.

Task A3: Proposal of an integral wastewater management strategy to reduce marine pollution to meet the environmental quality objectives developed under task A2.

The third step will be the proposal of an integral strategy containing possible measures to address the point and non-point sources of water pollution identified during task A1 and to meet the environmental quality objectives developed under task A2. Where appropriate, these measures should be differentiated geographically in order to take into account varying local costs and other locally-specific circumstances. Both abatement measures and preventative measures should be covered.

For measures specifically related to wastewater management, options should be assessed in terms of their technical performance, costs, institutional capacity requirements and other relevant economic implications. The actors or categories of actors who have to bear the costs must also be identified. For measures related to other factors such as waste management, watershed management, soil erosion and storm water runoff control, the relative importance of the factors to the water quality objectives should be identified and prioritized for future study.

The consultant will prepare a discussion paper outlining possible options for improved wastewater management. These options should include appropriate wastewater effluents limit values as well as recommended technical specifications for the Best Available Technology Not Exceeding Excessive Costs (BATNEEC). This paper will be discussed with stakeholders in at least one (1) national consultation workshop. The contractor will produce a report at the end of this workshop documenting stakeholder perspectives and offering policy recommendations for consideration by Cabinet.

Part B: Development of a legal framework for wastewater management, including wastewater effluents regulatory standards, for St. Vincent and the Grenadines

Task B1: Review of existing draft effluent regulations and other relevant legislation and policies

The consultant will review the existing draft effluent regulations prepared under the 10th European Development Fund Project in light of the information generated under Part A.

During the review process, the consultant shall engage the key government agencies to assess the relevancy and adequacy of the existing legislation and identify the revisions and modifications which are required in order to achieve the environmental quality objectives developed as part of task A.2A.

Specifically, the consultant will, but is not limited to:

⁸The primary variables of concern are total phosphorus (TP) and total nitrogen (TN), chlorophyll a and turbidity, dissolved oxygen (DO) and macrophyte growth and density.

- a. Review and prepare a report summarizing existing government policies and legislation relevant to environmental management, watershed planning, wastewater management, planning and development control and solid waste management.
- b. Conduct and document detailed consultations with stakeholder groups such as the Ministry of Health, Wellness and the Environment, National Parks, Rivers and Beaches Authority, Ministry of Housing, Informal Settlements, Land and Planning (MoHILP), the Ministry of Transport, Works, Urban Development and Local Government, line ministries and departments, statutory bodies such as the Bureau of Standards and Central Water and Sewerage Authority, and nongovernment organisations.
- c. Consult with residents and businesses with respect to point and non-point sources of marine discharge and importance of standards and guidelines to regulate effluent discharge.
- d. Review existing draft Effluent Standards and Regulations and revise or update as needed in order to comply with the suite of measures recommended by Cabinet under Part A3. These revisions should include:
 - National Environmental (Water) Quality Objectives/Standards for Coastal Areas;
 - Specify wastewater effluents limit values; and
 - Guidelines on Best Available Technology Not Exceeding Excessive Costs.
 The revised draft regulations should also designate competent authorities and clarify roles and responsibilities with regards to compliance monitoring and enforcement.
- e. Recommend draft amendments to other relevant legislation such as the Physical Planning Act and Environmental Health Services as required.

Task B2: Assessment of Institutional Capacity for implementing the integral wastewater management strategy and the legal framework for wastewater management

The consultant will review the capacities and requirements of existing agencies/authorities relevant to compliance monitoring and enforcement and prepare an institutional gap analysis report for submission to Cabinet, outlining the recommendations for building the requisite capacity. This report should also recommend possible economic instruments/ fiscal incentives to encourage compliance and sustainable financing mechanisms to cover regulatory costs.

5. INPUTS

The Client will make available to the consultant, all existing policies, reports and plans relevant to the proposed work that is in its possession and might be necessary and applicable in the execution of the work required under these TOR. These include but are not limited to:

- The existing draft Environmental Protection (Effluents Limitations) Regulations
- The existing draft Environmental Management (Pollution) Regulations
- Environmental Services Act 1991
- Public Health Act 1977
- Central Water and Sewerage Authority Act
- National Parks, Rivers and Beaches Authority Systems Plan
- National Parks, Rivers and Beaches Act
- Standards and Guidelines for New and Existing Coastal Development
- Draft Environmental Impact Assessment Policy
- The National Economic and Social Development Plan 2013 - 2025
- The Town and Country Planning Act and planning guidelines
- Land planning legislation and policies
- Supporting reports (Census, National Communications on Climate Change, disaster management policies, related technical studies, natural resource management, Integrated Water Resource Management study, and other available documents and reports)

- GIS Base maps
- GIS support under the MoHILP

6. DELIVERABLES

Task	Deliverable	Due by	Draft Payment percentage
	1. Inception report - This report will include a situation analysis, stakeholder engagement plan, project implementation schedule and any applicable comments on the TOR/contract.	2 weeks after signature of contract	10%
<i>A1: Development and piloting of a methodology for characterization of coastal water bodies in SVG.</i>	2a. Draft methodology for characterization of coastal water bodies in SVG	4 weeks after signature of contract	10%
	2b. Finalized and piloted methodology for characterization of coastal water bodies in SVG, including the findings of the pilot studies	7 weeks after signature of contract	10%
<i>A2: Development of environmental quality objectives for coastal waters in SVG</i>	3. Environmental quality standards and proposed status indicator system.	12 weeks after signature of contract	15%
<i>A3: Identification of a suite of measures to prevent or remediate coastal water pollution and to meet the environmental quality objectives developed under task A2.</i>	4a. Final discussion paper on the suite of measures to prevent/remediate coastal water pollution, inclusive of stakeholder input	16 weeks after mobilization	20%
	4b. Cabinet brief outlining policy recommendations for preventing and remediating coastal water pollution.		
<i>B1: Review of existing draft effluent regulations and other relevant legislation and policies</i>	5. Summary of relevant regulations and standards & documentation of stakeholder consultations as well as revised draft effluent regulations and draft amendments to other relevant legislation.	24 weeks after mobilization	20%
<i>B2: Assessment of Institutional Capacity for Implementing the integral wastewater management strategy and the legal framework for wastewater management</i>	Institutional gap analysis report (inclusive of recommendations for bridging gaps)	26 weeks after mobilisation.	15%

7. REPORTING

Under the overall guidance and management of the Director of Economic Planning, Economic Planning and Sustainable Development Division, the Consultant will report to the Project Coordinator of the Regional Disaster Vulnerability Reduction Project.

The consultant can submit draft reports via e-mail but shall submit all final reports in hard copy.

8. MINIMUM QUALIFICATIONS AND EXPERIENCE

The firm must have at least one similar experience within the last six years. Additionally, the firm's proposed team must satisfy the following minimum requirements:

Area of Key Expertise	Minimum Academic Qualifications	Minimum General Experience Requirements	Minimum Specific Experience Requirements
Environmental Studies	Bsc. In Environmental Studies or related field	5 years of general experience in environmental studies, or related fields	4 years of specific experience in water/environmental standards, development of water quality and monitoring protocols.
Policy Studies and Legal Drafting	Bachelor of Laws	5 years of general experience in legal drafting and policy studies	4 years of specific experience in water/environmental standards, development of water quality and monitoring protocols.

9. DURATION

The duration of the consultancy, inclusive of reviews and approvals by the client, is nine months.