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Improving Transport Logistics and Competitiveness in Suriname (SU-L1057)

Final Environmental Assessment of Proposed Works

28 February 2019

Project No.: 0482769

IDB
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Improving Transport Logistics and Competitiveness in Suriname (SU-L1057)

Final Environmental Assessment of Proposed Works

Ricardo Calvo, PhD
Partner in Charge

Herbert Pirela, PhD
Project Manager

Environmental Resources Management, Inc.
1776 I (Eye) St. NW Suite 200
Washington, DC 20006

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Acronyms and Abbreviations

CO	carbon monoxide
DAI	Direct Area of Influence
EA	Environmental Assessment
EHS	Environmental, Health, and Safety
EPC	Engineering Procurement and Construction
ERM	Environmental Resources Management, Inc.
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GM	Grievance Mechanism
GoS	Government of Suriname (Republiek Suriname)
IAI	Indirect Area of Influence
IDB	Inter-American Development Bank
IPCC	Intergovernmental Panel on Climate Change
km	Kilometres
km^2	Square kilometres
CLRP	Compensation and Livelihood Restoration Plan
m	meters
m^2	Square meters
MLK	Martin Luther Kingweg
MPWTC	Ministry of Public Works Transportation and Communication
NIMOS	National Institute for Environment and Development in Suriname (*Nationaal Instituut voor Milieu en Ontwikieling in Suriname*)
NO_2	nitrogen dioxide
OHS	Occupational health and safety
PCS	Port Community System
PPE	Personal Protection Equipment
SEP	Stakeholder Engagement Plan
SO_2	sulphur dioxide
TEU	Twenty-foot Equivalent
TOR	Terms of Reference
USD	United States Dollars
VOC	volatile organic compounds
WHO	World Health Organization

1. EXECUTIVE SUMMARY

The economy in Suriname has traditionally been open market and primarily based on commodities such as gold, bauxite, oil and agricultural products. Therefore, the economic performance has heavily relied on exports of extractives, among other commodities, as the main source of foreign earnings (90%) and fiscal income (45%).

The Dr. Jules Sedney Port (Port of Paramaribo, or the "Port") is the main cargo gateway, accounting for approximately 90% of the total seaborne trade. As the main entry and departure point for international trade in Suriname, access to Dr. Jules Sedney Port is vital for the economic development of many industries. In this regard, transport companies who utilize the Port are important stakeholders as the Port is instrumental in allowing Surinamese agricultural, fishing, and forestry industries to send their products abroad and import necessary supplies and equipment. In recent years, imports and exports, especially of the agricultural sector, have been affected by increasing freight costs and transit times due to limitations in the roads that connect production areas to the Port, as well as operational difficulties in Port access. Inefficiencies in the Port operation and its adjacent infrastructure create bottlenecks for trade. Improving access roads to the Port would improve connectivity since congestion occurs in the last-mile of approach to the Port. Some of the main problems identified in the operation of the Port include the following:

- Up to 5 hour dwell time for the trucks within the Dr. Jules Sedney Terminal;
- Lack of scheduling for transportation and limitation by customs schedule;
- Lack of scanning equipment for the inspection of containers;
- Lack of a permanent regulated parking space for trucks, causing queues outside the Port;
- Lack of spaces to perform value added services to the foreign trade cargo; and
- Lack of commercial spaces for the allocation of transport and logistic companies.

The Van 't Hogerhuysstraat, the main road to access the Dr. Jules Sedney Port, is very congested, with traffic of more than 50,000 vehicles per day, including trucks, which have led to deterioration of the road. In addition, the drainage along the road is inadequate for the current rainfall levels in Paramaribo, leading to flooding which worsens traffic. This road is the main access point to the Port and represents a major bottleneck for trucks going in and out of the Port.

The Inter-American Development Bank (IDB) is supporting the efforts of the government of Suriname through the Improving of Transport Logistic and Competitiveness in Suriname Program which aims to increase Suriname's competitiveness and productivity in the agricultural sector by improving the transport logistics within and near the Dr. Jules Sedney Port. The Program's proposed solutions include the following improvements:

- Modification of the port's entrance/exit and internal flows: to aid the decongestion of truck parking in Havenlaan West and reduce import process land transport departure for vehicles heading north. In order to avoid negatively affecting operations, it was recommended that current pre-gate processes be integrated in a new designated area, and to separate lanes for full and empty containers.
- Reincorporation of main entrance for light vehicles: current main gate in Havenlaan Zuid should be re-enabled for light vehicles transit. This will separate light from heavy traffic within the Port's roads.
- Transfer of cargo from container terminal to customs inspection area: could be made before land transport arrives at the Port and should be carried out by a third party. This could potentially reduce trucks waiting time inside the Port, reducing congestion and possibly freight logistic costs.

- Implementation of new modules in the Port Community System (PCS) to support activities: PCS modules should improve coordination between stakeholders and set the foundation for entrance/exit automation process.
- Geometric modification of two roundabouts.
- Construction of an extra lane per direction in the Martin Luther Kingweg -Van 't Hogerhuysstraat.
- Rehabilitation of the bridge over the Saramacca Canal, to allow for the circulations of trucks,
- Implementation of traffic lights (8 new) and reconfiguration of phases of the existing one.
- Storage lanes in selected intersections, and
- Road rehabilitation of the complete corridor, including the construction of sidewalks and cycle paths as urban renewal strategies.

For the purpose of this Environmental Assessment (EA), only the Port and access roads construction improvements were considered as the "Project."

The Project is anticipated to deliver benefits during the operation of the Port given the improvements of logistics transport within the Port and upgrades to nearby roads; however, it is acknowledge that the Project could also potentially lead to negative environmental and social impacts during its construction. Potential environmental and social impacts resulting from Project-related activities include:

- Emissions and noise from construction vehicles and equipment,
- Waste generated by construction activities,
- Decreased pedestrian and traffic safety,
- Increased traffic congestion and disruption,
- Decreased access to critical facilities, shopping, bus stops etc.,
- Loss or disturbance of vegetation,
- Wildlife injury or mortality,
- Habitat alteration – aquatic,
- Temporary loss of access to local businesses, and
- Possible disruption to the use of living heritage sites (such as churches mosques, and mandirs).

Based on this assessment, none of the abovementioned impacts were determined to be major and would all be reduced to minor or negligible with the implementation of appropriate mitigation measures. An Environmental and Social Management Plan (ESMP) has been developed outlining the measures and actions necessary to further minimize impacts to acceptable levels. In addition, implementation of the Project would result in positive environmental and social impacts as the Project components would address the Dr. Sedney Port Terminal operational inefficiencies and its adjacent infrastructure. Any changes to operational procedures that result from the Project must be included in the existing Port operational Environmental and Social Management System (ESMS).

ERM was contracted to perform an Environmental, Social, and Health & Safety (ESHS) review of the Port to assess the compliance status of existing Port operations, including the ESMS and the Health & Safety Management System (HSMS), against different criteria, standards, and regulatory requirements, such as, Surinamese laws and regulations, and applicable best management practices, international treaties and conventions such as ISO 14001:2015, the Basel Convention and Marine Pollution – MARPOL 73/78 (The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of

1978), among others. This report is included as Appendix A to this EA. Based on the findings of that report it was determined that although the Port management entity, NV Havenbeheer Suriname, developed and implemented an ESMS, there is room for improvements in its implementation, including:

- The preparation and implementation of a robust Social Management Plan to include stakeholder engagement, consultations, and a grievance mechanism to be implemented by all port operators;
- The preparation and implementation of a robust health and safety management system to be implemented by all port operators; and
- Monitoring requirements for the Port's activities' to include impacts on terrestrial and aquatic habitat, air emissions (e.g., VOC), noise, vibration, and impacts on local communities (e.g., road traffic, tourism).

For additional details with regards to the ESHS review please see Appendix A.

2. INTRODUCTION

2.1 Project Background

The Republic of Suriname is located in the northeastern Atlantic Coast of South America, bordered by French Guyana, Guyana, and Brazil, with a population of approximately 560,000 people. Most of the population is concentrated in the northern coastal plain portion of the country. Suriname's interior is mainly tropical rainforest, occupying some 80% of the country's territory. The capital city of Paramaribo and its suburbs are home to approximately 70% of Suriname's population (Health in the Americas 2012).

The economy in Suriname has traditionally been open market and primarily based on commodities such as gold, bauxite, oil and agricultural products, thus, the economic performance has heavily relied on exports of extractives, among other commodities, as the main source of foreign earnings (90%) and fiscal income (45%) (Inter-American Development Bank 2016).

The Dr. Jules Sedney Port (Port of Paramaribo, or the "Port") is the main cargo gateway, accounting for approximately 90% of the total seaborne trade. As the main entry and departure point for international trade in Suriname, access to Dr. Jules Sedney Port is vital for the economic development of many industries. In this regard, transport companies who utilize the Port are important stakeholders as the Port is instrumental in allowing Surinamese agricultural, fishing, and forestry industries to send their products abroad and import necessary supplies and equipment. In recent years, imports and exports, especially of the agricultural sector, have been affected by increasing freight costs and transit times due to limitations in the roads that connect production areas to the Port, as well as operational difficulties in Port access (Deloitte 2018). Inefficiencies in the Port operation and its adjacent infrastructure create bottlenecks for trade. Improving access roads to the Port would improve connectivity since congestion occurs in the last-mile of approach to the Port.

2.2 Purpose and Need

As the main entry and departure point for international trade in Suriname, access to the Dr. Jules Sedney Port and terminal is vital for the economic development of many industries. However, inefficiencies in Port operations and the Port access roads are detrimental to trade operations. Some of the main problems identified in the operation of the Port include the following:

- Up to 5 hour dwell time for the trucks within the Dr. Jules Sedney Terminal;
- Lack of scheduling for transportation and limitation by customs schedule;
- Lack of scanning equipment for the inspection of containers;
- Lack of a permanent regulated parking space for trucks, causing queues outside the Port;
- Lack of spaces to perform value added services to the foreign trade cargo; and
- Lack of commercial spaces for the allocation of transport and logistic companies (Deloitte 2018).

The Van 't Hogerhuysstraat is the main road to access the Dr. Jules Sedney Port. This road is very congested with traffic of more than 50,000 vehicles per day, including trucks, which have led to deterioration of the road. In addition, the drainage along the road is inadequate for the current rainfall levels in Paramaribo, leading to flooding. This road represents a major bottleneck for trucks going in and out of the Port, increasing the cost of agriculture exports and manufactured products imports (Deloitte 2018).

The Inter-American Development Bank (IDB) is supporting the efforts of the government of Suriname through the *Improving Transport Logistic and Competitiveness in Suriname (SU-L1057) Program* which aims to contribute to increase Suriname's competitiveness and productivity in the agricultural sector by

improving the transport logistics within and near the Dr. Jules Sedney Port. This includes multiple interventions at the Port and access roads, and institutional strengthening and administration. For the purpose of this Environmental Assessment (EA), only the Port and access roads improvements (the Project) will be considered (see Section 2.4 for a description of the Project).

2.3 Environmental Assessment Objectives

The objective of this EA is to assess the Project's potential environmental and social impacts and its alignment with IDB policies and safeguards. While it is anticipated that the Project would have a benefit to Suriname, the potential exists for environmental and social impacts to occur. This document describes the potential positive and negative effects of the Project and recommends an environmental and social management system to be put in place to augment positive effects and mitigate, manage, and monitor potential adverse impacts and risks for the life of the Project.

This EA has the following main objectives:

- Identify positive and/or negative changes in the human and natural environment that may affect the quality of life, as well as current and future options for sustainable social and economic development in the Project's Area of Influence, also referred to in this EA as the Project Area.
- Identify measures to minimize negative impacts and enhance positive impacts of the Project, following the mitigation hierarchy[1].
- Analyze alternatives and provide recommendations for the best course of action inclusive of any relevant prevention or mitigation measures.

The EA process included the following activities:

- Establishment of an environmental and social baseline through the following:
    - A document review including the documentation provided by NV Havenbeheer Suriname[2] (Port Management Company) and Project design information provided by Deloitte and Transconsult, in addition to other documentation from the Government of Suriname and other sources.
    - A site reconnaissance including visual observation of the relevant areas directly and indirectly affected by the Project, meetings with relevant individual/groups/organizations, and data and information collection.
    - Collection of data through stakeholder engagement activities.
- Evaluation of the legal and regulatory framework applicable to the Project, including IDB policies and safeguards.
- Assessment of the potential environmental, social, cultural, health, safety, and labor impacts and risks associated with the Project.
- Recommendations for mitigation, management, and monitoring required for the Project in an Environmental and Social Management Plan (ESMP).
- A meaningful public consultation with affected stakeholders.

[1] The mitigation hierarchy includes the following steps to manage potential adverse impacts of a proposed activity: avoid, reduce/minimize, remedy/restore and offset.

[2] Created in 1971, NV Havenbeheer Suriname is an autonomous, state-owned limited liability company in charge of the administration of the two main ports of the country, the Port of Paramaribo and the Port of Nieuw Nickerie.

2.4 Environmental Assessment Scope

This EA considers both the construction and operations phase of the Project, and focuses mainly on the relevant existing physical, biological, and socioeconomic environments within the direct footprint of the Project, namely the Port site and the roadway segments subject to improvements. However, it is understood that in the case of some impacts such as air quality, noise and traffic, impacts may extend beyond the immediate Project footprint. As such, both a Direct Area influence (DAI) and an Indirect Area of Influence (IAI) are defined for the Project as follows below.

2.4.1 Direct Area of Influence

The DAI for the Project is defined as the footprint of the Project, where the majority of the impacts from the Project are expected to occur and/or be experienced most acutely.

2.4.2 Indirect Area of Influence

The IAI of the Project is defined as the area within a 500-m radius of the Project footprint where some impacts such as traffic, dust and noise disturbance could occur, but generally with a lower level of intensity than in the DAI.

In the case of the socioeconomic baseline, affected populations are considered to be those who either reside, travel through, or engage in commercial or recreational activities within the DAI and/or IAI.

It is noted, that in many cases secondary sources of baseline data are available only for wider administrative areas (e.g., District or Resort level, or in some cases national-level). Data at these levels are supported by DAI- and IAI-specific information and data from interviews and field reconnaissance activities to provide as accurate a characterization of the impacted areas as possible.

2.5 Project Description

2.5.1 Introduction

Currently, approximately 90% of the total seaborne trade in Suriname (excluding oil) is handled through the Dr. Jules Sedney Port. The Port is Suriname's main cargo gateway, handling just over 100,000 twenty–foot equivalent units (TEU) in 2016 and slightly more than 80,000 TEU in 2017. Additionally, 200,000 tons of breakbulk cargo and 160,000 tons of liquid bulk are handled at the Port yearly, accounting for daily traffic of over 250 heavy vehicles coming in and out of the Port. In recent years, imports and exports, especially in the agricultural sector, have been affected by increasing freight costs and transit times due to capacity limitations on the roads that connect the producing areas to the Port, as well as operational difficulties in the Port access. These inefficiencies create bottlenecks for trade in Suriname.

This EA addresses the proposed improvements to the Port's transport and logistics as described below.

2.5.2 Site Description

The Port is located in Paramaribo, on the Suriname River about 34 kilometers (km) from the estuary of the river in the Atlantic Ocean (see Figure 2-1). Ships with a maximum draft of almost 7 meters (m) can call at the Port. The Port covers a total area of approximately 55 hectares, with a quay of about 600 m in length that can accommodate about four ships of 100 m. As part of regular operations, trucks use the North Gate as the main entry point, the Main Gate is used sporadically, and the South Gate is used as the departure point.

The port is run by N.V. Havenbeheer Suriname, which has the role of landlord and is responsible for managing daily operations and its long-term development; meanwhile, the cargo handling is the responsibility of two private stevedoring companies, VSH Transport and INTEGRA/DP World Paramaribo (see Figure 2-2).

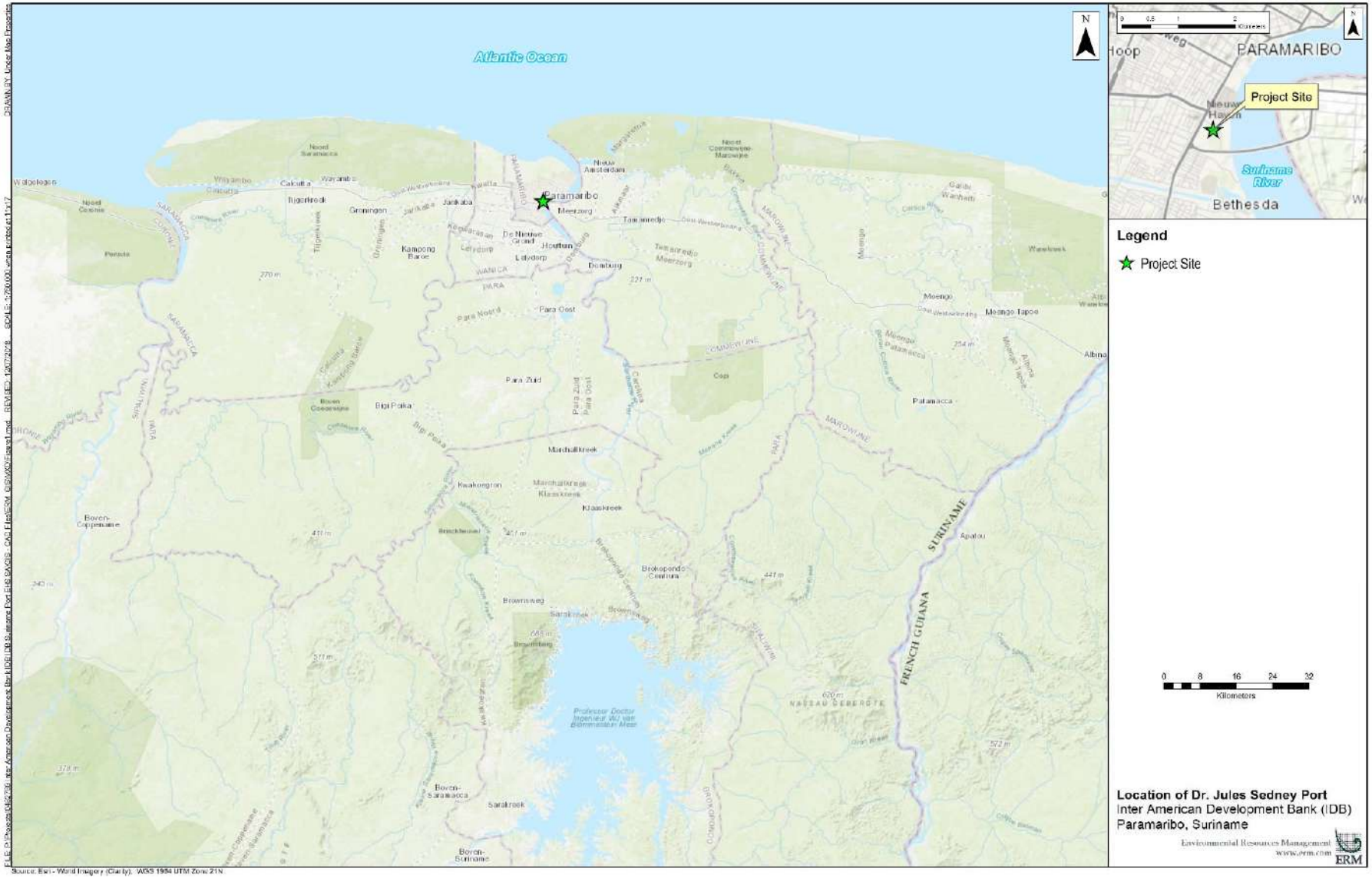


Figure 2-1: Location of the Dr. Jules Sedney Port in Suriname

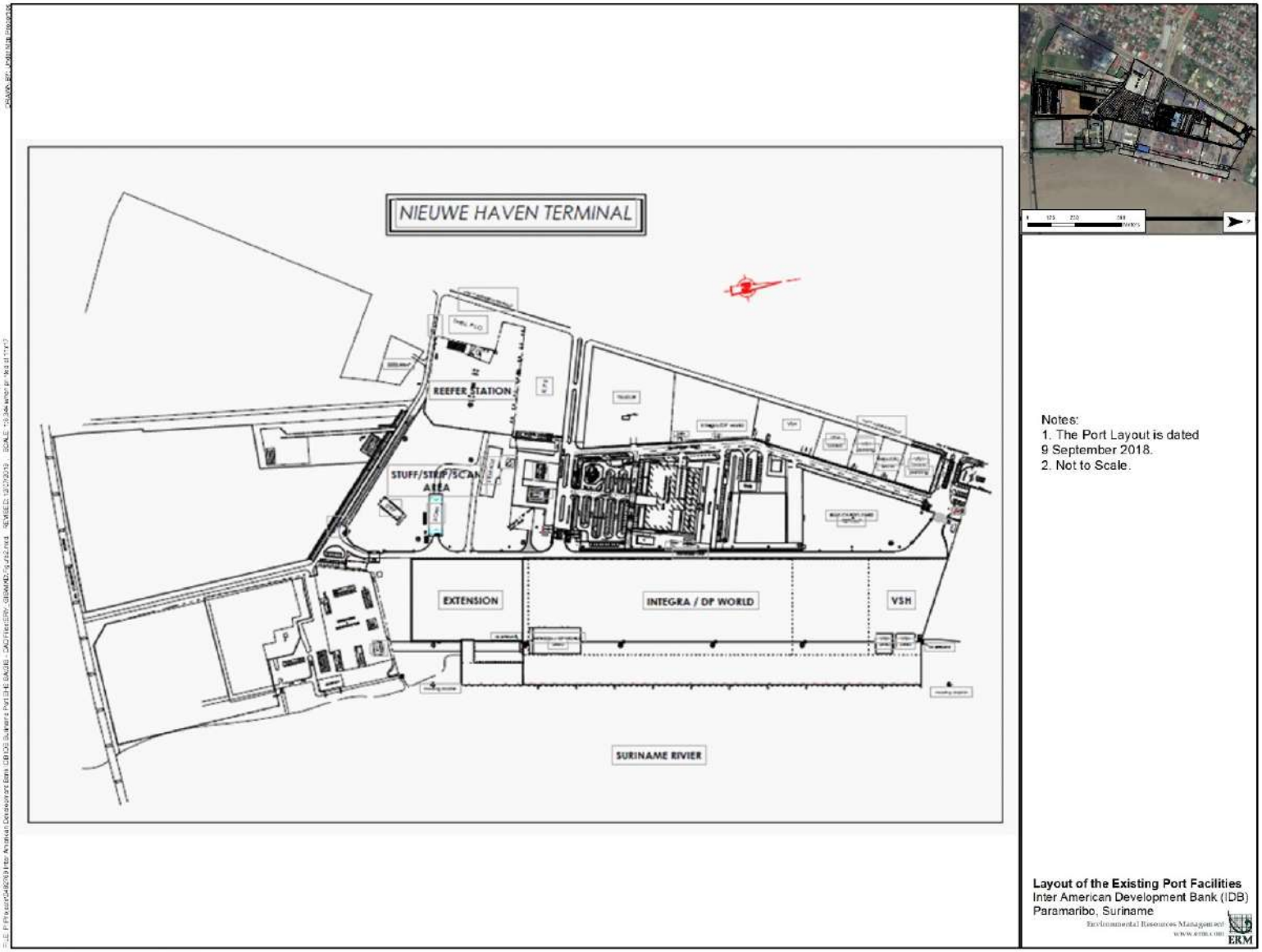


Figure 2-2: Layout of the Existing Port Facilities

2.5.3 Proposed Project Upgrades and Improvements

This section provides a description of the proposed Dr. Jules Sedney Port Terminal improvements. At this time, the final design and detailed technical information of the Port improvement works are not available. Therefore, the description of the Port improvements described in the following sections include the most recent Project design information available at this stage of the Project.

2.5.3.1 Proposed Improvements to Port Access and Land Utilization

The Project proposes improvements to Port access and land utilization which include the following components:

- The development of a formal truck center within the Port: the truck center (approximately 15,387 square meters in size) will include 110 parking spaces at 45-degree angle for 40-foot container trucks, and a waiting/rest area for drivers. The truck center will include the construction of offices, warehouse space, and parking for 110 light vehicle (see Figure 2-3 below). To improve the truck traffic flow inside the newly constructed facilities, and to prevent traffic congestion within the Port, the entrance and exit flow into the Port will be reversed.
- Development of additional container warehouse/storage to account for projected increases in throughput of the Port (see Figure 2-3).
- Acquisition and installation of security scanners for container inspections.

2.5.3.2 Upgrades and Improvements to Road Sections

The proposed road upgrades, improvements, and safety standard optimization will include the following components (see Figure 2-4):

- Geometric modification of the existing roundabouts at the intersection of Willem Campagnestraat and Hogerhuysstraat and at the intersection of Van ‘t Hogerhuysstraat and Jules Wijdenboschbrug. The modification of the roundabout at the intersection of Van ‘t Hogerhuysstraat and Jules Wijdenboschbrug will allow for the recovery of public open space;
- Construction of an extra lane per direction in the Martin Luther Kingweg and Van ‘t Hogerhuysstraat. The re-design of the Martin Luther Kingweg and Van ‘t Hogerhuysstraat corridor includes the construction of sidewalks and bicycle paths as part of urban renewal strategies;
- Rehabilitation of the bridge over the Saramacca Canal. The rehabilitation will include the replacement of the existing 3-lane bridge with a new 6-lane bridge that will allow the circulation of trucks;
- Installation of eight new traffic lights and the reconfiguration of phases for the existing traffic light; and
- Modification of the Port’s entrance and exit.

The road upgrades and improvements will allow for the implementation of an intelligent transportation system for traffic control, planning, and enforcement, while integrating traffic lights and variable message signs for sections adjacent to the Port and along the above described road sections.

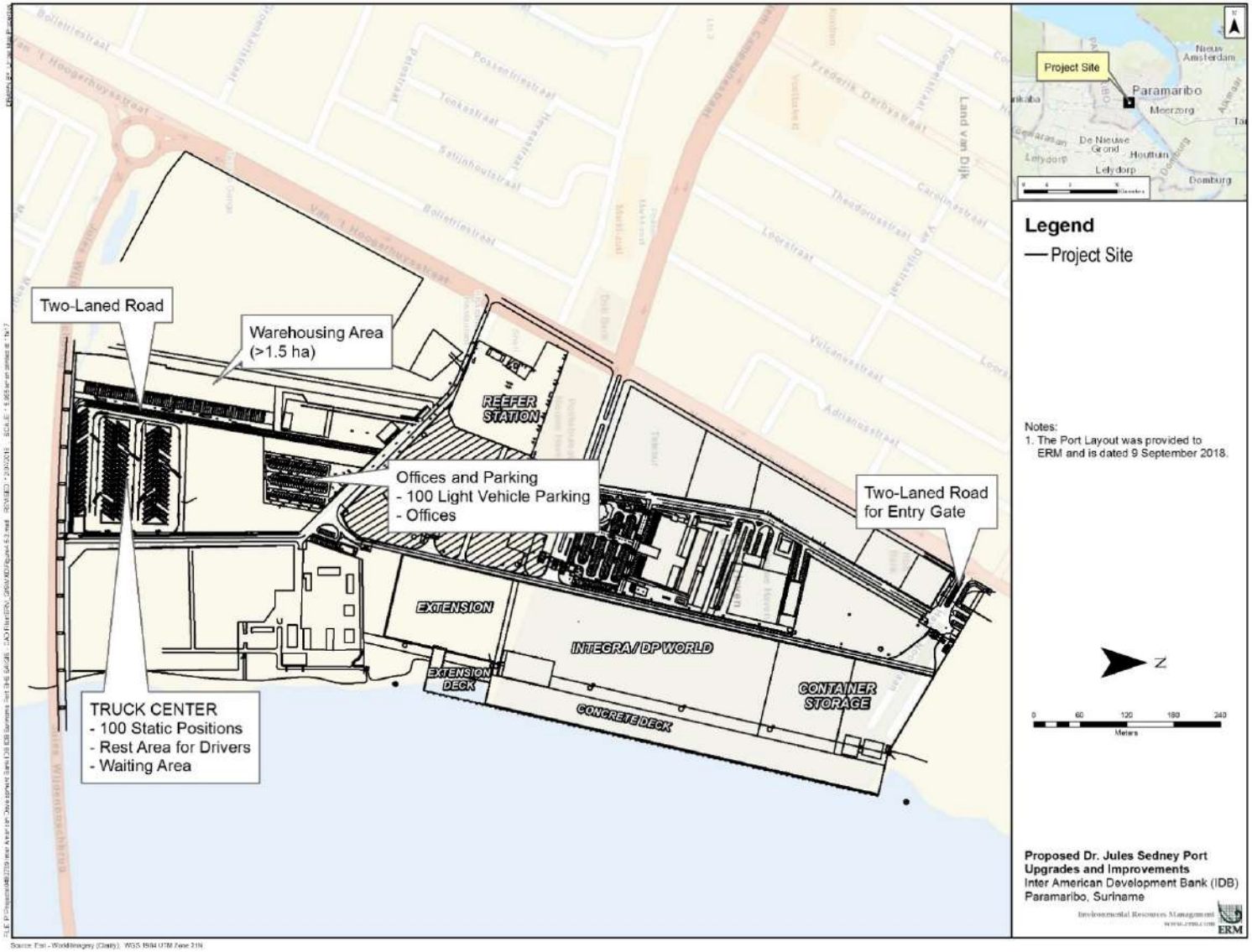


Figure 2-3: Dr. Jules Sedney Port Upgrades and Improvements

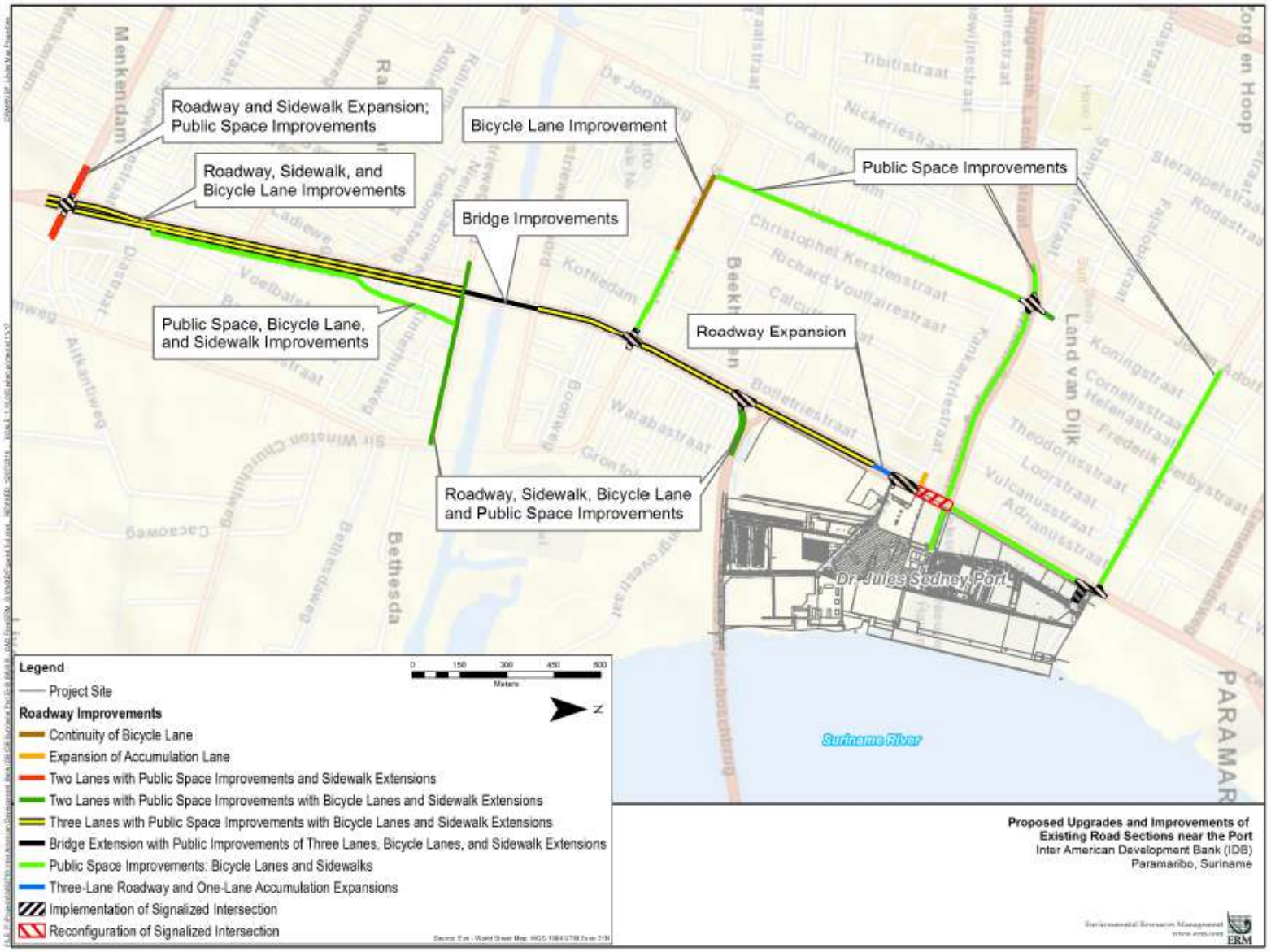


Figure 2-4: Upgrades and Improvements of Existing Road Sections near the Port

3. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

This section of the EA evaluates the existing Surinamese institutional and regulatory frameworks as well as IDB Safeguard Polices applicable to the Project. In addition to this EA, an Environmental, Health, and Safety (EHS) audit was also performed to verify compliance of current Port Operations with local and international regulations as well as best management practices. This audit report is included in Appendix A.

3.1 Legal and Administrative Framework

3.1.1 National Legislation

Suriname's national legislation is exercised through Laws or Acts of Parliament (Wet, also called Verordening and Landsverordening prior to 1975), Decrees (Decreet), Government Decrees (Staatsbesluit), Presidential Decree (Resolutie), Presidential Orders (Presidentieel Besluit) or Ministerial Orders (Ministeriële Beschikking) targeting various sectors including industry, tourism, nature conservation, etc. Suriname has had legislation on the historic environment since the 1950s. This section provides a summary of relevant regulations:

- The Hindrance Act (Hinderwet 1930, 1944, and 1972): This act defines the permit requirements to control noise and air pollution for industrial development projects. The permits are issued and enforced by local District Commissioners (Buursink 2005; SRK Consulting 2007).
- The Nature Conservation Act (Natuurbeschermingswet 1954): This act defines the procedures to establish and manage conservation areas and protect wildlife.
- State Order on Building Construction (1956, revised in 2010): This Order provides rules for construction of buildings. Construction permits will be issued based on an approved construction plan. Since 2010 this act is applicable in all of Suriname.
- The Building Act (1958): This act oversees licenses for new construction and residential areas in Suriname.
- The Building Code (1956, revised in 2002): This Code provides the rules for new construction and requires that construction be done in accordance with land use plans.
- The Roads Authority Act (1995): This Act establishes the requirements for managing roads and bridges and gives the Roads Authority the responsibility of providing guidance for construction, rehabilitation and maintenance of primary roads and bridges (as determined by the State Order on Primary Roads of 2001).
- State Order on Primary Roads (2001): This State Order gives the Ministry of Public Works the responsibility of carrying out major rehabilitation of roads legally determined to be "primary" roads: roads that are of national value socially and economically.
- The Town Planning Act (1972): The Act established that the Ministry of Public Works Transport and Communication (MPTC, Openbare Werken, Transport en Communicatie) that is responsible for the execution of spatial planning and development of urban areas.
- The Planning Act (1973): The Act established that the Ministry of Planning and Development Cooperation is responsible for a comprehensive and sustainable policy for spatial, ecological, and socioeconomic issues.
- State Resolution on the implementation of Article 4, Section 2 of the Building Code of 1956: This Resolution was approved by the President of the Republic of Suriname in 2011 (S.B. 31 October

2011 No. 74). The resolution established an Expert Building Committee (Special Advisory Committee) to review new building plans within the site according to aesthetic criteria for modern architecture, which were published in the Gazette.

- The Government Declaration (Regeringsverklaring 2016-2020) (GoS 2015): This declaration mandates an efficient and effective approach to environmental management and includes governmental goals to establish sustainable development practices.
- The Multi-Annual Development Plan (MOP): An MOP is drafted every five years and submitted to Parliament for approval; and the current plan is for 2017-2021. It is a government policy that includes a national development strategy for sustainable development and use of biological resources.
- The National Biodiversity Strategy (NBS): The NBS establishes goals and strategic directions to be pursued in order to conserve and sustainably use Suriname's biodiversity and biological resources.
- The Labor Act (1963, Amended in 1980, 1983, and 2001): Establishes labor regulations such as maximum allowed labor hours per week, legal working age restrictions (prohibition of child labor), compensation requirements, etc.
- Occupational Safety and Health Act (1947, last amended in 2005) and Decrees: Contain provisions for a safe work environment which must be provided by the employer. It is the employers duty and responsibility to protect the safety and health of workers and others. Provisions include limitations on exposure to risk (explosives, toxic substances and chemical hazards, biohazards, pesticides, etc), dust, gas and vapor, noise, vibration and radiation, etc.; providing appropriate personal protective equipment and first aid kits, training/instructions, and accident/medical response.
- In addition, a Draft Environmental Act was prepared in 2002: This draft act, as it has not yet been passed by Parliament, defines the rules for environmental conservation, management, and protection while promoting sustainable development. The provisions of the Act provide guidance for conducting an ESIA in Suriname, including the principles of access to information, participation and legal protection for stakeholders.

3.1.2 National Institutions

This section provides a brief breakdown of the relevant ministries and agencies and their responsibilities for the management of the Project components.

3.1.2.1 Ministry of Public Works, Transport and Communication

The Project will be executed by the Ministry of Public Works, Transport and Communication (MPWTC), which is responsible for planning, building, and constructing road and walkway infrastructure, public transportation. An Expert Building Committee within this Ministry is appointed by the Minister of Public Works.

3.1.2.2 Ministry of Regional Development – District Commissioner

Paramaribo is administratively divided into two geographic regions, which are each headed by a District Commissioner: Paramaribo North–East and Paramaribo South–West. The Paramaribo District is further subdivided into 12 resorts. The District Commissioner is responsible for issuing licenses to all resort users including, but not limited to, shops, parking, businesses, cultural activities, and advertisements on public

spaces. The District Commissioner is also responsible for monitoring the effects of licenses and is responsible for applying sanctions.

3.1.2.3 National Institute for Environment and Development in Suriname

The National Institute for Environmental and Development in Suriname (NIMOS) is an executing arm of the National Council for the Environment (President's Office). Under the Draft Environmental Act, the objectives of NIMOS are to act as the main governing body responsible for enforcing environmental laws and regulations, as well as managing and effecting new laws and developing subsidiary legislation. The mission of NIMOS is to initiate the development of a national legal and institutional framework for environmental policy and management in the interest of sustainable development through the Office of Environmental and Social Assessment. The Cabinet of the President, Security, and Environment (formerly the National Council for the Environment), is an advisory body of the Government oi Suriname (GoS), established by Presidential Decree in 1997, which supports NIMOS in the area of policy and advice.

3.1.3 Environmental Management

Suriname is governed according to the 1987 Constitution of the Republic of Suriname. Suriname does not have a single comprehensive environmental policy and there is no legislation dealing specifically with environmental management. However, environmental legislation is currently being developed. NIMOS released guidelines for environmental and social impact assessments. These guidelines have been updated in the recent Guidance Note NIMOS Environmental Assessment Process (2017), effective January 2018. Based upon the current scope of this Project, this Project will likely be categorized as a Category B project; however, it is up to NIMOS to screen the project and determine the level of assessment required (see Section 3.1.3.1 below).

Responsibility for environmental and natural resource management at the national level in Suriname is divided among different government institutions in as described in various pieces of legislation. In the environmental field, responsibilities are spread among a number of government organizations. Environmental management and protection are the responsibility of the National Council for the Environment and NIMOS. In addition, a number of agencies and departments are responsible for environmental protection, such as enforcing existing environmental regulations and contributing to environmental planning activities, as summarized in Table 3-1 below.

Table 3-1: Legal Framework for National Environmental Management in Suriname

Government Stakeholder	Role
Cabinet of the President: Security and Environment (*veiligheid en milieu Linscheer*) (Formerly the National Council for the Environment)	Environmental management and protection. Preparation of environmental policy at the national level and exercise of control in its implementation.
National Institute for Environment and Development in Suriname (*Nationaal Instituut voor Milieu en Ontwikieling in Suriname* [NIMOS])	Environmental management and protection. Main governing body responsible for enforcing environmental laws and regulations as well as managing and effecting new laws and developing subsidiary legislation.
Ministry of Natural Resources (*Ministerie van Natuurlijke Hulpbronnen*)	Responsible for policy direction, legislation, issuance of permits, budget allocation and inter-ministerial coordination, and for all matters relating to natural resources (not fisheries).
Nature Conservation Division (*Natuurbeheer*) of the Suriname Forest Service	Manages natural reserves and parks (not Brownsberg Nature Park). Supports Ministry of Spatial Planning, Land and Forest

Government Stakeholder	Role
	Management (ROGB) (below) in management and law enforcement, regarding conservation, nature reserves, and wildlife.
Foundation for Nature Conservation in Suriname (*Stichting Natuurbehoud Suriname* [STINASU])	A non-governmental organization that assists the Forest Service in managing nature reserves. Responsible for nature tourism and promoting public environmental awareness campaigns.
Ministry of Spatial Planning, Land and Forest Management (*Ministerie van Ruimtelijke, Ordening, Grond en Bosbeheer* [ROGB])	Performs land use planning. Manages and enforces laws regarding conservation, nature reserves, and wildlife.
Ministry of Agriculture, Animal Husbandry and Fisheries (*Ministerie van Landbouw, Veeteelt en Visserij* [LVV])	Manages land and water used for agricultural purposes; manages fish resources; controls water quality.
Sub-directorate of Fisheries (*Onder Direkteur van de Visserij Dienst*)	Manages fish resources. Enforces Fish Protection Act and Sea Fisheries Decree.
Ministry of Health (*Ministerie van Volksgezondheid* [VGZ])	Manages environmental health (infectious diseases, food quality, water quality, industrial waste disposal, water-soil-air quality standards vis-à-vis human health).
Maritime Authority Suriname (*Maritieme Autoriteit Suriname* [MAS])	Manages maritime traffic.
National Coordination Centre for Disaster Management (*Nationaal Coördinatiecentrum voor Rampenbeheersing* [NCCR])	A Division of the Ministry of Defense. Develops national policies on disaster management through coordination and prevention of potential threats and disasters.

The Draft Environmental Act of 2002 is a framework law that was prepared as a result of the Rio Declaration of 1992 in order to introduce international legal requirements into Suriname's environmental legislative scheme. This Draft Act establishes an Environmental Authority, a Supervisory Board, an Environmental Fund, and an Inter-Ministerial Advisory Committee. It also states the need for an ESIA for all new economic activities that might have an adverse impact on the environment. The ESIA must include tools for pollution control. It also requires permits for waste management and contingency plans for potential accidents that may cause environmental pollution. An important step in the Draft Act is the granting of public participation in the decision making process related to projects that may have an adverse effect on the environment.

The Planning Act of Suriname, which originated in 1973, establishes procedures for national and regional land use planning and provides guidelines for drafting land use plans. This Act also empowers the GoS to establish protected areas other than nature reserves such as special management areas. Laws on the issuance of state-owned lands provide for the issuance of long-term leases for management of public lands including environmental management.

3.1.3.1 National Institute for Environment and Development in Suriname Consultation

NIMOS provided the IDB with the Environmental Assessment Guidelines for Road Projects for review and implementation. Discussions held with NIMOS officials by the IDB confirmed that, in spite of the lack of formal authority, once the Project has been designed, an EA for the Project must be submitted to NIMOS, given that it is a best practice that should be followed as part the environmental and social responsibility.

The following steps must be performed for Road Projects as established in the Environmental Assessment Guidelines (see Figure 3-1; NIMOS, 2014).

Road Projects Screening

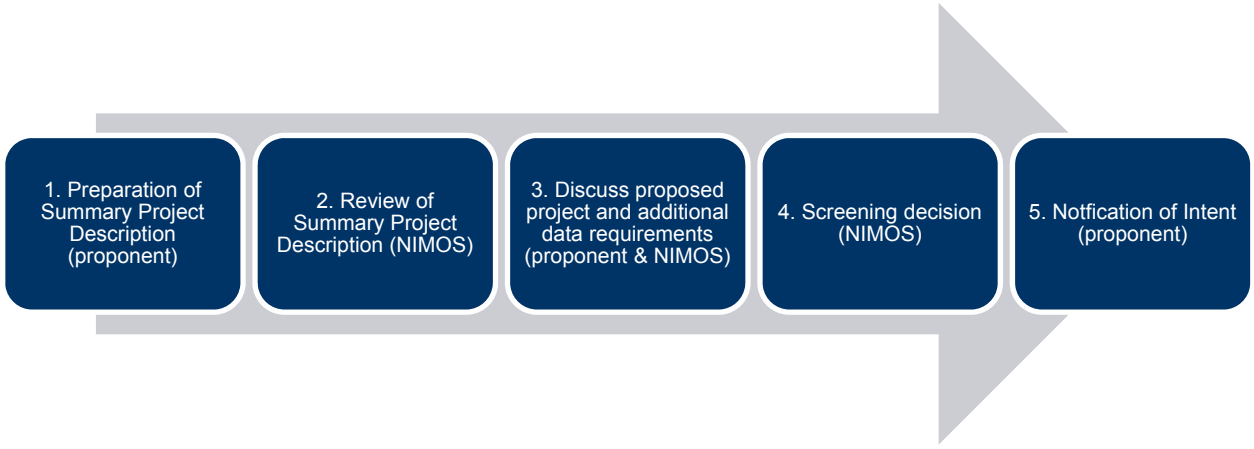


Figure 3-1: Key Steps in the Screening Process for Road Projects

1. The project applicant/proponent prepares a summary project description including, but not limited to, information on its proposed location, the nature of the project, potential environmental and social impacts (positive and negative), mitigation measures, construction information (methods, duration, etc.), as well as appropriate figures, maps, and sketches.
2. The summary project description shall be submitted to NIMOS for review.
3. NIMOS will meet with the project applicant/proponent to discuss the proposed project and request any other relevant information required to making its screening decision.
4. NIMOS will issue a screening decision to the project applicant/proponent, confirming the project category and specifying the level of assessment required.
5. NIMOS shall make its screening decision publicly known, including by posting it on its website.

If NIMOS determines that an ESIA is not required based on the information provided by the applicant/proponent, NIMOS will inform the permitting agency so they may proceed with the issuance of the permit.

Notification of Intent

Where an ESIA is determined to be required (all Category A and some Category B projects), the applicant/proponent must publish or announce a Notification of Intent (NOI) in order to proceed with the project (details regarding the distribution of the NOI are described in the NIMOS Guidance), no later than seven days after NIMOS' decision, or no longer than 60 days in case of appeal. The NOI serves to inform and provide information about the proposed project to the public, and may be accompanied with announcements of public consultation activities and means by which public comments, questions, and concerns can be submitted to the applicant/proponent for consideration during the ESIA process.

For Category B projects for which NIMOS has determined that an ESIA is not required (for Category B projects, the preparation of an Environmental Assessment, EA, is required), NIMOS will publish, within 7 days, its decision in the media providing relevant information about the project and justification as to why an ESIA is not required. The Notification will also state the public's right to appeal NIMOS' decision, based on legitimate environmental and social grounds, within 30 days of the published notification. Should there be no appeals, the permitting agency can issue a final decision to proceed with the project based on the advice from NIMOS.

Project Scoping Phase

Scoping provides guidance for the preparation of the Terms of Reference (TOR) for the ESIA.

Preparation of the Terms of Reference

The TOR must be prepared by the applicant/proponent, in collaboration with and guidance and advice from NIMOS. The TOR will serve as a guide for the conduct of the assessment and the preparation of the ESIA or the Environmental Assessment (EA) Report in an effort to understand the scope of the project, the potential impacts and the measures that should be taken to mitigate the significant negative impacts. While each TOR will be project-specific, at a minimum, the TOR will include following elements:

- Background information including all key project components.
- Description of environmental and socio-economic aspects of the Project Area.
- Identification of potential positive and negative environmental and social impacts that could result from the proposed project activities including to air quality, noise, water quality, soil, road traffic, wildlife, etc.
- Legal framework under which the ESIA will proceed including regulations, standards and guidelines for determining compliance.
- Requirements for ESIA report.

Roles and Responsibilities

The applicant/proponent is required to submit a TOR for the ESIA to be conducted for the proposed project using NIMOS' scoping guidelines. Upon assessing the TOR submitted by the applicant/proponent, NIMOS will issue project specific guidelines for the content of the ESIA. The TOR will need approval by the Environmental Authority before commencement of the study.

3.1.4 Applicable International Conventions and Agreements

The GoS has also ratified and complied with the terms of several international treaties and accords. These have been designed to formalize cooperation on regional and global environmental protection strategies. In this regard, Suriname has signed Agenda 21 and is party to the following conventions and agreements:

- United Nations Convention on Biological Diversity (CBD).
- The Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Western Hemisphere Convention).
- The Ramsar Convention (The Convention on Wetlands of International Importance).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Amazon Cooperation Treaty.
- United Nations Convention on the Law of the Sea.
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
- International Covenant on Civil and Political Rights.
- International Covenant on Economic, Social and Cultural Rights.

- American Convention on Human Rights.
- United Nations Framework Convention on Climate Change.
- World Heritage Convention, including the associated United Nations Educational, Scientific and Cultural Organization (UNESCO) guidelines.
- International Labour Organisation (ILO) Standards on Occupational Safety and Health:
    - Freedom of Association and Protection of the Right to Organize Convention.
    - Right to Organize and Collective Bargaining Convention.
    - Forced Labor Convention.
    - Abolition of Forced Labor Convention.
    - Worst Forms of Child Labor Convention.
- Other relevant international conventions.

3.2 Inter-American Development Bank Safeguards and Agreements

The IDB has established its own policies and safeguards to ensure that projects financed by the IDB group are sustainable (see Table 3-2 below). These environmental and social policies are guided by international best practices, and are relatively consistent with widely used International Finance Corporation (IFC) guidelines regarding environmental, health, and social management.

Table 3-2: Inter-American Development Bank Policies

IDB Policies	Policy Description
OP-703 – Environmental and Safeguards Compliance Policy	The Policy has three specific objectives: (i) To enhance long-term development benefits by integrating environmental sustainability outcomes in all Bank operations and activities and strengthening environmental management capacities in its borrowing member countries (ii) To ensure that all Bank operations and activities are environmentally sustainable (iii) To foster corporate environmental responsibility within the Bank The Policy has two sets of directives, as follows: • *Environmental Mainstreaming (Directives A.1 through A.7),* which refer to the concept of mainstreaming environmental issues and upstreaming them early on during the project cycle. • *Safeguarding Directives (Directives B.1 through B.16)* – allow the Bank to adopt a more effective and efficient risk management framework. Safeguards are applied throughout the project cycle to ensure the environmental sustainability of all Bank-financed operations. The Environmental Safeguards Directives are: B.1 Bank Policies; B.2 Country Laws and Regulations; B.3 Screening and Classification; B.4 Other Risk Factors; B.5 Environmental Assessment Requirements; B.6 Consultations; B.7 Supervision and Compliance; B.8 Transboundary Impacts; B.9 Natural Habitats and Cultural Sites; B.10 Hazardous Materials; B.11 Pollution Prevention and Abatement; B.12 Project Under Construction; B.13 Noninvestment Lending and Flexible Lending Instruments; B.14 Multiple Phase and Repeat Loans; B.15 Co-financing Operations; B.16 In-country Systems; B.17 Procurement.
OP-710 Involuntary Resettlement Policy	This document presents the principles and strategies to be followed in the case of Bank-financed development projects that result in involuntary relocation and includes specific

IDB Policies	Policy Description
	guidelines on preparing resettlement plans. The guidelines are meant to assist the Bank and borrowers in mitigating the negative impacts of compulsory relocation on individuals and communities, and in assisting the affected populations to establish a sustainable society and economy.
OP-761 Gender Equality in Development	This Policy integrates a gender perspective that seeks equal conditions and opportunities for women and men to reach their social, economic, political, and cultural potential by providing specific mechanisms for ensuring the effective implementation of the Policy and the evaluation of its results.
OP-765 Indigenous Peoples Policy	The objectives of this policy in the context of the social and environmental quality review of its projects is to strengthen *standards and guidelines* on sociocultural relevance and feasibility in order to avoid, mitigate, compensate, or offset adverse impacts and safeguard indigenous peoples' legitimate interests and rights. Such standards and guidelines will take into account the points of view of indigenous peoples, and will be incorporated into the Bank's safeguards and environmental procedures using specific operational guides approved by Management's Programming Committee.
OP-704 – Natural and Unexpected Disasters Policy	The Policy has two interrelated specific objectives: i) To strengthen the Bank's effectiveness in supporting its borrowers to systematically manage risks related to natural hazards by identifying these risks, reducing vulnerability, and preventing and mitigating related disasters before they occur ii) To facilitate rapid and appropriate assistance by the Bank to its borrowing member countries in response to disasters in an effort to efficiently revitalize their development efforts and avoid rebuilding vulnerability
OP-102 Access to Information Policy	This Policy is based on the principle that information concerning the Bank and its activities must be made available to the public in the absence of a compelling reason for confidentiality. Information provided to the public must be made available in a form and at a time that enhances the transparency and therefore the quality of Bank activities.

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

- B.1, Bank Policies: The Bank will only finance operations and activities that comply with the directives of this policy and are consistent with the relevant provisions of other Bank policies. This policy ensured the borrower/executing agency has legislation in place that promotes environmental management, training, and environmental governance, and also promotes conservation and sustainable use of natural resources.
- B.2, Country Laws and Regulations: Project activities must comply with all Suriname laws and regulations, including the preparation of an ESIA if required. Applicability will be determined by NIMOS once the Project activities are clearly defined.
- B.3, Screening and Classification: The Project will have impacts on the environment and the community. The Project is classified as Category "B". In accordance with OP-703, Category B projects "are likely to cause mostly local and short-term negative" impacts, for which "effective mitigation measures are readily available". These will be further discussed in this EA.
- B.4, Other Risk Factors: The Project's executing agency needs to comply with the EA and Environmental and Social Management Plan (ESMP) requirements. Therefore, the executing agency and relevant third parties will be required to develop appropriate measures for managing the identified risks.

- B.5, Environmental Assessment Requirements: This EA addresses the IDB's requirement for environmental assessment for the Project.
- B.6, Consultations: An initial stakeholder consultation was conducted on 1 November 2018 to discuss the project, possible alternatives and receive initial stakeholder feedback. Consistent with the IDB's Access to Information Policy (OP-102) and this policy (OP-703), the Draft EA was made available to the public and a meaningful consultation event with affected parties was carried out in February 2019 (see Section 8 for a description of consultations).
- B.7, Supervision and Compliance: A monitoring plan will be implemented for the Project as part of the Project's (ESMP).
- B.9, Natural Habitats and Cultural Sites: The Project is located in a highly developed area of Paramaribo, and no natural habitats or cultural sites are known to exist in the Project Area. This directive requires the development of mitigation and monitoring measures to mitigate impacts, as addressed in this EA and its ESMP.
- B.11, Pollution Prevention and Abatement: Project activities have a risk of pollution, specifically during the construction phase. Pollution prevention is addressed in the Project's ESMP (see Section 7.0).
- B17. Contractor clauses for implementation of an ESMP.

Additionally, the Project triggers the IDB's Access to Information Policy (OP 102), the Gender Equality in Development Policy (OP-761), and the Disaster Risk Management Policy (OP-704). When it comes to financing projects, it is the Bank's intent to be as clear and transparent as possible and, through clear stakeholder communication, to improve the quality of its operations (see Section 8 for a description of project disclosure and consultation events).

4. ANALYSIS OF ALTERNATIVES

As previously described in Section 1.0 of this report, the high traffic congestion currently found on the roads within and around the Port, as well as the inefficiencies in Port operations have proven to be detrimental to the trade operations of Suriname.

The IDB is supporting the Improving Transport Logistic and Competitiveness in Suriname Program which aims to increase Suriname's competitiveness and productivity in the agricultural sector by improving the transport logistics within and near the Port terminal. The program considers investments and activities throughout four inter-related fronts:

- Improvement of Port access and land utilization;
- Optimization of Port operation and customs inspections;
- Upgrade and implement climate change adaptation measures into road infrastructure, bridges and secondary roads; and
- Modernize traffic management.

The IDB established a Technical Cooperation to prepare a key technical analysis for the design of the Program, as well as to help identify strategic interventions that will help to fulfill the objectives.

4.1 Current Conditions

The existing road corridor situation is critical without any intervention. Currently the roads analyzed by Transconsult as part of the traffic baseline study present travel times of over 11 minutes on average. If the Project is not implemented, projections show that travel times could increase to up to 19 minutes (see Section 5.1.5 for a description of the traffic baseline).

4.2 No Action Alternative

NV Havenbeheer Suriname, one of the Port's Management Company, recently made physical and administrative improvements having implemented a new port management and information systems that improved access control to the Port, and provided the company with better statistical information. However, these improvements are still in development and there are several investments regarding equipment, IT development, and stakeholder's training that has to be done in order to fully automate the Port management and information system (Deloitte 2018).

As a temporary solution to the Van't Hogerhuysstraat congestion issue, NV Havenbeheer Suriname had to make adjustments in Port operations, reducing its capacity and competitiveness. This included the closure of the main truck gate, the use of a 470 m internal road for truck traffic, and the temporary use of a storage area of 12,914 m^2 for transit and parking. These measures are both not sustainable and unbeneficial to the operation of the Port (Deloitte 2018).

The no action alternative would leave current conditions as they are, impacting Suriname's imports and exports (especially the agricultural sector), which are currently affected by increasing freight costs and transit times due to limitations in the roads that connect production areas to the Port, as well as operational difficulties in Port access. In addition to impacting Suriname's import and exports, poor Port logistics that would remain due to the no action alternative would also impact current users of the road systems including public transport, etc. because congestion would continue and is projected to worsen.

4.3 Alternatives Assessment

4.3.1 Port Operation Assessment

Interviews with some of the port's stakeholders and a visit to Dr. Jules Sedney Terminal was the basis to understanding the current situation of the Port operations and preliminary identify four initiatives to improve the access and internal processes. The proposed potential solutions were:

1. Modification of the port's entrance/exit and internal flows: to aid the decongestion of truck parking in Havenlaan West; and reduce import process land transport departure for vehicles heading north. In order to avoid negatively affecting operations, it was recommended that current pre-gate processes be integrated in a new designated area, and to separate lanes for full and empty containers.
2. Reincorporation of Main Entrance for light vehicles: current main gate in Havenlaan Zuid should be re-enabled for light vehicles transit. This will separate light from heavy traffic within the Port's roads.
3. Transfer of cargo from Container Terminal to Customs: Container transit from the Terminals to customs inspection area could be made before land transport arrives at the Port and should be carried out by a third party. This could potentially reduce trucks waiting time inside the Port, reducing congestion and possibly freight logistic costs.
4. Implementation of new modules in the Port Community System (PCS) to support activities: PCS modules should improve coordination between stakeholders and set the foundation for entrance/exit automation process.

4.3.2 Road Assessments

Data was gathered during previous studies in order to develop a traffic simulation of the roads and have a better understanding of the current bottlenecks (Deloitte 2018). The information was input into VISSIM[3] software in order to model current conditions. VISSIM allows the evaluation and planning of urban and interurban infrastructure using current versions of international traffic manuals, such as the Highway Capacity Manual (HCM) (TRB 2016). The microsimulation network was comprised of main roads as well as complementary roads which were integrated to represent inputs and / or exits of flows. The main roads incorporated into the network were the following:

- Zwartenhovenbrug Straat
- Saramacca Straat
- Johan Adolf Pengel Straat
- Kankantrie Straat
- Calcutta Straat
- Jules Wijdenboschbrug
- Oud Pan Wanica
- Indira Ghandiweg
- Local streets in Hernhutter Straat and Martin Luther Kingweg

[3] PTV Vissim is a microscopic multi-modal traffic flow simulation software package developed by PTV Planung Transport Verkehr AG in Karlsruhe, Germany.

Additionally, the model included Port entrances and exits, as well as some internal roads and parking areas. The analysis identified key areas for improvement, where travel time, level of service, delays and queue length were not optimal (Deloitte 2018). Based on the models, the consultants identified seven types of interventions to improve the conditions of the access roads to the Port:

1. Geometric modification of two roundabouts (2),
2. Construction of an extra lane per direction in the MLK-Van ‘t Hogerhuysstraat (2.7 Km),
3. Rehabilitation of the bridge over the Saramacca Canal (0.21 km), to allow for the circulations of trucks,
4. Implementation of traffic lights (8 new) and reconfiguration of phases of the existing one,
5. Modification of the port´s entrance and exit,
6. Storage lanes in selected intersections (3), and
7. Road rehabilitation of the complete corridor, including the construction of sidewalks and cycle paths as urban renewal strategies.

4.3.3 The Proposed Project

A Cost Benefit Analysis was performed for the interventions identified in the microsimulation described above. Based on the results of the cost benefit analysis, the proposed Project interventions:

- Will have an impact of 9.3M USD in the first year of operation (18% of the total CAPEX).
- Will save 1.4 million hours for drivers and 3 million liters of fuel in the first year of operation
- Will increase competitiveness of freight logistics, reducing its cost and increasing the use of the truck fleets.
- Will obtain other additional benefits such as green areas, standardization and improvement of public transport stops, pedestrian and cycle dedicated areas, safety improvement, and better quality of infrastructure of the corridor (Deloitte 2018).

5. DESCRIPTION OF THE EXISTING ENVIRONMENT

This section of the EA describes the existing conditions within the vicinity of the proposed Project improvement area. It is divided into three major sections: physical resources, biological resources, and socio-economic and cultural resources. This Section describes the baseline environmental conditions against which the predicted impacts of the Project are measured in Section 6.0.

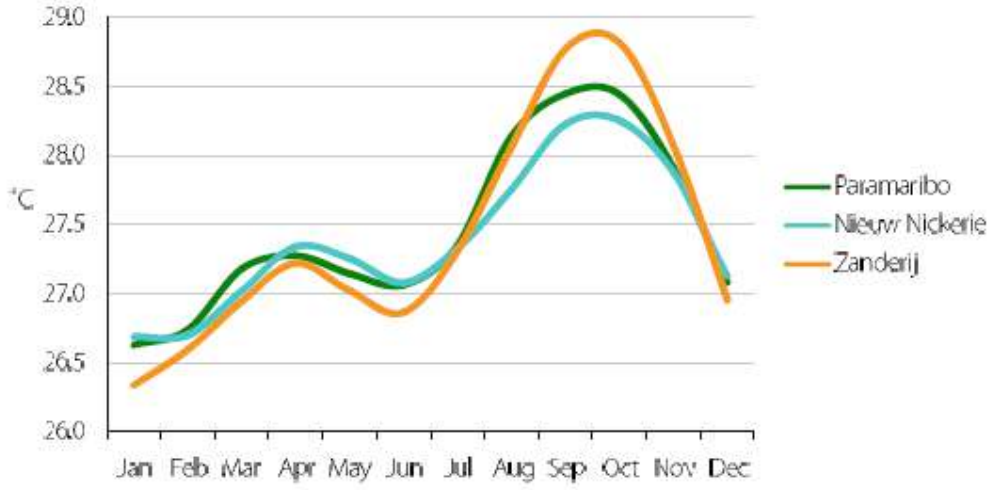
5.1 Physical Resources

5.1.1 Climate

Even though Suriname is located outside the hurricane area, hurricanes often cause heavy rainfall. Sibibusies's (Sibi= sweep, busie= forest), Inter Tropical Convergence Zone (ITCZ) and the El Niño phenomenon are climate systems that influence meteorological conditions in Suriname (CIS 2014).

- Sibibusies are heavy winds events that occur during heavy precipitation with speeds between 70 kilometers per hour (km/hr) and 100 km/hr.
- ITCZ is an area close to the equator, where the northeast and southeast trade winds meet.
- The El Niño phenomenon usually occurs every 2 to 7 years lasting 12 to 18 months, but it can occur any time. Generally, El Niño conditions in Suriname are dryer than normal.

The Project is located within the urban footprint of downtown Paramaribo, which has an average daily temperature of approximately 27.4° Celsius (C), with daily variations of 5°C (MLTDE 2013). Figure 5-1 shows the average monthly temperature for Paramaribo indicating that there is only a small variation in air temperature throughout the year. The coldest month of the year in Paramaribo is January and the warmest month of the year is October.



Source: MLTDE 2013.

Figure 5-1: Average Monthly Temperatures for Paramaribo

Paramaribo has two wet and two dry seasons with an annual average precipitation of 2,210 millimeters (mm):

- The short wet season occurs from December to February and the long wet season occurs between May and August, with an average monthly precipitation of approximately 200 mm for both wet seasons.
- The short dry season occurs between February and April and the long dry season occurs from August to December, with an average monthly precipitation of 100 mm for both dry seasons.

Classification of these four seasons is based on precipitation records from the Cultuurtuin meteorological station located in Paramaribo, immediately north of the Project Site (Amatali 2007; MLTDE 2013).

Precipitation intensity depends on the duration of the storm and return period. The precipitation intensity decreases when the duration of the storm decreases (Amatali, 2007). Figure 5-2 shows the precipitation intensity duration frequency (IDF) curves for different return periods for the Cultuurtuin station based on historical precipitation records for 1981 to 2015.

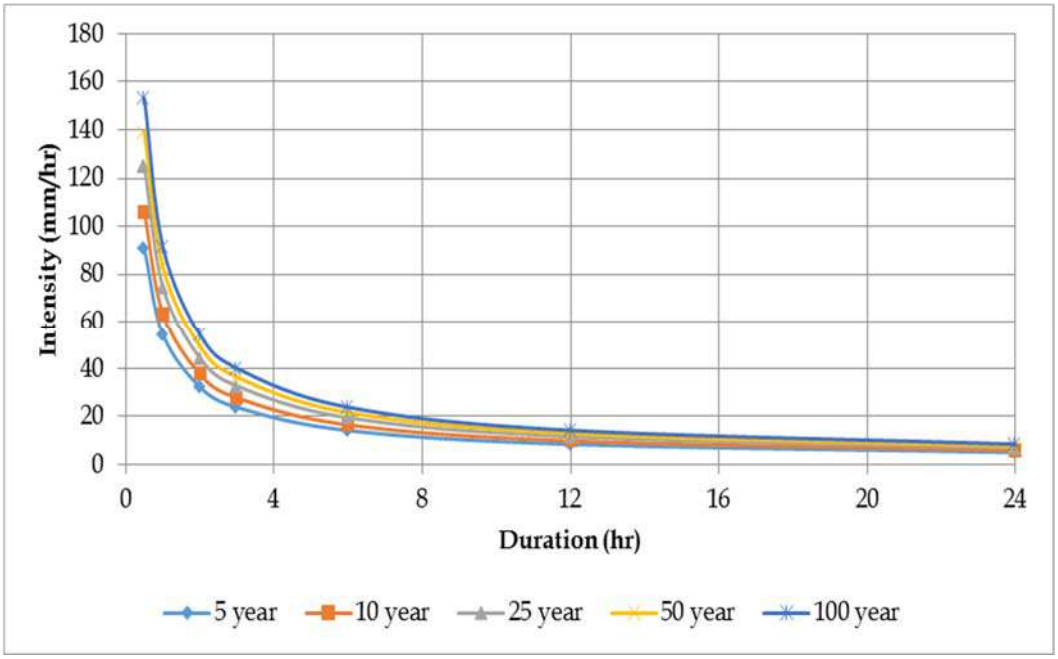


Figure 5-2: Intensity Duration Frequency (IDF) Curves for Cultuurtuin Station (1981-2015)

5.1.2 Air Quality

Air quality baseline data (gaseous pollutants and dust) are currently not available in the Project Area. The major air emission sources in the Project Area are attributable to port-related activities at the Dr. Jules Sedney Port (truck and maritime traffic, cranes, forklifts, etc.) and heavy traffic on roadways leading to the Port, particularly Van 't Hogerhuysstraat and its access roads. Therefore, it can be presumed that average air quality in the Project Area is medium and typical of an urban environment with dense traffic. The major air pollutants likely to be present in the Project Area include inhalable particulate matter (mostly smoking in public places), and combustion/exhaust emissions such as carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and volatile organic compounds (VOC). Most of the roads are paved, which results in low dust generation.

The most significant existing air pollution sources in the Project Area are likely to include:

- Vehicles movement or idling on Van ‘t Hogerhuysstraat and its access roads (cars, trucks, buses, and motor cycles);
- Port-related activities (container trucks, loading ships, support vessels, tug boats, cranes, forklifts, etc.); and
- Tobacco smoking in public places (indoor and outdoor).

Traffic activity, wind speed, and direction can have a big influence on pollutant concentrations. Generally, the more traffic, the higher the emissions; however, certain activities like congestion, stop-and-go movement or high-speed operations can increase emissions of certain pollutants. The Van ‘t Hogerhuysstraat road is very congested and has traffic of more than 50,000 vehicles per day (93% cars and motorcycles, 3% trucks, and 4% public transport and buses). This traffic includes the trucks heading towards the Port, which has deteriorated the road, road shoulders and parapets. Traffic volumes range from over 2,800 to over 5,000 vehicles per hour during peak hour (7:00 a.m.) at intersections within the Project Area. The traffic congestion and stop-and-go movements on the access roads leading to the port restricts the proper dispersion of vehicle exhaust emissions, which further increases emissions of some pollutants in the Project Area.

The Project Area is surrounded mostly by commercial and residential receptors, with the residential population closer to the road improvement areas.

5.1.3 Noise

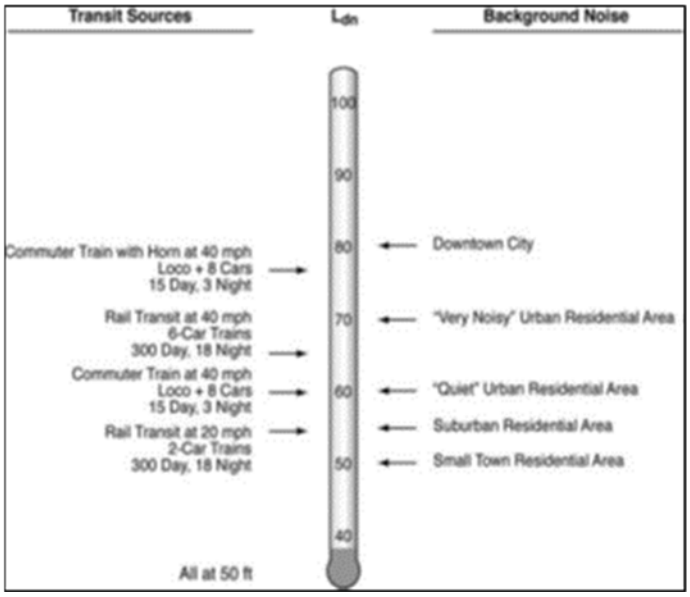
Noise baseline data are currently not available in the Project Area. The major noise sources in the Project Area are attributable to Port-related activities (truck and maritime traffic, cranes, forklifts, etc.) at the Dr. Jules Sedney Port and heavy traffic (including warning horns/alarms) on roadways leading to the Port, particularly Van ‘t Hogerhuysstraat and its access roads. Therefore, it can be presumed that the average noise level in the Project Area is medium and typical of an urban environment with dense traffic.

The most significant existing sources of noise pollution in the Project Area are likely to include:

- Vehicle movement on Van ‘t Hogerhuysstraat and its access roads (passenger cars, trucks, buses, and motor cycles);
- Port-related activities (container trucks, loading ships, support vessels, tug boats, cranes, forklifts, etc.); and
- Backup alarms from trucks on access roads leading to the Port and within the Port area.

The Project Area is surrounded mostly by commercial and residential receptors, with the residential population closer to the road improvement areas.

Figure 5-3 shows typical day-night sound levels for different land uses and transit sources.



Source: FTA 2006

Figure 5-3: Typical Day-Night Sound Levels

5.1.4 Natural Disasters and Risks

The World Bank Group's Think Hazard! tool is a high-level, on-line, natural hazard risk data base for emerging market countries. This tool was queried to assess relative risk ratings for a suite of potential natural hazards for Paramaribo, Suriname. The relevant risk categories identified for the Paramaribo area are listed in decreasing order of risk:

- River flooding (medium);
- Urban flooding (medium);
- Tsunami (low);
- Earthquake (very low); and
- Hurricane (very low).

Flooding risks are described below in the context of Paramaribo and the Project Area. In addition to the risks of extreme storms and high winds. The risks for the occurrences of tsunamis, earthquakes, and hurricanes are not discussed as these risks are not considered to be relevant for the country.

Paramaribo, including the Project Area, is prone to flooding during rain events and other natural hazards such as storms and high winds (see Table 5-1 below, for floods in Paramaribo). These natural hazards may pose risks to the implementation of the proposed Port and road upgrades and improvements, the surrounding population, and the environment. Details of the natural risks for the Project Area are described in the following sections. Other natural risks such as drought may occur at the regional level but are not described in this EA due to the lack of nexus to the Project.

Disaster risk is defined as the combination of the probability of an event and its negative consequences (UN 2014). The risks for the Project, people, and environment include the following components:

- Exposure (probability and intensity of natural disasters and the number of people exposed or threatened by these disasters).

- Vulnerability (considering susceptibility, coping capacity, and adaptive capacity).

According to the World Risk Index (WRI; UN 2014), Suriname is ranked 49 of 174 countries in the world in terms of vulnerability with a WRI of 8.42 percent (exposure and vulnerability risk where 0.08-3.46 is considered very low risk, 3.47 to 5.46 is low, 5.47 to 7.30 is medium, 7.31-10.39 is high and 10.40-36.72 is very high risk). Suriname is especially vulnerable to natural hazards for the following reasons:

- Population concentrations in low-lying, hazard prone areas;
- Weak institutional capacity to prepare for, and respond to, natural disasters; and
- High levels of poverty that limit the population's ability to respond to natural disasters.

Table 5-1 provides a summary of the types of natural disasters and the population affected in Suriname between 2000 and 2016. The United Nations Development Program (UNDP) includes Suriname in the list of the ten most vulnerable countries with low-lying coastal plains that are threatened by sea level rise (SLR) in this century.

Table 5-1: Types of Natural Disasters and Population Affected 2000-2016 in Suriname

Date	Natural Disaster	Affected Areas	Population Affected
5/28/2000	Flood due to excessive rainfall	Sipaliwini, Northern Marowijne, Tapanahony River, Lawa, and Curuni	5,000 people
9/7/2004	Floods associated with rainfall from Hurricane Ivan	Not specified	Unknown
6/5/2006	Flood due to excessive rainfall	Gran Rio and Pikin Rio rivers, Paramacaans on the Marowijne River, upper Marowijne, Tapanhony and Lawa, (Mofina) Suriname and Sipaliwini River	25,000 people
June 2006	Floods due to heavy rainfall	Villages along the upper Marowijne river and the upper Suriname River	20,000 people
2006/2007	Flood	Coropina triangle, Vier Kinderen, La Prosperite and Republiek	500 people
4/20/2007	Floods due to continuous rainfall	Paramaribo	Unknown
6/8/2008	Flood due excessive rainfall	Southern part of the interior: Djumu, Asidonhopo, Semoisi, Awaradam	Unknown
1/10/2009	Flood due to excessive rainfall	Paramaribo	Unknown
2/4/2009	Flood due to excessive rainfall	Paramaribo	Unknown
10/3/2009	Flood due to excessive rainfall	Paramaribo	Unknown
5/3/2009	Flood due to excessive rainfall	Paramaribo	Unknown
7/14/2010	Coastal flooding as a result of dam fail	Saramaca: La poule, Peperhol, north part of Wayambo	Unknown
4/24/2010	Flood due to excessive rainfall	Paramaribo	Unknown
4/16/2010	Flood due to excessive rainfall	Paramaribo: Margarethalaan	Unknown
4/22/2010	Flood due to excessive rainfall	Paramaribo: Poelepantje	Unknown

Date	Natural Disaster	Affected Areas	Population Affected
6/1/2012	Storm	Nickerie: Nieuw Nickerie	55 houses
6/20/2012	Storm	Paramaribo, Marowijne: Galibi and Albina	35 people
5/17/2013	Flood due to excessive rainfall	Saramacca: Misgusnst Commewijne: Frederikdorp Para, Paramaribo, Marowijne (Cottica)	Unknown
6/20/2013	Tail of a heavy tropical storm/flooding (heavy rainfall)	Paramaribo, Wanica, Saramacca, Marowijne (Galibi). Roof were torn away (30 houses), trees uprooted and damaged power poles, advertising signs and street lighting	300 people
12/27/2013	Flood due to excessive rainfall	Paramaribo, Wanica, Saramacca	Unknown
7/6/2014	Storm	National: Paramaribo, Coronie, Commewijne, Saramacca en Nickerie Nickerie: Nieuw Nickerie	150+ people
5/2/2015	Flood	Marowijne: Alale Kondre	Unknown
5/18/2015	Persistent rainfall	Wanica: Hanna's Lust	Unknown
6/21/2015	Storm	Paramaribo: Zorg en Hoop	1 injured and 35 homes affected
6/28/2015	Storm	Paramaribo	1 (death)
7/27/2015	Flood	Saramacca	Unknown

Source: Adapted from CIS 2014 and NCCR 2017. Detailed data not readily available after January 2016.

5.1.4.1 Flooding

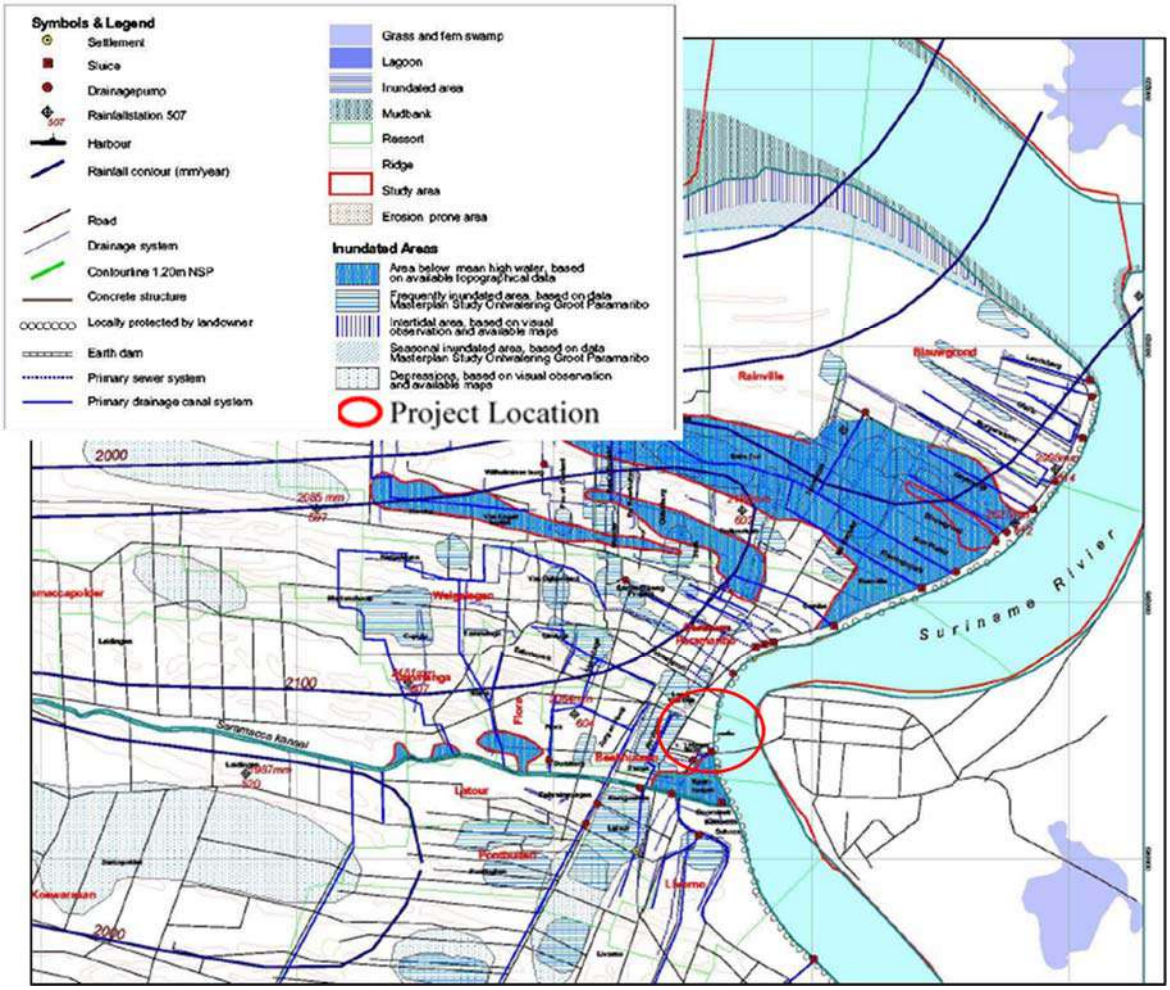
Suriname experiences frequent floods in its coastal plain and rivers. Inland and coastal flooding in urban areas of Paramaribo is produced from the high volume of precipitation, poor drainage due to the outdated and insufficient drainage system, and rising sea and river water levels.

The Project is located in Paramaribo on the left bank of the Suriname River. Besides Paramaribo, there are other settlements along the left bank of the river, including Domburg and Paranam. New Amsterdam is on the right bank of the river (Amatali and Naipal 1999). The urban area of Paramaribo (including the Project Area) is considered highly vulnerable to flooding due to sea level rise and the increasing intensity of precipitation; loss of land due to coastal and riverbank erosion; longer and frequent severe dry periods; and uncontrolled urbanization in Paramaribo and areas north of downtown (Noordam 2007). The Suriname River borders Paramaribo to the east, which is a tidally-influenced river with a catchment area of 16,500 square kilometers (km^2). Its waters discharge into the Atlantic Ocean and its flow has been regulated by the hydropower Afobaka Dam (Prof. van Blommenstein reservoir) since 1964, which is located approximately 194 km upstream of Paramaribo (see Figure 2-1).

According to a study on disaster management in Suriname, before May 2006, natural disasters were infrequent in Suriname (Karijokromo 2011). Some historical normal floods were produced by an outdated drainage system in different areas of Paramaribo City (Karijokromo 2011). The impacts of these normal floods were not as damaging as the first major flood that occurred on 2006. The Prevention web (2014) reports that flooding represents an average annual loss of approximately USD $54 million for Suriname.

According to a masterplan prepared by the MPTC, approximately 13% of the total urban area of Paramaribo was affected by this hazard, causing economic damage and health conditions associated with stagnant water (MOGP 2001). The most recent severe floods in Paramaribo occurred in 2006 and 2008, but no records of economic or life losses were available. Floods principally occur because large parts of the city were built on low-lying lands and the city lacks an updated stormwater drainage system (see Figures 5-4 and 5-5). Some areas, near the Project Area is prone to floods because it is located at low-lying lands and it is part of the left bank of the Suriname River (see Figure 5-4). The river is tidally-

influenced and when the high water level of the Suriname River is combined with runoff from impermeable areas, it produces floods affecting roads and properties near the Project Area.



Source: Amatali 2007.

Figure 5-4: Frequent and Seasonal Inundated Areas in Paramaribo based on Data from Masterplan Study Ontwatering Groot Paramaribo

Source: YouTube 2010.

Figure 5-5: Inland Flooding in Urban Paramaribo in October 2009

Coastal and Suriname River banks are at risk for flooding due to higher water levels. According to a study on climate change for Suriname, over 2,000 km2 of coastal zones of Suriname are at risk for flooding (CCCRA 2012). Historical sea level rise is affecting the city and sometimes existing natural and artificial protections are insufficient. Portions of the Suriname River's left bank (e.g., Anton Dragtengwe, Paramaribo North) are overtopped during high water (MOGP 2001).

Most of the floods in the Project Area occur during spring tide. Breaching or overtopping defensive structures results in tidal flooding by saline or brackish water (Noordam 2007). At the mouth of the Suriname River, the mean tidal range is 1.8 m between neap tide and spring tide. A slightly positive increase of +0.6 mm/year on water levels in the Suriname River has been observed based on historical annual water level measured at Paramaribo station located at km 52 in the Suriname River (Amatali 2012). In the inhabited areas along the Suriname River banks the land level is lower than the 10-year return (Tr) water level (see Table 5-2) producing potential risk for inundation from the river.

Table 5-2: High Water Level in the Suriname River

Station	Annual Higher High Water (cm NSP)			
	Tr = 10-years	Tr = 25-years	Tr = 50-years	Tr = 100-years
Geleidelicht	185	198	207	216
New Amsterdam	193	203	210	217
Paramaribo	201	211	219	226
Domburg	198	203	207	212
Paranam	155	175	190	204

Key:
cm= centimeters; NSP= Normaal Surinaamse Peil; Tr= Return period
Source: Adapted from Amatali 2012.

5.1.4.2 Extreme Wind

According to the Environmental Statistics published by Conservation International Suriname and conversations with local specialists (Sukarni Sallons Mitro, Meteorological Service Suriname, personal communication), Paramaribo has recently experienced severe weather conditions including high intensity

wind or Sibibusies (CIS 2014). These extreme wind conditions have caused partial destruction of Paramaribo's infrastructure. Extreme winds occur during heavy rains and can present wind speeds between 20 meters per second (m/s) and 30 m/s. It is expected that with the projected increase in temperature, the energy in the atmosphere will increase as well as the maximum wind velocity (Amatali 2007). Extreme winds have toppled trees, blown off roofs, and snapped light poles. The National Coordination Center for Disaster Management (NCCR) has provided help to people under extreme wind events at more than 35 places around Paramaribo (Hokstam 2012). Figure 5-6 shows maximum wind speeds recorded at the Cultuurtuin Climatological Station for the last 2 years (February 2015 to August 2016).

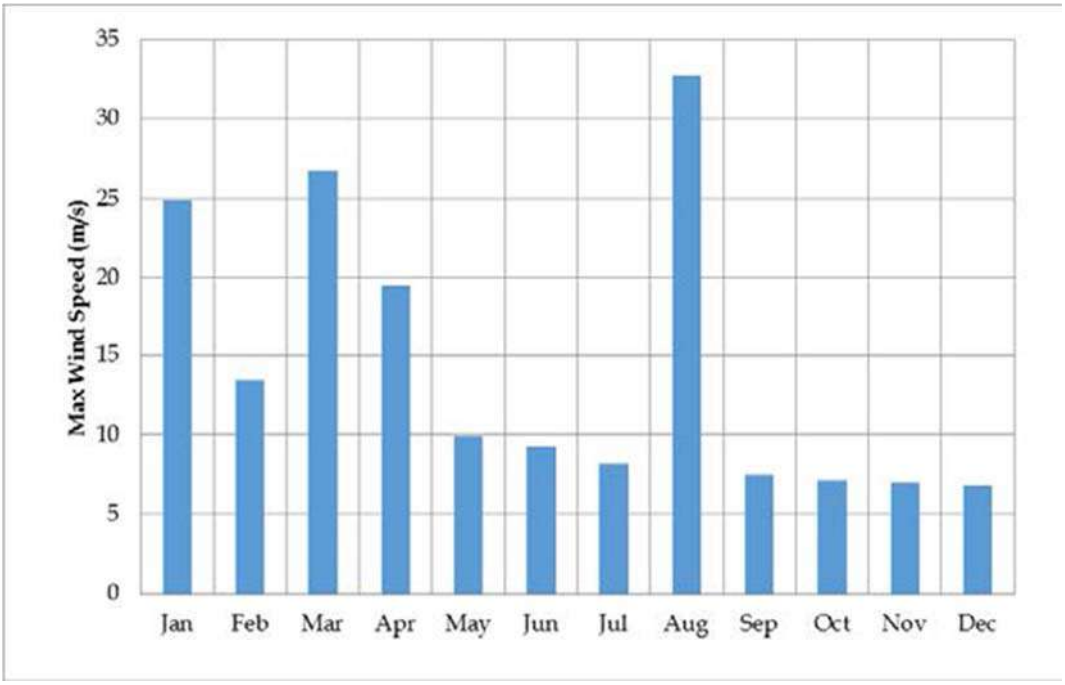


Figure Source: ERM (data provided by the Meteorological Service).

Figure 5-6: Maximum Wind Speed (m/s) Recorded at Cultuurtuin Climatological Station for 2015-2016 Period

5.1.5 Traffic

The main reason the Project is being proposed Cis to relieve congested traffic conditions both outside and inside of the Port, which affect its competitiveness and the population's social and economic activities. As part of the feasibility studies for the Project, current traffic conditions were characterized and analyzed in the roads in and around the Port as shown in Figure 5-7 below, and the results are described in this Section. Because the roads included in the scope of the study have an important share of urban traffic (over 97%), the study analyzed the traffic flows of: i) private cars and motorcycles, ii) heavyweight trucks, and iii) public transportation (Deloitte 2018).

Figure Source: Deloitte 2018.

Figure 5-7: Traffic Study Area

The traffic study showed different kinds of issues in relation to the roads in and around the Port, not only are these roads affected by heavy traffic congestion, but the infrastructure of the roads has been damaged due to the coexistence of heavy and light vehicles.

The traffic study conducted utilized several devices and manual/visual stations to gather information, including observations from a site visit, pneumatic and manual traffic counters in specific points of the access roads, statistics obtained from Roads and Public Works Authorities, visual inspection with drones, and blueprints and information regarding the state of the infrastructure (water pipes, stormwater drainage features, electric lines and underground connections, telephone lines and underground connections). The results of this study are described below.

5.1.5.1 Traffic Flow Volume

A Weekly Average Daily Traffic (WADT)[4] was used for the analysis. The study not only registered number of vehicles but also direction and vehicle type at Van 't Hogerhuysstraat at the exit of the Port, Molenpad, Van 't Hogerhuysstraat after the Saramacca Bridge, Van 't Hogerhuysstraat before Molenpad, Van 't Hogerhuysstraat/Jules Wijdenboschbrug roundabout, Slangenhoutstraat, Hernhutterstraat, Willem Campagnestraat, and Martin Luther Kingweg.

As can be seen from the results of the study in Figure 5-8 below, the section with the most congestion reaching more than 50,000 vehicles per day, is Van 't Hogerhuysstraat after the Saramacca Bridge and all the way to Molenpad, where some of the traffic is scattered to alternative roads. The traffic was found to have the following composition:

- Private cars and motorcycles: 93%.
- Heavyweight trucks: 3%.
- Others: 4%, mainly public transport and motorcycles (used as taxi's).

Figure Source: Deloitte 2018.

Figure 5-8: Weekly Average Daily Traffic in the Study Area

[4] WADT is a measure used primarily in transportation planning, transportation engineering and retail location selection. The WADT was calculated using the measurements of counters installed in strategic points that allowed a valid sample of measurements to characterize the traffic and vehicle dynamics of the corridors.

Additional observations included the following:

- Van ‘t Hogerhuysstraat has external lanes in each side of the road for motorcycles while other vehicles use internal ones. Pedestrian activity was observed, but it’s marginal in access roads.
- Saramaccabrug, connecting Martin Luther Kingweg and Van ‘t Hogerhuysstraat doesn’t have the capacity to withstand heavy traffic, forcing trucks to take detours that delay their trips.
- Illegal parking in some of the internal roads can also cause congestions or delay traffic.
- Current traffic lights are being manipulated by transit police at the morning peak hour.

Peak hours (maximum demand) was identified from 7:00 to 8:00 am on traffic headed north bound and 3:00 to 5:00 pm on traffic headed south bound. The following figure shows average traffic flows at peak hours (Figure 5-9). The study showed the quantity of vehicles range from 2,000 to 5,000 vehicles per hour during peak times, with the most traffic observed in Van ‘t Hogerhuysstraat in the vicinity of the Port, with a range from approximately 4,000 to 5,000 vehicles.

Figure Source: Deloitte 2018.

Figure 5-9: Average Traffic Flows at Peak Hours

5.1.5.2 Traffic Direction

In addition to traffic estimates, the study analyzed the direction of flow in the eight main intersections during peak hours. Below is a description of the results at the three most important of the intersections included in the study.

Jules Wijdenboschbrug Roundabout

One of the main bottlenecks identified in the study is the Jules Wijdenboschbrug roundabout, on Van 't Hogerhuysstraat's southbound lane and the bridge. During peak hours, this intersection has a volume of approximately 4,000 vehicles. It is important to mention that traffic on Van 't Hogerhuysstraat accounts for 57% of all the traffic at this intersection (approximately 2,259 vehicles). Furthermore, 25% of the traffic can access/exit this road from the Jules Wijdenboschbrug roundabout with continuous turns.

Van 't Hogerhuysstraat-Willem Campagnestraat Intersection

The second intersection analyzed is the Van 't Hogerhuysstraat-Willem Campagnestraat, which has a of volume of 4,886 in peak hour. Traffic on Van 't Hogerhuysstraat (north and southbound traffic) makes up about 51% of all of the traffic at this intersection. The rest of movements are significant lower (<400 vehicles/hour). This intersection is the only intersection in the study area that has a traffic light. The study shows that traffic congestion at this intersection can be easily improved by changing the timing/phasing of the traffic light.

Poelepantje Roundabout

The last intersection analyzed was the Willem Campagnestraat and Hernhutterstraat intersection at the Poelepantje roundabout. The main traffic movements at this intersection are from south to west, and south to north, accounting for approximately 30% of all movements at this intersection. Some of this traffic is re-routed to this intersection because of congestion on Van 't Hogerhuysstraat. Traffic on Hernhutterstraat is mainly northbound, but a dedicated north-south lane for access to Kankantriestraat, causes additional congestion to the vehicles that circulate the roundabout. Other main traffic flow patterns at this intersection include east-west and vice versa (accounts for 16% each).

5.1.5.3 Traffic Velocity

The study's road network was divided into 12 sections as shown in the Figure below (see Figure 5-9). The average speed of the study area is 29 km/hr. Sections 4-3 and 9-10, located on Van 't Hogerhuysstraat and Hernhutterstraat respectively (see in Figure 5-10 below), showed average speeds lower than 10 km/hr because traffic volumes exceed the capacity of the roundabouts.

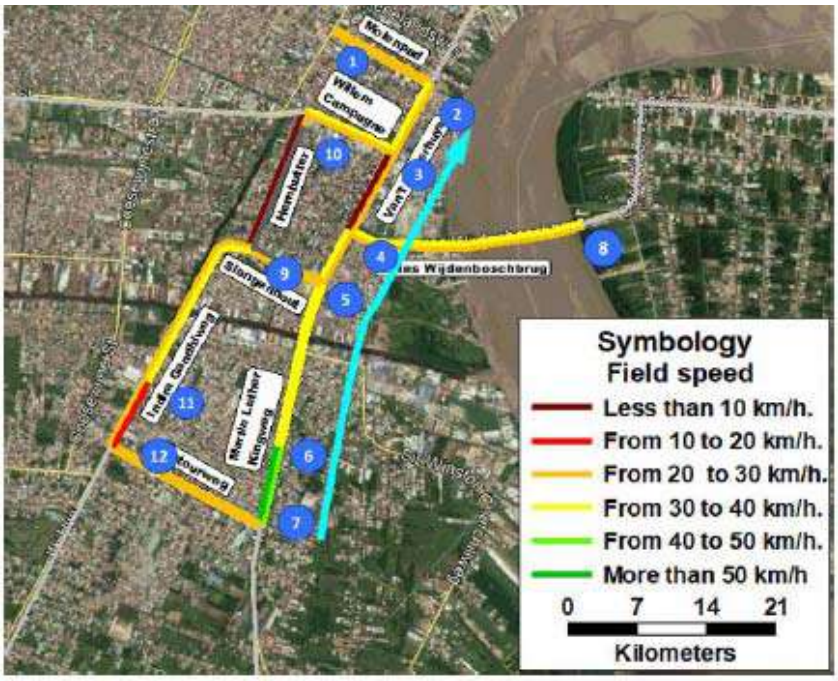


Figure Source: Deloitte 2018

Figure 5-10: Study Area - Average Vehicle Speeds

As vehicles move towards the urbanized areas, congestion worsens and the average speed decreases. Hernhutterstraat showed the lowest average speeds for vehicles before reaching Willem Campagnestraat as well as a portion of Van 't Hogerhuysstraat before arriving at the Port entrance.

5.2 Biodiversity

As described in Section 2.1 - Project Background, the Port and associated roadways are located within Paramaribo. The Port is located along the western edge of the Suriname River, immediately north of the Jules Wijdenboschburg [road] and east of Van 't Hoogerhuysstraat. The central and northern portions of the Port are developed with pavement, buildings, and storage containers, while the southern portion is largely undeveloped and/or fallow. Due to the urban location of the Project, there are limited biodiversity resources within the vicinity of the Project, none of which are listed on the International Union for Conservation of Nature (IUCN) red list as threatened or endangered.

5.2.1 Shoreline Habitats along the Suriname River

The shoreline along the Suriname River near the Port is largely developed with impervious surfaces comprised of homes, marinas, and businesses. Patches of significantly fragmented and/or degraded natural habitats associate with small tributaries and manmade canals (i.e., Saramacca Kanaal) are in close proximity to the Project, and are hydrologically connected to the Suriname River. Much of the natural habitats are degraded due to the Paramaribo City's poor stormwater drainage infrastructure as well as untreated sewage discharge. Untreated stormwater and sewage typically flows directly into the Suriname River and nearby canals, polluting the waterbodies.

5.2.2 The Saramacca Canal (Wanica Kreek)

The manmade, linear Saramacca Canal (Wanica Kreek) is located along the western shoreline of the Suriname River, approximately 860 m south of the Port, and meanders westerly approximately 25 km

connecting to the Saramacca River, flowing beneath several roadways along its path. A water navigation lock is located at its confluence with the Suriname River, adjacent to an emergent swamp comprised of degraded woody and herbaceous habitat. Narrow bands of fragmented and/or degraded riparian habitat also extend along the Canal's embankments. Due to the Canal's urban location and its high concentration of pollution, including garbage and raw sewage, the Canal supports minimal flora and fauna biodiverse habitats. The Cecropia (*Cecropia* spp.) tree is a common vegetation species that grows in disturbed areas throughout Suriname. Similarly, the spectacled caiman (*Caiman crocodilus*) is a common (and IUCN Least Concern) reptile species that is typically found in slow moving waterways and wetlands. Common green iguanas (*Iguana iguana*) are also commonly found throughout urban environments.

5.3 Socioeconomic and Cultural Resources

5.3.1 Socioeconomic Context

The Project is located within Paramaribo District in the Centrum, Beekhuizen and Livorno Resorts[5], near the center of Paramaribo in an urbanized- commercial and densely populated area (see Figure 5-11).

[5] Suriname is divided administratively into ten districts, which are further subdivided into resorts. There are 62 resorts in total in the country.

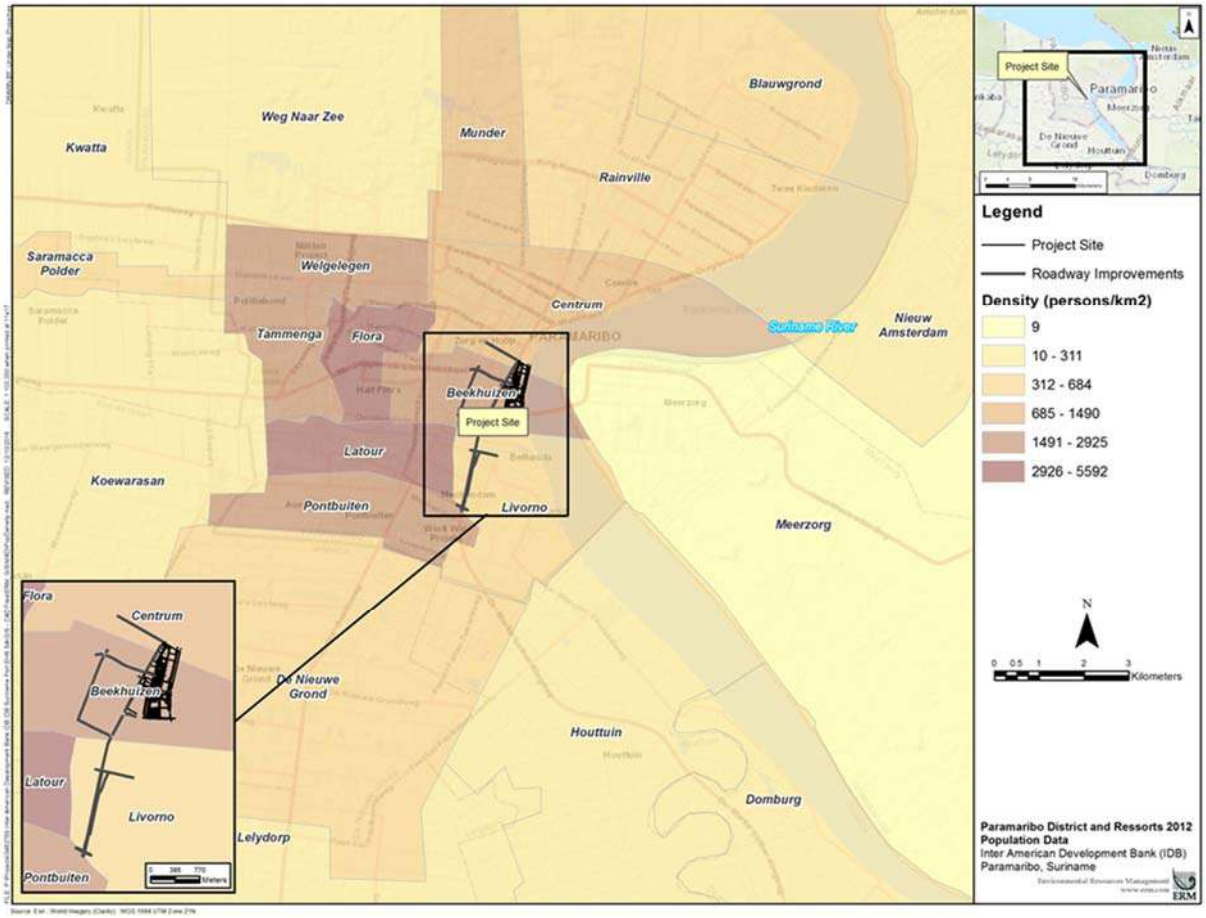


Figure source: ERM, 2018. Data source: ABS 2012.

Figure 5-11: Project Location within Paramaribo District, with Illustration of Resort Population Density (2012)

5.3.1.1 Population and Demographics

Paramaribo district had a population of 240,924 at the time of the most recent census in 2012. This represents a small decrease (-0.8%) since the last census in 2004. Data for all districts shows that Paramaribo was one of the two districts in the country with negative growth over the intercensal period (Figure 5-12), while districts with the highest rates of growth are Wanica, Para and Commewijne districts. Part of this growth is represented by former residents of Paramaribo moving into peri-urban areas where more developable land is available.

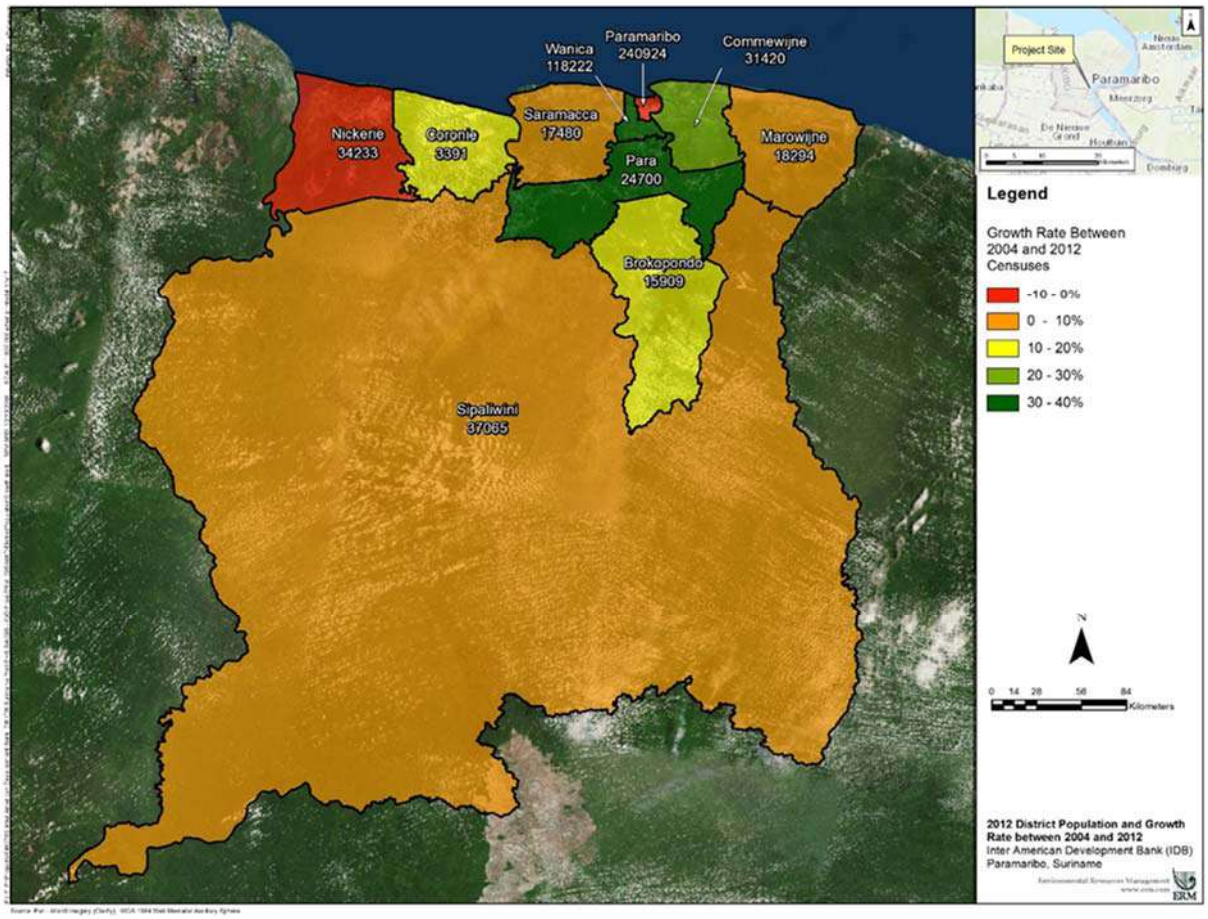


Figure source: ERM, 2018. Data source: ABS 2012.

Figure 5-12: Population Change in Suriname Districts, 2004-2012

The resorts in which the Project footprint is situated are relatively densely populated. The resorts of Centrum and Beekhuizen saw considerable decreases in population between 2004 and 2012. Livorno saw a modest decrease in that period (

Table 5-3).

Table 5-3: Census Population in Affected Resorts, 2004 and 2012

Resort	2004 Population	2012 Population	Population Change (%)
Centrum	29,274	20,631	-29.5%
Beekhuizen	19,783	17,185	-13.1%
Livorno	8,386	8,209	-2.1%

Source: ABS 2012.

Figure 5-13 shows the ethnic makeup of the population in the Centrum, Beekhuizen and Livorno Resorts according to the 2012 census, with data from Paramaribo District for comparison. The data show that the majority of population in these resorts is of Maroon, Creole, Hindustani and Mixed heritage.

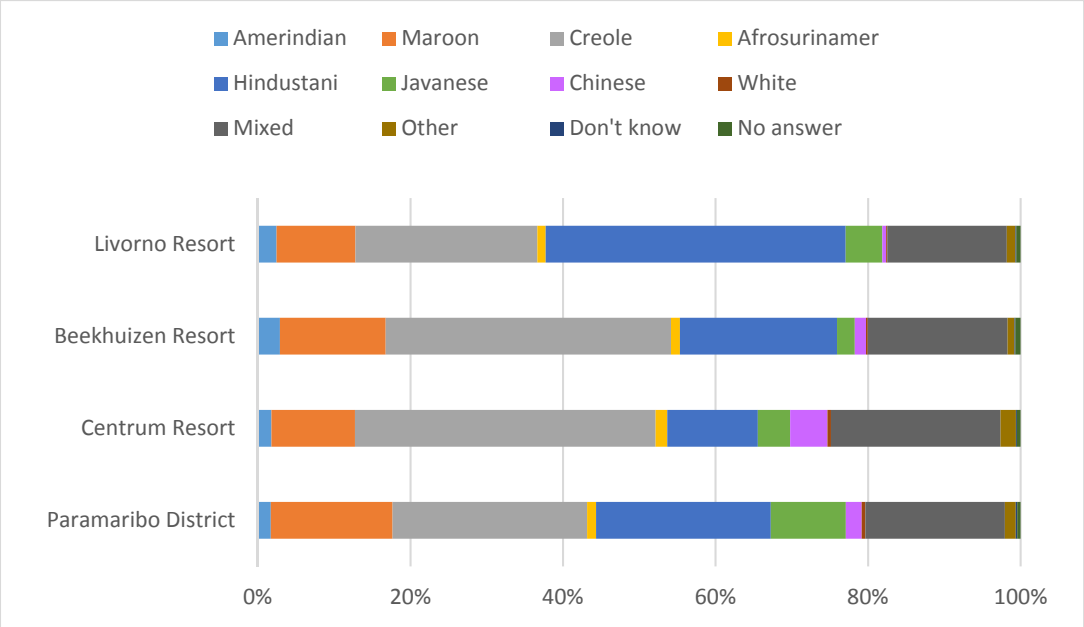


Figure source: ERM, 2018. Data source: ABS 2012.

Figure 5-13: Ethnic Makeup of Populations in Project Area

The age structure in Paramaribo District at the time of the last two censuses (2004 and 2012) is shown on Figure 5-14. The data suggest an aging population in the district; while the working-age population did not undergo much change, the 0-14 population experienced a decline of 12.7% while the 60+ population increased by 27.7%.

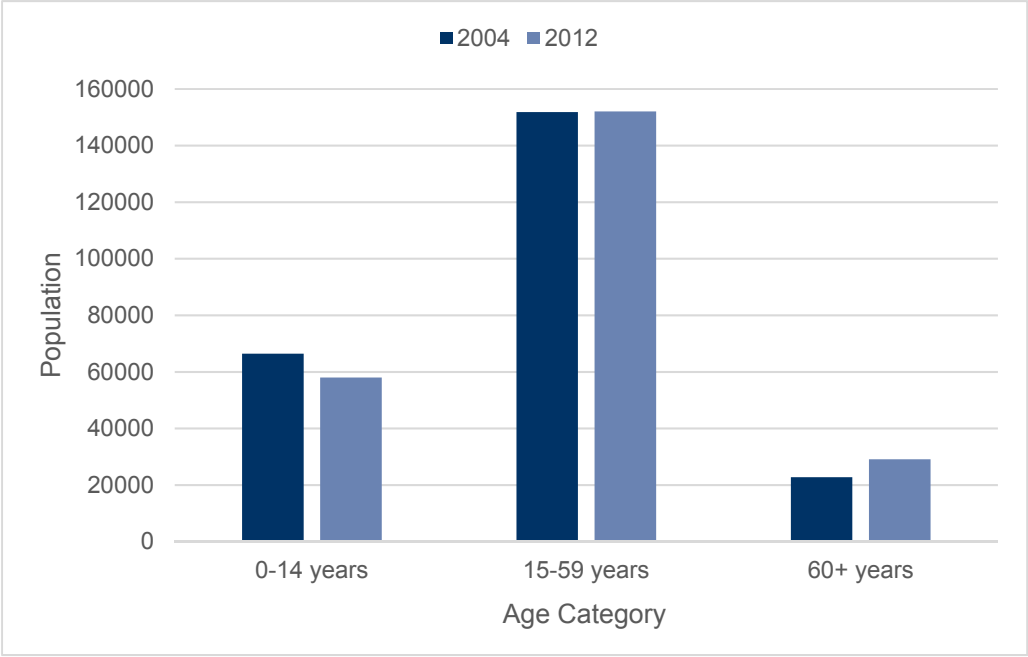


Figure source: ERM, 2018. Data source: ABS 2012.

Figure 5-14: Age Structure in Paramaribo District, 2004 and 2012

5.3.1.2 Vulnerable Populations

Vulnerability as defined herein equates to an inability to claim or take advantage of benefits, or an increased likelihood or magnitude to experience adverse conditions or impacts. As such, vulnerable groups are more likely to experience the negative impacts of a nearby project (e.g., traffic impacts, economic consequences of displacement), and/or an inability to experience benefits associated with a nearby project (e.g., employment, income).

Vulnerability is often associated with poverty or social status, although other individual factors can exacerbate the vulnerability of a person or group, such as gender, ethnicity, age, physical or mental capacity, race, political, or religious affiliation.

In the case of this project, segments of the affected population are likely to be vulnerable due to high levels of poverty or social exclusion. In many cities worldwide, areas that are industrial in character are typically considered less desirable to live in and therefore poorer segments of the population become established here. Aside from poverty, other factors likely to influence vulnerability are described further below.

Ethnicity

Maroon and Indigenous populations are relatively vulnerable in comparison with the general Surinamese population. This is largely due to their reliance on land and natural resources that are increasingly under pressure from extractive industries and infrastructure projects; however those living in the urban environment also tend to experience social and economic exclusion due to ethnic discrimination, and also as a result of these populations having migrated to the urban area relatively recently. As such, they are less likely than other groups to have land assets, established social networks, and other forms of capital in Paramaribo.

Data from the most recent census, presented on Figure 5-13 above indicates that of the three affected resorts, Beekhuizen has the largest percentage of indigenous and Maroon individuals.

Gender

Various factors can make female-headed households more vulnerable to poverty and food insecurity (Babatunde et al., 2008; Oginni et al., 2013;), though this differs depending on contextual factors such as social safety nets, legal rights and different levels of economic participation of women in different contexts. In Suriname, woman-headed households are considered as more vulnerable based on Suriname's Gender Inequality Index which indicates that women have a lower labor participation rate and per capita income relative to men, despite women in Suriname having on average one year more of schooling than their male peers (UNDP 2016).

Age

Youth are generally vulnerable due to their dependent status and often a lesser likelihood of benefiting directly from the economic benefits of development projects. In the context of construction projects, children and youth are also considered more vulnerable to potential health impacts of air quality and traffic safety risks due to developing respiratory and cognitive systems.

Seniors (age 60 and above) also represent a vulnerable group since many may be on fixed incomes such as state pension (AOV) allowance. They are also considered vulnerable to health impacts due to higher likelihood of having impaired respiratory function and challenges with mobility. As shown on Figure 5-14 above, data from the most recent censuses suggest that the number of seniors in Paramaribo District is on the rise.

Disability

Differently abled individuals, in terms of both mental and physical ability, may be more vulnerable to project impacts due to a lesser likelihood of experiencing direct economic benefits, and due to possible limitations with respect to mobility and cognition which could put them at greater risk for traffic safety impacts.

5.3.1.3 Economy and Employment

Suriname's economy is currently in a recovery phase after a 2014 commodity crisis that led to a spike in inflation, steep declines in GDP growth (see Figure 5-15), and a currency devaluation of 104% over the period 2014-2017. The economy was particularly vulnerable to such a crisis due to its dependence on commodity exports (gold, bauxite and oil), which have over the years created limited spillover to the local economy. Another impediment to economic growth in the country has been an oversized public sector that has dominated the economy to the detriment of private sector development (World Bank Group 2015). The World Bank also notes the Surinamese economy's high level of vulnerability to climate disasters, particularly flooding due to the majority of workers, economic infrastructure and institutions being situated in the low-lying coastal area.

Economic growth is projected for 2018-2020 after several consecutive years of economic contraction, largely due to better prospects for the mining sector (IDB 2018; see Figure 5-16). However, the government is also currently prioritizing initiatives to promote economic diversification through private sector development, strengthening of social services, and better planning and management for disaster risks (World Bank Group 2015).

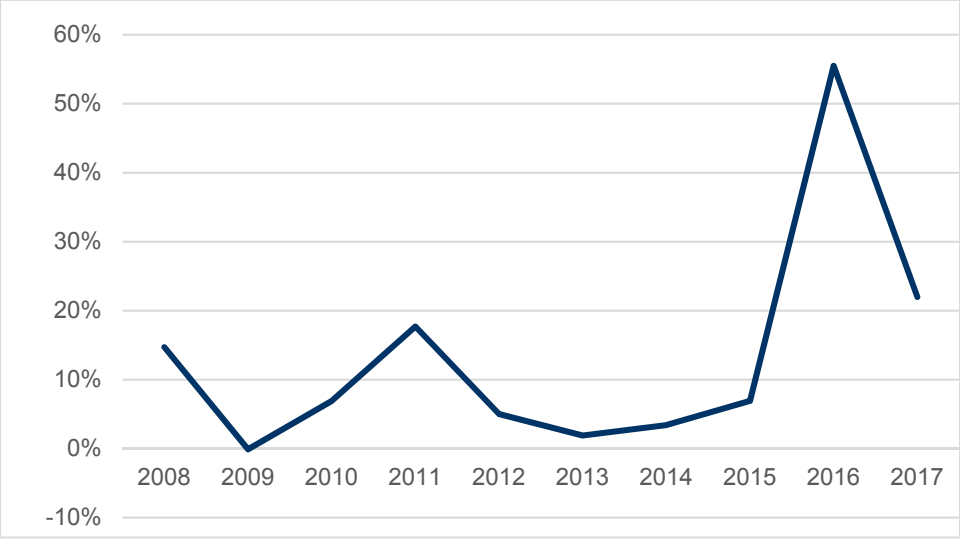


Figure source: ERM, 2018. Data source: Centrale Bank van Suriname 2018.

Figure 5-15: Suriname Inflation Rate, 2008-2017

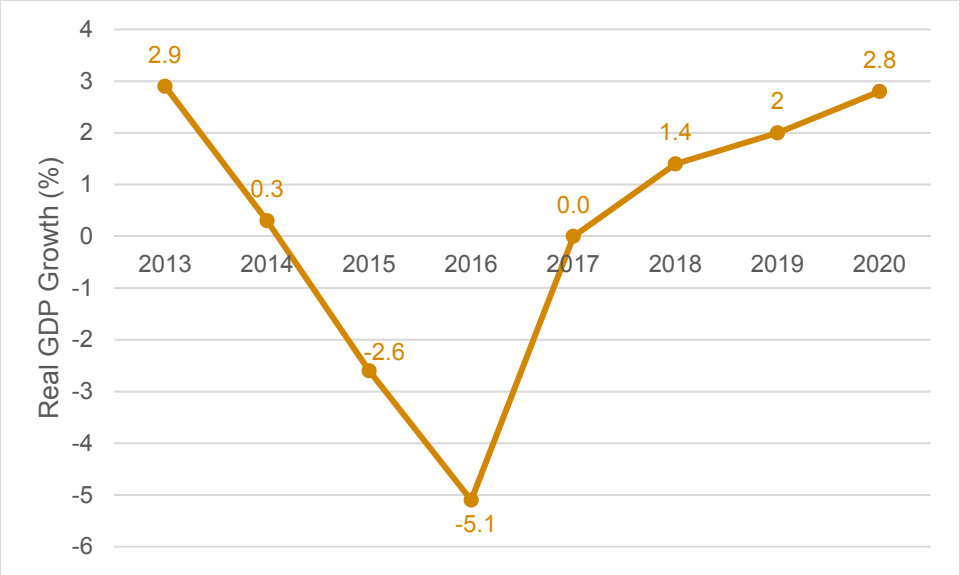


Figure source: ERM, 2018. Data source: IDB 2018.

Figure 5-16: Gross Domestic Product Growth Rate

The Dr. Jules Sedney Terminal is one of the most important hubs for foreign trade in Suriname, handling about 90% of the country's seaborne trade by volume (excluding oil), with nearly all containerized agricultural exports going through this port (Deloitte 2018). Improvements in efficiency at the port and the road networks used to access it are expected to generate benefits to many areas of the country whose products make up the port's cargo: For example the banana sector in Saramacca and the forestry and gold sectors in Brokopondo and Sipaliwini.

In terms of employment, the overall rate for Paramaribo District at the time of the 2012 census was 9.2%, with considerable disparity between male and female workers (6.3% and 13.0%, respectively).

5.3.1.4 Community Health and Safety

Health Status

Compared to the World Health Organization (WHO) Americas Region, Suriname performs more poorly overall on most general health indicators (see Table 5-4). Suriname has a lower life expectancy, higher mortality rates, and a higher disease burden from HIV. Additionally, Suriname also spends significantly less on health per capita than other countries in the WHO Americas Region. However, with respect to malaria and tuberculosis status, Suriname has performed similar to or better than other countries. Low malaria incidence is attributed to the Global Malaria Fund, which has conducted malaria prevention activities in Suriname since 2005.

Table 5-4: Key Health Indicators for Suriname

Health Indicator (data year)	The Americas Region[a]	Suriname
Life expectancy at birth (years), male / female (2015)	74.0 / 79.9	69 / 75
Probability of dying in adulthood (15-60) (per 1000 adults), male / female (2015)	158 / 87	221 / 129
Probability of dying under 5 (per 1000 live births), both sexes (2016)	14.2	20.0 [9.7-41.1]
Maternal mortality ratio (per 100,000 live births) (2016)	52	155
Prevalence of HIV among adults 15-49 years (%) (2016)	0.5 [0.4−0.5]	1.4 [1.2-1.6]
Incidence of tuberculosis (per 100,000 population per year) (2016)	27 [26-29]	26 [20-32]
Malaria incidence in high risk areas per 1,000 population at risk (2015)	10	1.7
Current expenditure on health per capita, in US$ (2015)	$1,008 (global average)	$577.5

Source: WHO Global Health Observatory Data Repository (2017a)
[a] WHO Region of the Americas covers North America, Latin America and the Caribbean.

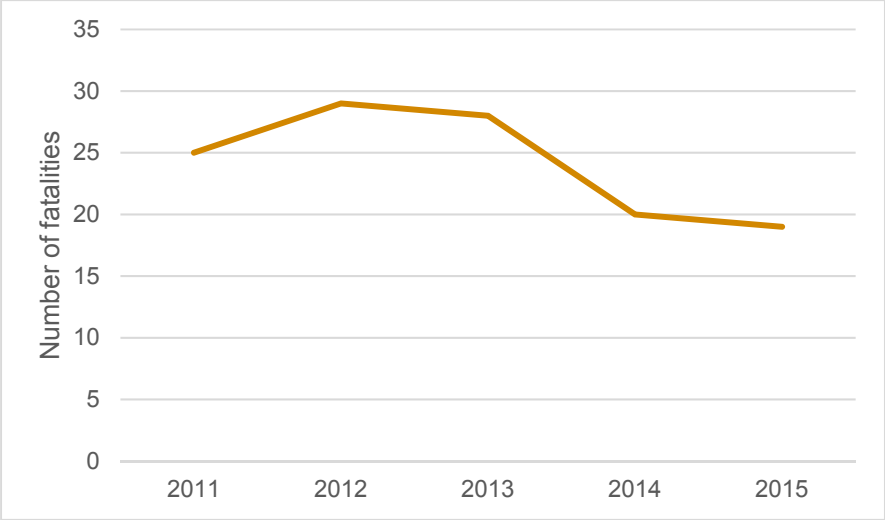
Leading Causes of Illness and Death

Chronic diseases are the leading causes of death in Suriname. In 2012, chronic diseases (including cardiovascular diseases, cancers, and diabetes) accounted for an estimated 68% of all deaths in the country, with cardiovascular diseases as the number one cause of mortality (WHO 2014a; MOH 2012).

When disaggregated by ethnic group, chronic disease-related mortality data indicate that persons of Indo-Surinamese descent (referred to as Hindustani) carry a higher chronic disease burden than other ethnic groups. In 2009, Hindustani represented 27.4% of the population but accounted for 34.0% of all cardiovascular deaths, and 48% of all diabetes-related deaths. In terms of cancer-related deaths, the Surinamese Creole population made up the highest percentage, followed by the Hindustani (MOH 2012).

In terms of communicable diseases, in the urban environment zoonoses transmitted by the *Aedes aegypti* mosquito (e.g., dengue fever and chikungunya) are a major cause of illness. Data for the period 2002-2011 show that there were 2,393 confirmed cases in this period, with 57.7% of those occurring in Paramaribo (Hamer et al., 2015). It is likely that the number of cases is in reality much higher due to gaps in compliance and coordination with respect to infectious disease reporting in the country.

Traffic fatalities present another health and safety risk in the urban environment. Figure 5-17 shows traffic fatality data for the period 2011-2015, and shows that traffic-related deaths in fact decreased from 2013 to 2015. It should be noted that a currency devaluation of over 100% occurred in this timeframe, which is likely to have decreased both the number of Surinamese people able to afford to drive, and the amount of driving that vehicle owners did in this period.



Source: ABS 2016.

Figure 5-17: Traffic Fatalities in Paramaribo District, 2011-2015

5.3.1.5 Land Use

The port site is designated for industrial uses, as shown on Figure 5-18. Other than the port facilities and operations for VSH United and DP World/Integra Marine (the two companies providing stevedoring services to the port), site occupants include an office campus for the telecommunications provider Telesur, an office for Kosmos Energy, a police station, and a restaurant/nightclub at the edge bordering Van ‘t Hogerhuysstraat.

Other than the river-facing edge, the site is surrounded by high-density residential and commercial land uses. There are a number of institutional and recreational uses such as schools, churches, mosques, bars and nightclubs interspersed within these neighborhoods and along Van ‘t Hogerhuysstraat.

There is an industrial corridor along the Saramacca Canal and the roads Industrieweg Noord and Industrieweg Zuid, south of the Project site. However, these areas are in reality mixed-use with some dwellings and small commercial enterprises coexisting alongside industrial facilities.

Many of the residential neighborhoods surrounding the site and subject to the roadway improvements consist of low-income neighborhoods with relatively poor housing and infrastructure (e.g., inadequate or nonexistent sidewalks, discharge of wastewater into open ditches, standing water on streets). Examples include the Land Van Dijk and Ramgoelam neighborhoods.

ERM engaged a local Surinamese consultant (“TDS”) to undertake field reconnaissance activities on 9 December 2018 to obtain a high-level understanding of the social context and land uses in the vicinity of the Project site. This did not represent an exhaustive inventory of businesses, institutions and other land uses. It is recommended that such an inventory be conducted prior to the onset of construction as this will form the basis of a stakeholder engagement plan (SEP), mitigation plan for maintaining access to existing establishments, and a compensation and livelihoods restoration plan (CLRP) in the event that compensation is found to be required. Figure 5-18a includes some examples of land uses in the vicinity of the Project and is generally representative of the high-density, mixed use urban environment seen in the vicinity of the Project.

Figure Source: ERM. Data Sources: TDS 2018.

Figure 5-18a: Land Use in the Project Area

5.3.1.6 Population in the Direct Area of Influence of the Project

The number of people in the direct area of influence (i.e., residents and workers along the proposed project) was estimated by counting on aerial photography the number of residential and commercial structures alongside the project footprint and applying conservative multipliers to provide an estimate of people. The number of structures, per type, is as follows (see Figure 5-18b):

- Residential: 221
- Commercial Large: 22
- Commercial Medium: 72
- Commercial Small: 129
- Other/public: 6 (e.g., police station, substation, school, church)

According to the United Nations (see https://population.un.org/Household/index.html#/countries/740), the average household size in Suriname as of 2018 is 3.9. For this estimate, we assume an average of 5-10 employees per commercial/public unit. Therefore the estimated number of people in the direct area of influence is between approximately 2,000 and 3,000 (862 residents and 1,145-2,885 workers).

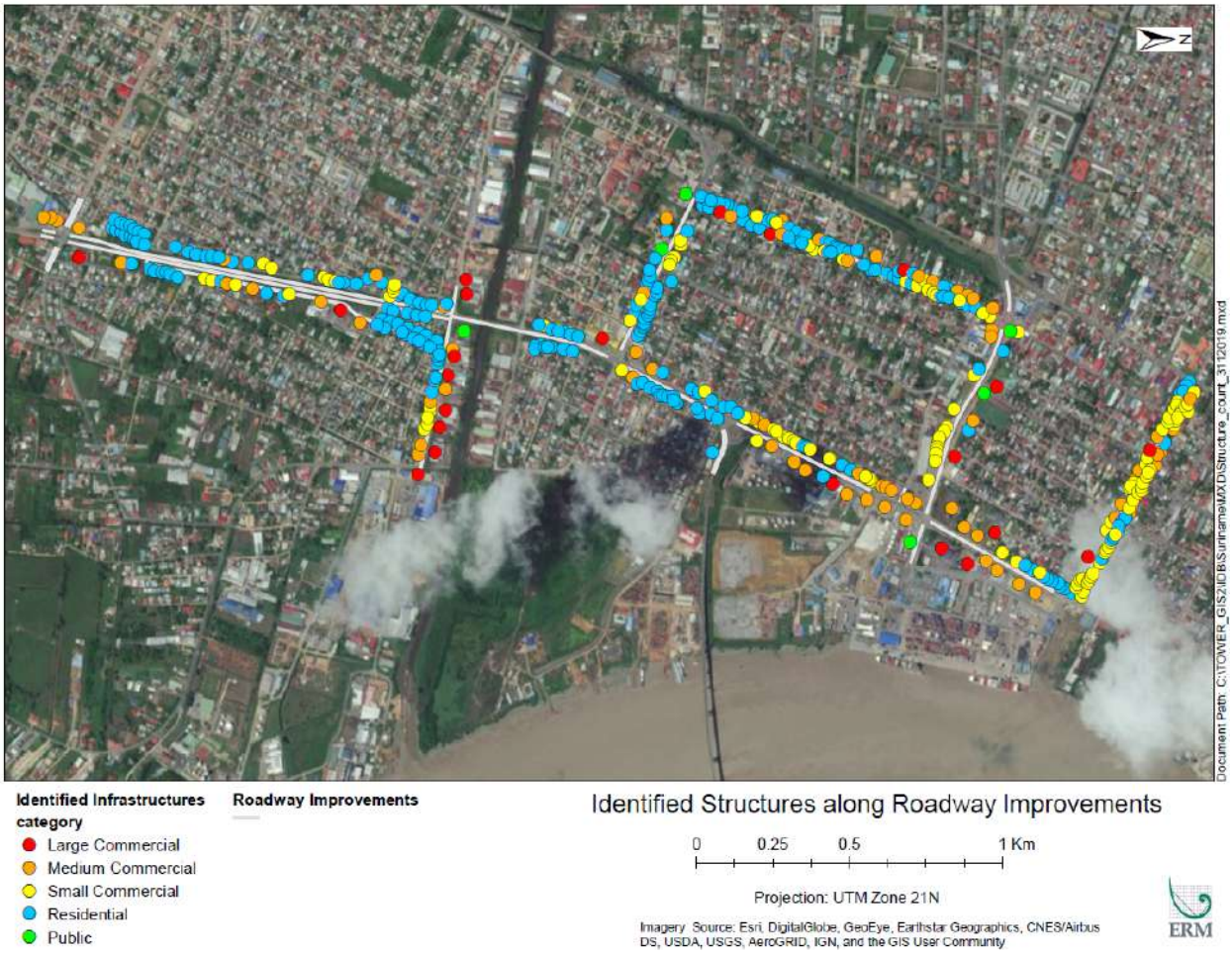


Figure 5-19b: Residential and Commercial Structures in the Direct Area of Influence of the Project

5.3.2 Cultural Heritage

Much of Suriname's coastal area holds historical and cultural significance, including Paramaribo's historic inner downtown, which was designated as a UNESCO World Heritage Site in 2002 and contains many historical and cultural monuments including Fort Zeelandia, the Palm Garden, de Waag, and various churches, mosques, mandirs and synagogues.

The Project is situated over a kilometer to the southwest of the historic downtown. Project components will be situated in areas that are either industrialized or which constitute high-density residential-commercial neighborhoods, areas which have already undergone a high level of recent human disturbance and modification.

Although no listed monuments are present in the Project footprint, it should be kept in mind that there may be features of interest integrated into the urban landscape which may have historic or aesthetic value to the affected communities or other stakeholders. An example is a bus shelter built in the 1960s on Slangenhoutstraat, of which only a few still exist in Paramaribo (Figure 5-20).

Source: TDS, 2018.

Figure 5-20: 1960s Bus Shelter on Slangenhoutstraat

In addition and as shown on Figure 5-18, several places of worship were identified on or adjacent to affected roadways. These are considered to be living heritage sites. This includes at least one evangelical church (Figure 5-20) and an Islamic mosque (Figure 5-21). It should be noted that since neither an exhaustive inventory of land uses, nor a public stakeholder engagement session have been conducted, that there are likely additional living heritage sites present in the Project area that require identification.

Source: TDS 2018.

Figure 5-21: Evangelical Church on Slangenhoutstraat

Source: TDS 2018.

Figure 5-22: Islamic Mosque on Willem Campagnestraat

6. IMPACT ASSESSMENT

6.1 General Methodology

The primary purpose of an Environmental and Social Impact Assessment (ESIA) is to predict the impacts resulting from the proposed project. Impacts can be direct, indirect, or induced, as defined in Table 6-1.

Table 6-1: Impact Designation Definitions

Designation	Definition
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor (e.g., between disturbance of a plot of land and the habitats on that plot of land that are affected).
Indirect	Impacts that follow from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).
Induced	Impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g., influx of camp followers resulting from the presence of a large Project workforce).

The assessment of impacts proceeds through an iterative process that considers four questions as illustrated in Figure 6-1.

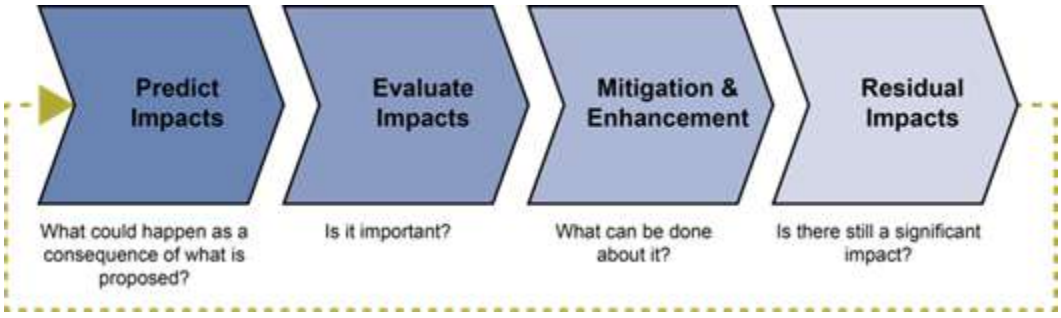


Figure 6-1: Impact Prediction and Evaluation Process

These questions are expanded in Steps 1 through 4 below.

6.1.1 Step 1: Predict Impacts

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

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

Magnitude describes the actual change that is predicted to occur in the resource or receptor. The magnitude of an impact takes into account all the various dimensions of a particular impact in order to

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

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

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

6.1.2 Step 2: Evaluate Impacts

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

Significance was assigned for each impact using the matrix shown in Table 6-2. This matrix applies universally to all resources/receptors.

Table 6-2: Evaluation of Significance of Impacts

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

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

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

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

6.1.3 Step 3: Mitigation and Enhancement

An ESIA process aims to ensure that project decisions are made in full knowledge of their likely impacts on the environment and society. A vital step within the ESIA process is therefore the identification of measures that could be taken to mitigate potential impacts of the project being assessed.

This process involves identifying where potentially significant impacts could occur and identifying ways of mitigating those impacts as far as reasonably possible. The mitigation hierarchy was used for this ESIA, in which preference was given to trying to avoid or minimize the impact before considering other types of mitigation (i.e., remedy, compensate, offset):

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

6.1.4 Step 4: Residual Impacts

Once mitigation measures are determined, the next step in the impact assessment process is to determine the residual impact significance. Residual impacts are the impacts that are predicted to remain

after both embedded controls and committed mitigation has been taken into consideration. In most cases, the sensitivity/vulnerability/importance of a receptor is unaffected by proposed mitigation measures: the mitigation measure is typically intended to reduce the magnitude of a predicted impact, thereby reducing its overall significance.

6.2 Physical Resources Impact Assessment

6.2.1 Air Quality

This section assesses the Project's construction and operation impacts on air quality and it considers the magnitude and sensitivity of the affected receptors. No quantitative assessment of potential impacts from Project construction and operation has been undertaken (i.e., no air dispersion modeling), due to the absence of detailed equipment specifications and logistics information at the time of this report. Therefore, a qualitative air quality assessment was performed. For air quality, the general population is considered to be of Medium Sensitivity. This rating reflects the fact that air quality standards are inherently conservative and are designed to protect the large majority of people in the general population. High sensitivity would only apply to a small number of receptors, such as hospitals, daycare centers, and nursing homes for seniors, where vulnerable individuals are located (children, elderly, people with breathing problems, etc.). These high-risk receptors are not located within the Project's immediate vicinity. As indicated in Section 5.1.2, the Project Area is surrounded mostly by commercial and residential receptors, with the residential receptors closer to the road improvement areas.

6.2.1.1 Construction Phase

Dust accumulation and combustion/exhaust emissions during the Project construction would increase air pollution and may create a health nuisance for residents and other sensitive receptors near the project areas.

The potential direct impact to air quality during the construction phases of the port expansion and roadway improvements construction include:

- Emissions of dust from construction activities and movement of vehicles and heavy machinery over unpaved surfaces; and
- Increases in combustion/exhaust emissions.

The potential for dust emissions is higher during dry and windy weather and it is less of an issue during the wet season.

Port Expansion Activities and Impacts

The following Project components would generate air emissions during the port expansion construction:

- Development of a formal truck center within the Port (approximately 15,385 m^2) to help organize incoming traffic and avoid congestion on internal roads (110 truck parking spaces, 100 light vehicle parking spaces, offices, warehouse space, and a rest and waiting areas for drivers); and
- Development of additional container warehouse/storage to account for projected increases in throughput of the Port.

The remaining Project components require little-to-no use of heavy construction equipment and vehicles and are expected to occur over a shorter duration compared to the main components listed above. These remaining components include implementation of a Port Community System to automate operational processes, etc., and acquisition and installation of security scanners for container inspections.

The construction activities associated with the Port upgrades and improvements would result in emission increases in the immediate vicinity. However, considering the Project's activities would be localized, intermittent, and occur over a short-term (a few weeks each), the impacts on air quality is expected to be *Moderate* (medium magnitude and medium sensitivity).

Roadway Improvements Activities and Impact

The following Project components would generate air emissions during the road improvements construction:

- Geometric modification of two existing roundabouts (one at the intersection of Willem Campagnestraat and Hogerhuysstraat and the other at the intersection of Van 't Hogerhuysstraat and Jules Wijdenboschbrug);
- Construction of an extra lane per direction in the Martin Luther King-Van 't Hogerhuysstraat road (2.7 km) (includes construction of sidewalks and cycle paths as urban renewal strategies);
- Rehabilitation of the bridge over the Saramacca Channel (i.e., replacement of the existing 3-lane bridge with a new 6-lane bridge); and
- Modification of the port's entrance and exit.

The remaining Project components require minimal use of heavy construction equipment and will occur over a shorter duration compared to the main activities listed above. These remaining components include installation of eight new traffic lights and the reconfiguration of phases for the existing traffic light.

The construction of the extra lane along the Martin Luther King-Van 't Hogerhuysstraat road is expected to generate the most dust and exhaust emissions at nearby existing residential properties. This is because the proposed road expansion would reduce the distance between the existing residential properties and the expanded road, thereby exposing the receptors to increased air pollution levels.

The construction activities associated with the roadway improvements would result in emission increases in the immediate vicinity, particularly at residences close to the expanded road section. However, considering the Project activities would be localized, intermittent, and occur over a short-term (a few weeks each), the impact on air quality is expected to be *Moderate* (medium magnitude and medium sensitivity).

Air Quality Mitigation Measures during Construction Phase

The air quality impacts associated with the construction of the port expansion and roadway improvements could be minimized using the following mitigation measures:

- Maintain all construction equipment in accordance with manufacturer's specifications.
- Suppress dust as needed in unpaved areas (e.g., use of water sprays).
- Avoid burning non-vegetative wastes (refuse, etc.) at construction sites.
- Avoid unnecessary idling of construction equipment or delivery trucks when not in use.
- Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site.
- Cover work vehicles transporting friable materials to prevent materials being spread around and off the site.
- Minimize drop heights of materials

- Develop and implement a grievance procedure in the event of any dust and/or exhaust emissions compliants being received.

Residual Impact

Implementation of the mitigation measures above is expected to reduce construction air impact from *Moderate* to *Minor*.

6.2.1.2 Operations Phase

During the operations phase, vehicle traffic volumes within the port and along port access roads are not expected to change but reductions in traffic congestion is expected to decrease mobile source emissions and contribute to improvements in air quality by reducing travel delays, engine idle time and unproductive fuel consumption. The speed improvements associated with the Project will help vehicles decrease fuel consumption up to 57% for personal vehicles and 54% from trucks. In addition, the northbound and southbound truck traffic for the port will reduce its travel distance 42% and 41% respectively, resulting in vehicle fuel savings (Deloitte 2018). Since combustion/exhaust emissions increase with increased fuel usage, the vehicle fuel savings during operations is expected to reduce air pollution in the Project Area.

Overall, the Project operation is expected to have a *Positive* impact on the surrounding air quality due to reduced vehicle fuel usage and travel/idle time.

Air Quality Mitigation Measures during Operations Phase

No mitigation/management measures are proposed in relation to air quality during operation of the Project.

Residual Impact

The residual impact significance will remain *Positive* and no additional mitigation/ management measures are proposed.

6.2.2 Noise

This section assesses the Project's construction and operation impacts on noise quality and it considers the magnitude and sensitivity of the affected receptors. For noise, however, it is usually possible to predict noise levels quantitatively and compare them against standards that are resource/receptor-specific and inherently take into account resource/receptor sensitivity. No quantitative assessment of potential impacts from Project construction and operation has been undertaken (i.e., no noise propagation modeling), due to the absence of detailed equipment specifications and logistics information at the time of writing. Therefore, a qualitative noise assessment was performed. For noise quality, all residential areas, places of worship, schools, and healthcare facilities are considered to be of Medium Sensitivity. Less noise sensitive receptors such as commercial and industrial areas are considered to be of Low Sensitivity. High sensitivity would only apply to a small number of receptors, such as pristine areas and national parks where natural sounds, scenery and wildlife are considered a precious natural resource worthy of protection for future generations. These high-risk receptors are not located within the Project's immediate vicinity. As indicated in Section 5.1.3, the Project Area is surrounded mostly by commercial and residential receptors, with the residential receptors closer to the road improvement areas.

6.2.2.1 Construction Phase

The potential direct impact to noise quality during the construction phases of the port expansion and roadway improvements construction include increases in noise emissions from use of heavy construction equipment and vehicles.

Table 6-3 provides a list of typical construction equipment at their typical noise levels at 15 m (50 ft).

Table 6-3: Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA), 15 m from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Scrapper	89
Shovel	82
Truck	88

dBA = A-weighted decibel
Source: US DOT 2006 (Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006).

Port Expansion Activities and Impacts

The following Project components would generate noise emissions during the port expansion construction:

- Development of a formal truck center within the Port (approximately 15,385 m^2) to help organize incoming traffic and avoid congestion on internal roads (110 truck parking spaces, 100 light vehicle parking spaces, offices, warehouse space, and a rest and waiting areas for drivers); and
- Development of additional container warehouse/storage to account for projected increases in throughput of the Port.

The remaining Project components require little-to-no use of heavy construction equipment and vehicles and are expected to occur over a shorter duration compared to the main components listed above. These remaining components include implementation of a Port Community System to automate operational processes, etc., and acquisition and installation of security scanners for container inspections.

The construction activities associated with the port upgrades and improvements would result to noise increases in the immediate vicinity. However, considering the Projects activities would be localized,

intermittent, and occur over a short-term (a few weeks each), the impacts on noise quality is expected to be *Moderate* (medium magnitude and medium sensitivity).

Roadway Improvements Activities and Impact

The following Project components would generate noise emissions during the road improvements construction:

- Geometric modification of two existing roundabouts (one at the intersection of Willem Campagnestraat and Hogerhuysstraat and the other at the intersection of Van 't Hogerhuysstraat and Jules Wijdenboschbrug);
- Construction of an extra lane per direction in the Martin Luther King-Van 't Hogerhuysstraat road (2.7 km) (includes construction of sidewalks and cycle paths as urban renewal strategies);
- Rehabilitation of the bridge over the Saramacca Channel (i.e., replacement of the existing 3-lane bridge with a new 6-lane bridge); and
- Modification of the port's entrance and exit.

Other Project components require minimal use of heavy construction equipment and will occur over a shorter duration compared to the main activities listed above. These remaining components include installation of eight new traffic lights and the reconfiguration of phases for the existing traffic light.

The construction of the extra lane along the Martin Luther King-Van 't Hogerhuysstraat road is expected to generate the most noise at nearby existing residential properties. This is because the proposed road expansion would reduce the distance between the existing residential properties and the expanded road, thereby exposing the receptors to increased noise.

The construction activities associated with the roadway improvements would result to noise increases in the immediate vicinity, particularly at residences close to the road expansion section. However, considering the Project activities would be localized, intermittent, and occur over a short-term (a few weeks each), the impact on noise quality is expected to be *Moderate* (medium magnitude and medium sensitivity).

Mitigation Measures

The noise impacts associated with the construction of the port expansion and roadway improvements could be minimized using the following measures:

- Maintain all construction equipment in accordance with manufacturer's specifications.
- Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable.
- Schedule construction, modification, and rehabilitation work to minimize activity during peak periods of traffic.
- Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g., residents, commercial businesses, churches, and hotels) of construction activities.
- Provide acoustic enclosures, if necessary.

- Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies).
- Avoid unnecessary idling of construction equipment and trucks.

Residual Impact

Implementation of the mitigation measures above is expected to reduce construction noise impact from *Moderate* to *Minor*.

6.2.2.2 Operations Phase

During the operations phase, vehicle traffic volumes within the port and along port access roads are not expected to change but reductions in traffic congestion is expected to decrease mobile source emissions and contribute to improvements in noise quality. Therefore, the Project operations is expected to have a *Positive* impact on the surrounding noise environment.

Mitigation Measures

No mitigation measures are proposed in relation to noise quality during operation of the Project.

Residual Impact

The residual impact significance will remain *Positive* and no additional mitigation/ management measures are proposed.

6.2.3 Natural Disasters and Risks

According to a Global Assessment Report on Disaster Risk Reduction prepared by the United Nations, a hazard is a dangerous phenomenon, human activity, or condition that may cause loss of life, injury, or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR 2009). A disaster is defined as a serious disruption of the functioning of a community or a society involving widespread, human, material, economic, or environmental losses and impacts that exceeds the ability of the affected community or society to cope using its own resources.

As described in Section 5.1.4, the Project itself would be exposed to natural events, such as floods and high winds from tropical storms, which could be induced or exacerbated by climate change and affect it during both construction and operations. For example:

- **Construction Phase**: Flooding and tropical storms could impact construction activities and could result in damage to Project components (e.g., damage to construction sites and equipment).
- **Operations Phase:** Natural events could also damage roads and infrastructure.

According to NV Havenbeheer Suriname the Port itself has not historically been, and is not currently affected by flooding events. However the Van ‘t Hogerhuysstraat and parts of Paramaribo City are frequently impacted by flooding during heavy rains caused primarily because of poor drainage systems. Data from the Second National Communication to the United Nations Framework Convention on Climate Change show increases in sea level rise, possible changes in extreme events including wind speeds and precipitation based on climate change scenarios and projections for Suriname (MLTDE 2013). All these projections are based on scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) and adapted for Suriname. Table 6-4 provides a summary of climate projections for Suriname.

Therefore, due to its geographic location, the proposed port and road interventions are projected to be highly susceptible to flooding events, caused either by increases of the Saramacca River water levels or by intensive storms events. However, the magnitude of the impacts are related is relative small in comparison to Paramaribo as a whole. Therefore, the potential impacts from these events to the Project are expected to be *Moderate*.

Table 6-4: Climate Change Projections for Suriname based on Intergovernmental Panel on Climate Change[a]

Parameters	Value	Year	Source
Precipitation	-10%	2100	IPCC Fourth Assessment Second National Communication to the United Nations Framework Convention on Climate Change
Weather extremes, including wind, intensity	+27% Dec-Jan- Feb +18% March- Apr-May	2100	IPCC Fourth Assessment
Average significant wave height	+2.5% compared with the current magnitude	2099	Technical paper Future profile. Second National Communication. Sector Water Resources
Sea level rise	+1.0 meter	2100	Technical paper Future profile. Second National Communication. Sector Water Resources

Source: MLTDE, 2013, CCCRA 2012.

[a] Based on A2 and B2 IPCC scenarios.

Suriname is not in an active seismic zone or in a zone where tsunamis or hurricanes occur with frequency.

6.2.3.1 Mitigation Measures

Careful attention in the design of the Project components and controls should be taken into consideration (i.e., road drains and ditches and culverts) to ensure the Project is resilient to flooding events. ERM recommends applying the following design considerations:

- All new road construction and improvements should include a properly designed drainage system intended to remove water efficiently from the roads and other Project improvement sites.
- Construct properly engineered drainage structures along the Marin Luther Kingweg, where there is open drainage channel that will be covered, to prevent the risk of flooding. In these area drainage solutions will require careful calculations and consideration of potential hydrological climate change.
- In the same sections of the Martin Luther Kingweg, the distance between the existing buildings (that lie below the level of the road) and the expanded road may be extremely reduced, exposing it to noise, vibration, dust and potential flooding during the construction as well as operation of the road. It is recommended to carefully identify those sections and review the design to ensure that adequate distance is maintained between the road and the immediately adjacent buildings.

As part of, and in addition to, risk prevention measures described above, there should be plans in place to assure emergency preparedness and response. During Project construction activities, the contractor should implement an Emergency Response Plan that describes procedures to be implemented both in the event of a forecasted event (e.g., floods) or an unanticipated event (e.g., a severe storm). This would involve securing equipment and materials, stabilizing disturbed areas, and similar actions as well as procedures for site evacuation.

6.2.3.2 Residual Impact

It is expected that the implementation of these Project control measures would reduce the potential impact from natural disasters to the Project to *Minor*.

6.2.4 Waste

Waste associated with the Project is limited to the construction phase and comprised of general construction waste. Construction waste consists of general food and office waste, personal protection equipment, paper, cardboard, plastic, pallets, wood, scrap steel, etc. General construction waste generated on-site will be collected in waste bins/receptacles to be hauled offsite by a licensed waste hauler and disposed of accordingly in approved landfills. No changes to current waste generating conditions are expected during the operation phase of the Project.

Considering that construction activities would be intermittent, and occur over a short-term (a few weeks), and the amount of waste to be generated is expected to be low, the impacts related to waste generation and disposal of the Project are expected to be *Moderate to Minor*.

6.2.4.1 Mitigation Measures

The impacts associated with the construction waste generated during the Port expansion and roadway improvements could be minimized using the following measures:

- Provide appropriate waste bins, type, volume and service frequency to accommodate anticipated waste streams.
- All loads arriving or leaving the site will be appropriately secured.
- Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads.
- Ensure licensed contractors are used to collect controlled wastes

6.2.4.2 Residual Impact

Because the quantity of waste to be generated is expected to be low and only occur during a short period of time, the residual impact significance if all mitigation measures are applied, is expected to be *Minor*.

6.2.5 Traffic

As previously discussed in Section 2.4.3, the proposed road upgrades, improvements, and safety standard optimization include the following components:

- Geometric modification of the existing roundabouts at the intersection of Willem Campagnestraat and Hogerhuysstraat and at the intersection of Van ‘t Hogerhuysstraat and Jules Wijdenboschbrug. The modification of the roundabout at the intersection of Van ‘t Hogerhuysstraat and Jules Wijdenboschbrug will allow for the recovery of public open space;
- Construction of an extra lane per direction in the Martin Luther Kingweg and Van ‘t Hogerhuysstraat. The re-design of the Martin Luther Kingsweg and Van ‘t Hogerhuysstraat corridor includes the construction of sidewalks and bicycle paths as part of urban renewal strategies;
- Rehabilitation of the bridge over the Saramacca Channel. The rehabilitation will include the replacement of the existing 3-lane bridge with a with a new 6-lane bridge that will allow the circulation of trucks;

- Installation of eight new traffic lights and the reconfiguration of phases for the existing traffic light; and
- Modification of the Port's entrance and exit.

6.2.5.1 Construction Phase

Construction of the Project would require frequent large vehicle trips into and out of the Project Area, carrying construction materials and supplies to and from individual construction sites. A limited number of heavy equipment movements would also be required. This document assumes that construction employees would arrive at construction sites via automobile, foot, or public bus (i.e., no Project-specific employee busing and/or housing). The number and type of construction truck trips are not known as there is no final design of the Project yet. Depending on the extent and methodology of construction, traffic may be disrupted along the intersection of Willem Campagnestraat and Hogerhuysstraat and at the intersection of Van 't Hogerhuysstraat and Jules Wijdenboschbrug, Martin Luther Kingweg, and Van 't Hogerhuysstraat, and other roads adjacent to construction sites due to temporary road closures and changing traffic patterns.

Overall, Project construction would result in increased traffic volumes, as well as concentration of non-Project traffic along alternative routes. This would increase the potential for traffic congestion and disruption. Project construction would also further worsen pedestrian safety issues, which in turn could hinder access to public and community facilities. Considering the Project activities would be localized, intermittent, and occur over a short-term (a few weeks each), the impact on traffic in the Project Area is expected to be *Moderate* (medium magnitude and medium sensitivity).

Mitigation/Enhancement Measures

Impacts resulting from the construction phase of the Project will be minimized through the development and implementation of a Traffic Management Plan and an Access Management Plan to be prepared by the Project contractor following the guidance of the Traffic and Pedestrian Management Plan provided in Section 7.4. The Traffic Management Plan would include early notification of road closures, detour signage, and safety programs and measures for pedestrians and bicyclists, especially for the most vulnerable populations. Parking and traffic management should be reviewed in an integrated manner in coordination and with approval of the appropriate traffic control authorities to discourage car and motorcycle parking on sidewalks, as well as a review of public transportation systems. The plan should suggest accommodations/improvement to bus routes, stops, and terminals. The Access Management Plan would maintain continuous access for critical community facilities for pedestrians through careful staging and sequencing of construction activities and provision of alternative pedestrian crossings and facilities, where needed.

Residual Impact

It is expected that the implementation of these Project control measures would reduce the potential impacts of the Project to the Project Area traffic to *Minor*.

6.2.5.2 Operation Phase

In the short term, operation of the Project would not generate an increase in vehicular, pedestrian, or vessel traffic. Based on a Cost Benefit Analysis performed for the proposed Project activities, improvements to the road systems surrounding and within the Port will result in time savings and reduced vehicle operating costs (Deloitte and Transconsult 2018). Microsimulations of current and proposed conditions were modeled for traffic per vehicle type, travel times, and speed in order to determine Project

benefits. Project Benefits were estimated using time savings (TTV[6]), and vehicle operating costs (VOC)[7]. Model results showed the following benefits by user type (see Table 6-5) below.

Table 6-5: Traffic Benefits by User Type

User Type	Benefits
Cars	• Savings of up to 31 hours annually • Savings of up to $53 USD annually in fuel
Public Transport	• Savings of up to 155 hours annually (5 travels per day) • Savings of up to $102 USD annually in fuel
Trucks	• Savings of up to 31 hours annually in traffic congestion • Savings of up to $48 USD annually in fuel • Savings of up to $62 USD annually in round trips to the Port • Increased use of truck fleet due to 3 hours saved in waiting time at the Port per round trip
Motorcycles	• Savings of up to 31 hours annually • Savings of up to $37 USD annually in fuel

In the long term, improvements to Port operations could lead to increased traffic in and out of the Port due to increased competiveness and imports/exports. Although improvements to the roads and the Port operations should allow for increased flow; it is recommended that further studies be conducted in order to adequately assess and address future direct and indirect impacts.

Mitigation Measures

No mitigation measures are proposed in relation to traffic during the short-term operation of the Project.

Residual Impacts

Operation of the proposed Project in the short-term would therefore result in *Positive* impacts to traffic at the Port and in the roads surrounding the Port where the interventions are applied.

6.3 Biodiversity Impact Assessment

The existing degraded natural habitat conditions at the Port-site and the roadway portions slated for improvement limit the significance of the Project's impacts on biodiversity. Overall, impacts to biodiversity related to implementation of the Project during the construction phases would be temporary, minor, and easily managed through implementation of standard mitigation measures, and construction good practice. No net loss or improvement on natural habitat is proposed. The potential direct and indirect impacts to biodiversity from implementation of the Project include:

- Terrestrial and Water Resources Associated with the Port and Roadway Improvements:
    - Loss or Degradation of Vegetation;
    - Increase of Surface Water Runoff from Vegetation Clearing;
    - Degradation of Aquatic Habitat; and

[6] Transit Time Value (TTV) was calculated using Mexican Transport Institute Methodology based on World Bank Studies.

[7] Vehicle Operating Costs consisting of fuel consumption and non-fuel costs (i.e. oil, tires, maintenance and repairs, and depreciation), calculated using Cal-B/C Model fuel consumption rates per vehicle type for speed related savings and STEAM model for on-fuel costs for distance based savings.

- Wildlife Injury or Mortality.

6.3.1 Vegetation Removal

6.3.1.1 Port

Limited vegetation clearing would likely occur within the proposed Port site slated for improvement. The northern portion of the existing Port has building facilities and storage containers surrounded by impervious surfaces, and the proposed Port upgrades will occur within the existing Port-footprint. The southern portion of the Port slated for construction with proposed offices, a truck center, warehouse area, and a two-lane roadway is proposed to occur on a previously disturbed, low species diversity, fallow field. Disturbance and minor loss of this vegetation community would be temporary during construction, and disturbed areas would revegetate quickly and impacts are expected to be *Minor*.

Mitigation Measures

Minimization of the construction footprint and avoidance of vegetation disturbance to the extent possible would minimize the impacts to vegetation to a negligible level.

Residual Impact

The potential impact rating is *Negligible* (negligible magnitude, low sensitivity, vulnerability, importance).

6.3.1.2 Roadway Improvements

Limited vegetation clearing would likely occur within the vicinity of the roadways slated for improvement (see Section 2.4.3. for a list of the specific roadways). Narrow areas of maintained lawn and landscaped areas vegetate along the existing roadways. The degraded riparian vegetation associated with the Saramacca Canal occurs in the immediate vicinity of the proposed roadway improvement associated with the bridge over the Saramacca Canal; however, the exact location and extent of vegetation clearing cannot be determined until designs that are more specific and construction procedures are developed. The vegetation community in and along the edges of the Canal is of low quality due to the low species diversity, proximity of human activity, polluted water in the Canal, and presence of invasive vegetative species. Minor loss and disturbance of this vegetation community would be temporary during construction and disturbed areas would revegetate quickly. Impacts to vegetation during the construction phase of the Project are expected to be *Minor*.

Mitigation Measures

Minimization of the construction footprint, the installation of sediment and erosion controls, and the avoidance of vegetation disturbance to the extent possible would minimize the impacts to vegetation.

Residual Impact

Implementation of the above mentioned mitigation measures would reduce impact rating to a *Negligible* level.

6.3.2 Increased Surface Water Runoff from Vegetation Clearing

6.3.2.1 Port and Roadway Improvements

The limited vegetation clearing within the proposed Port site and within the vicinity of the existing roadways slated for improvements will increase the likelihood of surface water runoff. The conversion of

the disturbed, fallow field and the adjacent landscape areas to impervious surface would enable stormwater to surface flow into the nearby Saramacca Canal, Suriname River, and associated tributaries during both the construction and operation phases of the Project. Surface water runoff impacts from the Project are expected to be *Moderate* to *Minor*.

Mitigation

The installation of sediment and erosion controls and the avoidance of vegetation disturbance to the extent possible during construction, would minimize the impacts to vegetation. All new construction and improvements should include a properly designed drainage system intended to direct surface runoff to the appropriate stormwater systems or to stormwater best management practices.

Residual Impact

Implementation of the above mentioned mitigation measures would reduce impact rating to a *Negligible* level.

6.3.3 Degradation of Aquatic Habitat

6.3.3.1 Port and Roadway Improvements

Transport, handling and storage of fuels and reagents during construction and operation of the Project could impact aquatic habitat if a spill occurs. Pollutants of concern that could potentially be spilled include petroleum-based products (i.e., motor fuels, oils, lubricants, etc.). These materials could potentially be harmful to water quality and therefore aquatic habitat and aquatic resources, depending on the volume and location of the spill. Impacts from the Project to the aquatic habitats could be *Moderate to Minor*.

Mitigation

The Project proposes to implement several mitigation measures to control spills within and surrounding the Port and the roadways, including an Erosion and Sediment Control Management Plan. The Erosion and Sediment Control Management Plan will include specific measures such as sediment control procedures during in-water works to minimize the release of fine sediments to adjacent waterways and recommends work to occur during low flow periods and/or dry periods for the Suriname River and Saramacca Canal during the months of August to November. The Project will also implement a Spill Prevention, Control and Countermeasures Plan would minimize the impacts to aquatic habitat.

Residual Impact

Implementation of the above mentioned mitigation measures would reduce impact rating to a *Minor* level.

6.3.4 Wildlife Injury or Mortality

6.3.4.1 Port and Roadway Improvements

With the exception of the birds occupying the Saramacca Canal and common disturbance-tolerant aquatic species that inhabit the Canal itself, wildlife within the vicinity of the Port and Roadway Improvement Area are very limited and restricted primarily to transient birds and occasional reptiles occurring in strips of vegetation along the Canal. For the most part, wildlife will move away from work areas during construction, avoiding injury or mortality from Project activities, and return to the area once construction activities are complete. Impacts from the construction phase of the Project to area wildlife are expected to be *Minor*. No additional impacts from current conditions are expected to wildlife during the operation phase of the Project.

Mitigation Measures

Increases in vehicular and heavy equipment traffic would pose risks to wildlife but limiting work to daylight hours, effectively managing the construction workforce, and limiting vegetative clearing to distinct zones will reduce the significance of these impacts.

Residual Impact

Together, the mitigation and construction management measures described in the ESMPs in Section 7.4 will help ensure that the Project has *Negligible* impacts on terrestrial biodiversity

6.3.5 Additional Mitigation/Enhancement Measures for Biodiversity

The following additional mitigation measures would further help reduce the potential impacts of the Project on biodiversity:

- Demarcate work area with fencing to minimize disturbance or removal of natural vegetation;
- Plan equipment access locations that minimize impacts to riparian areas, where possible; avoid areas with less stable structure such as steep banks; and
- Minimize temporary stockpiling and place stockpiles outside of the active floodplain. Prevent runoff from stockpiles from entering creeks by using erosion control measures such as silt fences and/or straw wattles.

6.4 Socioeconomic and Cultural Heritage Impact Assessment

6.4.1 Impacts to Livelihoods

This section assesses potential impacts of the Project to livelihoods of affected households, communities and sectors in Suriname over the construction and operations phases of the Project. During construction, the Port and roadway upgrades described in Section 2.4.3 will generate impacts that may disrupt livelihood activities locally, particularly in the neighborhoods where road improvements will take place. However, it is envisioned that over the long run the Project will have beneficial, indirect livelihood impacts for a much larger and widely dispersed population in Suriname, via improved efficiency of the Port leading to enhanced global competitiveness in the country.

6.4.1.1 Construction Phase

Construction of the Project would require excavation along some roadways, and would generate traffic in and out of the Project area for movement of construction materials, supplies, wastes, and workers. The volume of traffic that will be generated, and the extent of disruption to different roadways over the Project duration, are not yet known as there is no final design or construction plan for the Project yet. However, it is expected that construction activities and traffic could disrupt both formal and informal commercial activities on both sides of the road segments where roadways will be improved. As described in Section 5.3.1.5, there are businesses of varying scales from informal vegetable stands to multinational companies present along the affected roadways. Disruption could occur through the need to move or close the establishment temporarily while construction is underway, through limiting access to businesses by blocking entrances and parking areas with construction equipment or safety barriers, deterring would-be patrons due to increased traffic congestion or safety risks, or otherwise creating challenges to gaining access to the establishments. Local livelihoods could also be affected if entrepreneurs' assets are accidentally damaged in the course of construction activities, for example, delivery vehicles or wooden food stands by the roadside. As the construction proceeds, over 2,000 people may be directly affected by the construction activities (see Section 5.3.1.6).

Considering that the Project activities would be localized to specific streets and occur over the short term (a few weeks in each road segment), impacts to local livelihoods are expected to range from *Minor* to *Moderate* depending on the size of the business enterprise (medium magnitude of impact; minor sensitivity for medium to large enterprises, and medium sensitivity for small commercial establishments and individual entrepreneurs). The possibility of accidental damage to private assets is reflected in this rating, with mitigation measures including development of a Livelihoods Restoration Framework and grievance mechanism that would be used as needed if such losses were to occur.

Mitigation/Enhancement Measures

All efforts should be made to avoid economic displacement by phasing construction activities, and by creating alternate entrances, walkways, detours and parking areas as needed. This will require advance engagement of the *engineering procurement and construction (EPC) contractor with affected businesses to understand peak hours and existing constraints, and thereby jointly develop mitigations appropriate to each establishment.*

Although the aim is to avoid any economic displacement, a Livelihoods Restoration Framework has been developed to guide development of a Project-specific Livelihoods Restoration Plan, should it be required. The Framework outlines the process for conducting a census to inventory all affected businesses and to establish an appropriate compensation scheme. The Livelihoods Restoration Framework is provided in Section 7.4.4.

Positive *(though temporary) livelihood impacts may be realized if opportunities for local employment are provided during Project construction. This can be done by including stipulations for the contracted EPC to hire a target percentage of workers from the local community.*

Regular and timely communication should be maintained with affected business owners through development and implementation of a Stakeholder Engagement Plan (SEP), including a grievance mechanism that provides a reliable and consistent process to seek remedy in the event of unforeseen accidents that could affect livelihoods. When developing and implementing the stakeholder engagement plan, and designing and publicizing the grievance mechanism it is necessary to consider any special needs of vulnerable subpopulations. For example, it should be determined whether the heads of women-headed households may require alternative forms of project communication to attendance at a public stakeholder meeting, and whether indigenous and Maroon households may be best reached via cultural organizations, and in languages other than Dutch.

Residual Impact

It is expected that implementation of the proposed mitigation and enhancement measures would reduce the significance of livelihood impacts to *Negligible* for medium and large businesses, and *Minor* for small enterprises or individual entrepreneurs.

6.4.1.2 Operations Phase

The Project's objective is to improve efficiency of the Port operations by eliminating logistical bottlenecks, which is envisioned to in turn enhance Suriname's global competitiveness, particularly in economic sectors such as agriculture and forestry. As such, socioeconomic impacts of the Project over the long term are expected to be positive for much of the Surinamese population including those involved in productive sectors that export via the port, as well as the general population in general that will experience indirect benefits from improved economic diversification and performance.

Furthermore, efficiencies at the port will result in a range of benefits for local road users, summarized in Table 6-4 above. The projected time savings and savings in vehicle operating costs for road users will

allow for increased productivity including economic activities or other activities contributing to quality of life improvement. The overall impact to livelihoods during the operations phase is therefore *Positive* and is not qualified further.

Mitigation/Enhancement Measures

Given the positive nature of the impact, no additional mitigation or enhancement measures are required.

6.4.2 Impacts to Community Health and Safety

This section assesses potential health and safety impacts for affected communities during the Project's construction and operations phases. During construction the port and roadway upgrades described in Section 2.4.3 will generate activities that may cause heightened health and safety risks for road users and for populations of adjacent neighborhoods. However, it is envisioned that over the long term the Project will be beneficial from a safety perspective due to improvements in traffic efficiency and safety, and better accommodation of non-motorized modes of transport like pedestrians and bicycles.

6.4.2.1 Construction Phase

A range of the impacts described in Section 6.2 (air quality, noise, and traffic) could have implications for the health and safety of road users and the communities adjacent to the Project footprint. In addition to the increase in traffic congestion, improper management of construction activities, including inadequate securing of equipment and machinery, can lead to unforeseen incidents potentially causing injury or death.

Excavation activities required for the Port and road improvements may result in pooled rainwater, which if left standing for extended periods could provide breeding ground for mosquitoes. As described in Section 5.3.1.4 above, mosquito-borne diseases including dengue fever and chikungunya are prevalent in urban Paramaribo.

It is assumed for the purposes of this assessment that the majority of Project construction workers will be Surinamese nationals rather than imported labor. As such, influx-related health and safety impacts are not assessed.

Given that noise, air quality and traffic impacts are all expected to be minor with application of the relevant mitigation measures, it is expected that associated impacts on community health and safety from these will also be minor. However, given the high-traffic, high-density character of the Project environment, risk for injury-causing construction accidents are considered to be *Moderate* (medium magnitude, medium sensitivity).

Mitigation/Enhancement Measures

To reduce health and safety risks to the community, construction contractors should be required to develop robust Health and Safety Plans that are in alignment with construction industry best practices. Monitoring of compliance with these plans should be ongoing for the duration of construction.

As part of the Health and Safety Plans, good housekeeping practices must be maintained in and around the Project construction sites including elimination of standing water or, if not practicable, treatment of standing water to kill mosquito larvae.

Appropriate and timely engagement of stakeholders, including communities adjacent to the Project footprint areas, should be undertaken to ensure that they are well-informed of the nature and duration of Project activities, and have a good understanding of associated safety risks. Additional efforts should be

made for stakeholder outreach to vulnerable subpopulations or to those responsible for maintaining their safety, for example schools, daycares, hospitals and senior homes present in the Project area.

A grievance mechanism for the Project construction phase should be established and publicized to ensure that stakeholders are provided with a consistent process to voice any concerns regarding health and safety risks from Project activities. Again, extra efforts may be required to ensure the grievance mechanism is adequately publicized to vulnerable subpopulations.

Residual Impact

With implementation of the recommended mitigation measures, the residual impact to community health and safety would be reduced from *Moderate* to *Minor*.

6.4.2.2 Operations Phase

During the operations phase, no activities distinguishable from baseline will be conducted. Rather, the regular operational activities of the Port including associated road traffic should occur more efficiently and safely than before the Project, including reducing the amount of time spent on the road by users of the roads in the vicinity of the port. This will have beneficial health and safety effects by reducing stress and fatigue, reducing the amount of time road users are exposed to exhaust fumes, freeing time that may then be spent on more productive or health-promoting activities, and potentially increasing the number of road users choosing the less sedentary options of pedestrianism and bicycling due to safer road conditions. Therefore impacts of the operation phase of the Project are expected to be *Positive*.

Mitigation/Enhancement Measures

Given the positive nature of the impact, no additional mitigation or enhancement measures are required.

6.4.3 Cultural Heritage

This section assesses the impact on cultural heritage resources in the Project Area. There are no listed monuments in the Project footprint, and the improvements will occur in industrial or high-density mixed-use areas where potential for undiscovered cultural heritage is expected to be low. However, there are numerous living heritage structures such as churches and mosques integrated into the urban landscape, and potentially built heritage structures that could have historic or aesthetic value to local communities.

6.4.3.1 Construction Phase

As described in Section 5.3.2, construction activities will be in areas at least a kilometer removed from Paramaribo's historic downtown, and that have already undergone a high degree of human disturbance. None of the proposed Project activities are considered to be more intrusive than those activities that were necessary in the initial development of the current existing facilities and infrastructure. As such, it is unlikely that undiscovered subsurface cultural heritage would be discovered or damaged.

Since the activities will not alter the character of the landscape or skyline, it is also not anticipated that the Project would have any visual effects that could diminish the value of the historic downtown located about a kilometer away.

As described in Section 5.3.2, the mixed-use environment in which the Project is situated includes places of worship including evangelical churches and at least one mosque. These are considered living heritage sites of moderate importance given the large populations they are likely to serve in these densely populated areas.

The significance of impact on cultural heritage is considered to be *Moderate* – medium magnitude of impact particularly for possible disruption to the use of living heritage sites, and medium sensitivity since users of such sites are likely to have limited alternatives in the vicinity.

Mitigation/Enhancement Measures

As discussed previously, it is recommended that an exhaustive inventory of buildings and structures in the Project area be conducted prior to the onset of construction. In addition, meaningful stakeholder engagement with affected communities should be undertaken. This will allow for the identification of living heritage and other structures, places and features that may have historical, cultural or aesthetic importance to members of the community. Once such features are identified, plans should be developed in consultation with stakeholders to ensure their protection during the construction phase.

In the case of living heritage sites such as churches, mosques and mandirs, engagement with the administrators of these institutions should be undertaken to understand their operating and peak hours and regular events such as worship services. This will allow for coordination and planning to avoid or minimize undue disruptions. Key points of contact and a predefined protocol should also be established for the living heritage site administrators to alert the Project of any impromptu events such as funerals so that provisions can be made to avoid disruptions.

It is considered unlikely that undiscovered, underground cultural heritage would be discovered in the Project Area. However, since it is still a possibility, the EPC should develop a simple Chance Finds Procedure that outlines a protocol to stop work and notify the Directorate of Culture under the Ministry of Education, Science and Culture if anything resembling archaeological resources is found during excavation activities.

Residual Impact

With the implementation of the recommended mitigation measures, the significance of impact would be reduced from *Moderate* to *Minor*.

6.4.3.2 Operations Phase

No activities with the potential to change levels of access to living heritage sites, or cause damage or alteration to built heritage or other forms of cultural heritage are anticipated during the operations phase.

Mitigation/Enhancement Measures

As no impact is expected to cultural heritage resources, no mitigation or enhancement measures are recommended during operations.

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

7.1 Introduction

This impact assessment has identified a range of potential environmental, socioeconomic, and cultural impacts related to implementation of the Project components, as described in Section 6.0 Impact Assessment. As part of the environmental and social management requirements established by IDB and according to industry good practice, an Environmental and Social Management Plan (ESMP) must be developed and implemented for the Project.

This ESMP describes the approach that the Project proponent and other involved parties (e.g., contractors) would follow to manage, mitigate, and monitor the potential impacts of the Project. It includes the Project commitments and mitigation measures as identified in Section 6.0, Impact Assessment.

7.2 Environmental and Social Management Plan Guiding Principles

7.2.1 Plan, Do, Check, Review

Industry good practice follows the general principles of the “Plan, Do, Check, Review” cycle as described below, and outlined in Figure 7-1.

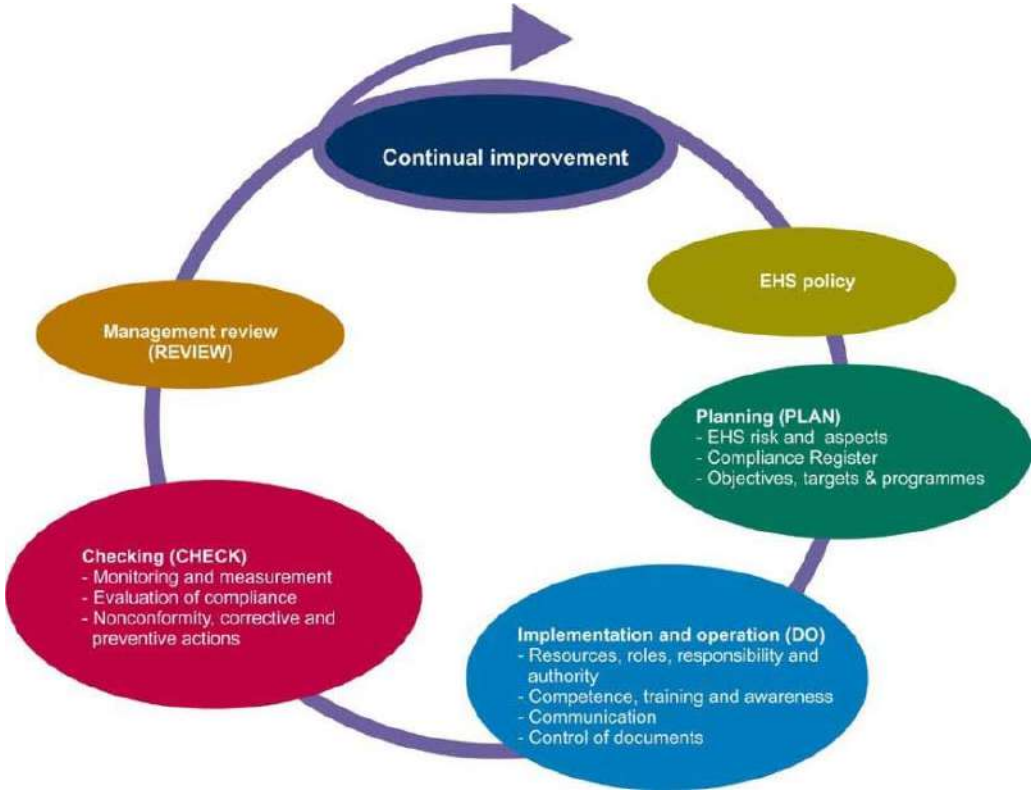


Figure 7-1: Plan, Do, Check, Review Cycle

Plan

- Define policies and objectives for environmental and social performance.
- Identify environmental and social impacts and risks of the operations.

- Develop mitigations and operational controls to address impacts and risks.
- Develop a management plan to achieve these objectives.

Do

- Implement a management plan.
- Implement mitigation and operational controls.

Check

- Monitor performance against policies and objectives.
- Check that mitigation and operational controls are effective.

Review

- Make corrections to plans, mitigation, or controls in response to performance monitoring or out of control events.

7.2.2 Mechanism for Auditing, Adjustments, and Reporting

Auditing and adjustment is an essential part of a successful ESMP. Auditing systems include inspections and monitoring to confirm proper implementation of the ESMP, as well as effectiveness of mitigation measures. Corrective actions include response to out-of-control situations, non-compliances, and non-conformances. Actions also include those intended to improve performance.

The parties involved in overseeing the day to day activities of Project implementation will conduct continuous monitoring to ensure that all Project personnel (contractors) are fulfilling their obligations under this ESMP.

Monitoring will be conducted to ensure compliance with the commitments in this document and to evaluate the effectiveness of operational controls and other measures intended to mitigate potential impacts. Project monitoring activities are summarized in Table 7-1 below.

The Project proponent will keep relevant authorities informed of the Project performance with respect to environmental and social matters and implementation of this ESMP by way of written status reports and/or face-to-face meetings. Contractors will also be required to provide EHS performance reporting as relevant based on the contractor's responsibilities. The Project proponent will continue the stakeholder engagement efforts described in Section 8.0 and communicate with stakeholder groups regarding Project activities and the results of environmental and social monitoring.

7.2.3 Training

All Project personnel will be qualified to do the particular job that they are performing and undergo further training to meet the needs of the working environment, as required. All personnel, regardless of position, will be given specific job oriented EHS training prior to starting work and as necessary thereafter. All personnel will be trained on general awareness of environmental and social issues and specific procedures aimed at the avoidance of environmental damage as well as human health and safety. New staff, contractors, and visitors will be given basic induction training and follow Project EHS procedures.

7.3 Organizational Capacity and Policies

The MPWTC, as the Project proponent, will be responsible for leading the Project through implementation, and therefore will also be responsible for the implementation of the ESMP. Given the

scale and nature of this Project, as a minimum the following roles will be required to support ESMP implementation:

Environmental Coordinator – part-time resource (maximum of 20 hours a week) to ensure that the works are implemented according to applicable national laws, regulations, and rules, as well as international standards – mainly IDB standards – as defined in Section 2 of this document and follow applicable good industry practice (e.g., ISO 9001 Quality Standards, ISO 14001 Environmental Standards, and OHSAS 18001 Occupational Health and Safety Standards). The role will also need to ensure that the relevant management plans described herein are being implemented by the selected contractor, including the associated mitigation measures, so that noise, air quality, water, traffic and biodiversity issues are appropriately managed. Requirements for this role will be a degree in environmental management or engineering (or equivalent) and at least 5 years' experience of environmental management on construction sites.

Community and Social Coordinator – full time resource (40 hours a week) to manage the implementation of the Stakeholder Engagement and Communication Plan, the community and social coordinator and also liaise with the Environmental Coordinator on aspects of the Construction Environmental Plan and Traffic and Pedestrian Management Plan. Requirements for this role will be a degree in social sciences (or equivalent) and at least 10 years' experience of stakeholder engagement and livelihood restoration, including to international standards.

7.4 Environmental and Social Management Plan

The following sections provides a description of the various management plans recommended to be implemented for the Project that the Project proponent and other involved parties (e.g., contractors) would follow to manage, mitigate, and monitor the potential impacts of the Project. They include the Project commitments and mitigation measures as identified in Chapter 6.0 *Impact Assessment*.

Table 7-1: Mitigation Measures and Monitoring Recommendations

Resource / Receptor and Impact	Project Phase	Mitigation Measures	Execution Responsibility	Means of Verification	Monitoring and Reporting
Air Quality					
Emissions from construction vehicles and equipment	Construction	See Section 7.4.1 for a Construction Environmental Management Plan, which includes the following: • Maintain all construction equipment in accordance with manufacturer's specifications. • Suppress dust as needed in unpaved areas. • Avoid burning non-vegetative wastes (refuse, etc.) at construction sites. • Avoid unnecessary idling of construction equipment or delivery trucks when not in use. • Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site. • Cover work vehicles transporting friable materials to prevent materials being spread around and off the site. • Minimize drop heights of materials	Construction contractor	Site inspection during construction	Monthly progress reports during construction

Resource / Receptor and Impact	Project Phase	Mitigation Measures	Execution Responsibility	Means of Verification	Monitoring and Reporting
		• Develop and implement a grievance procedure in the event of any dust and/or exhaust emissions compliants being received.			
Noise					
Noise generated by construction equipment and activities	Construction	See Section 7.4.1 for a Construction Environmental Management Plan, which includes the following: • Maintain all construction equipment in accordance with manufacturer's specifications. • Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable. • Schedule construction, modification, and rehabilitation work to minimize activity during peak periods of traffic. • Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g., residents, commercial businesses, churches, and hotels) of construction activities. • Provide acoustic enclosures, if necessary. • Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies). • Avoid unnecessary idling of construction equipment and trucks.	Construction contractor	Site inspection during construction	Monthly progress reports during construction
Climate Change and Natural Hazards					
Climate change and natural hazards	Construction Operation	Implement a Construction Environmental Management Plan and a Health and Safety Plan and Emergency Response Plan, which include the following: • All new road construction and improvements should include a properly designed drainage system. • Ensure drainage solutions have careful calculations and consideration of potential hydrological climate change. • Ensure adequate distance is maintained between roads and immediately adjacent buildings.	Construction contractor	Interviews with construction workers, site inspection	Monthly progress reports

Resource / Receptor and Impact	Project Phase	Mitigation Measures	Execution Responsibility	Means of Verification	Monitoring and Reporting
		• Properly secure equipment and materials. • Immediately stabilize disturbed areas. • Provide procedures for site evacuation.			
Waste					
Waste generated by construction activities	Construction	See Section 7.4.1 for a Construction Environmental Management Plan, which includes the following: • Provide appropriate waste bins, type, volume and service frequency to accommodate anticipated waste streams. • All loads arriving or leaving the site will be appropriately secured. • Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads. • Ensure licensed contractors are used to collect controlled wastes.	Construction contractor	Site inspection during construction	Monthly progress reports during construction
Traffic					
Decreased pedestrian and traffic safety	Construction	Implement Traffic and Pedestrian Management Plan to include early notification of road closures, detour signage, and safety programs and measures for pedestrians and bicyclists (Section 7.4.5).	Construction contractor	Site inspection during construction	Monthly progress reports
Increased traffic congestion and disruption	Construction	Incorporate public transportation alternatives (e.g., pedestrian and bus) into Traffic and Pedestrian Management Plan (Section 7.4.5)	Construction contractor	Site inspection during construction	Monthly progress reports
Decreased access to critical facilities, shopping, bus stops etc.	Construction	Implement Traffic and Pedestrian Management Plan to maintain continuous access through careful staging and sequencing of construction activities and provision of alternatives where needed (Section 7.4.5)	Construction contractor	Site inspection during construction	Monthly progress reports
Biodiversity					
Biodiversity management in general including the items below	Construction	See Section 7.4.1 for a Construction Environmental Management Plan, which includes the mitigation measures below.	Construction contractor	Site inspection during construction	Monthly progress reports during construction
Loss or disturbance of vegetation	Construction	• When designing and planning work elements, minimize temporary and permanent construction footprints • Demarcate work area with fencing to minimize disturbance or removal of natural vegetation	Construction contractor	Site inspection during construction	Monthly progress reports during construction
Wildlife injury or mortality	Construction	• Conduct canal- and mangrove-related works outside the waterbird breeding season (April – Sept)	Construction contractor	Site inspection during construction	Monthly progress reports during

Resource / Receptor and Impact	Project Phase	Mitigation Measures	Execution Responsibility	Means of Verification	Monitoring and Reporting
		• Minimize lighting • Implement above measures to minimize noise and air pollution			construction
Habitat alteration - aquatic	Construction Operation	Implement Erosion and Sediment Control Management Plan as well as a Spill Prevention, Control and Countermeasures Plan to include: • sediment control procedures during in-water works to minimize the release of fine sediments to adjacent waterways and recommends work to occur during low flow periods and/or dry periods for the Suriname River and Saramacca Canal during the months of August to November. • Demarcate work areas with fencing to minimize disturbance or removal of natural vegetation; • Plan equipment access locations that minimize impacts to riparian areas, where possible; avoid areas with less stable structure such as steep banks; and • Minimize temporary stockpiling and place stockpiles outside of the active floodplain. Prevent runoff from stockpiles from entering creeks by using erosion control measures such as silt fences and/or straw wattles.	Construction contractor	Site inspection	Monthly progress reports during construction
Social					
Loss of income for businesses	Construction	• Phase construction activities, create alternate entrances, walkways, detours and parking areas as needed • Provide oportunities for local employment • Develop and implement a Traffic and Pedestrian Management Plan (see Section 7.4.8). • Develop and implement a Livelihood Restoration Plan (see Section 7.4.7) for potentially Affected Persons. • Continue stakeholder engagement through Project implementation through the use of the Stakeholder Engagement and Communications Plan (see Section 7.4.4). • Implement a Grievance Mechanims to receive and respond to grievances (see Section 7.4.5).	Construction Contractor - Community Liaison Officer	Interviews with construction contractor and affected parties	Monthly progress reports during construction
Provision of construction jobs to	Construction	• Implement job quotas for local employment and sourcing	Construction contractor	Records review and interview	Monthly progress

Resource / Receptor and Impact	Project Phase	Mitigation Measures	Execution Responsibility	Means of Verification	Monitoring and Reporting
local companies and materials sourced from the local economy		requirements for construction contractors based on the size and scope of the Project		of construction contractor	reports
Potential vulnerable groups (gender or disability related)	Construction	• Ensure adequate ground surfaces and associated infrastructure (such as ramps) for patron mobility (e.g., high heels and crutches) at construction sites; and • Conduct Gender Awareness Training for contractors and their staff.	Construction contractor	Records review and interview of construction contractor	Monthly progress reports
Health and Safety					
Management of health and safety of both construction workers and the public	Construction	• Develop and implement a Construction Health and Safety Plan (see Section 7.4.2) • Implement good housekeeping practices in and around the Project construction sites including elimination of standing water or, if not practicable, treatment of standing water to kill mosquito larvae • Appropriate and timely engagement of stakeholders, to ensure that they are well-informed of the nature and duration of Project activities, and have a good understanding of associated safety risks. • Implement stakeholder outreach to vulnerable subpopulations or to those responsible for maintaining their safety • Establish and publicize a Grievance Mechanims to receive and respond to grievances (see Section 7.4.5).	Construction contractor	Records review and interview of construction contractor	Monthly progress reports
Cultural Resources					
Possible disruption to the use of living heritage sites	Construction	• Conduct an exhaustive inventory of buildings and structures in the Project area prior to the onset of construction. • Perform meaningful stakeholder engagement with affected communities to identify living heritage and other structures: places and features that may have historical, cultural or aesthetic importance to members of the community. • For sites such as churches, mosques and mandirs, engage with the administrators of these institutions to understand their operating and peak hours and	Construction contractor	Interviews with relevant stakeholders, site inspection	Monthly progress reports

Resource / Receptor and Impact	Project Phase	Mitigation Measures	Execution Responsibility	Means of Verification	Monitoring and Reporting
		regular events such as worship services, allowing for coordination and planning to avoid or minimize undue disruptions. • Develop plans in consultation with stakeholders to ensure their protection during the construction phase.			
Damage to undiscovered archaeological sites due to construction of subsurface Project components	Construction	• Implement a simple Project Chance Finds Procedure (CFP) during all Project ground work.	Construction contractor	Interviews with construction workers, site inspection	Monthly progress reports

7.5 Construction Phase

7.5.1 Construction Environmental Management Plan

This Construction Environmental Management Plan (CEMP) provides a working template that will be used by the selected construction contractor (the Contractor) appointed by the Project Proponent (the MPWTC). It details the specific mitigation requirements and focus areas identified through the Environmental Assessment, but also recognizes that the selected Contractor will have their own policies and procedures that will need to be inputted to this plan. It also recognizes that as the Contractor develops the Project designs, this may influence how construction will be undertaken and progress, and these aspects will need to be integrated into this plan.

7.5.1.1 Introduction

Overview

This Section provides the Construction Environmental Management Plan (CEMP) for the Dr. Jules Sedney Port and Roads Intervention Project (the "Project"), a Category B Project that focuses on the port and roads interventions and improvements and comprises two components:

- Improvements of the Port access and land utilization; and
- Road upgrades, improvements, and safety optimization.

The CEMP sets out the expectations of the Project Proponent (i.e., the Ministry of Public Works, Transport and Communication, MPWTC, and its partner, the Inter-American Development Bank, IDB) and defines how the Contractor will implement and manage environmental matters.

Objectives

The CEMP will ensure that the Project is delivered in full compliance with legal requirements, and also address the requirements of IDB policies. Specifically, it will ensure the Project aligns with:

- Emerging environmental legislation (if in place at the time of construction) being developed by the National Institute for Environment and Development in Suriname (NIMOS); and
- Guidance Note NIMOS Environmental Assessment Process (2017), effective January 2018.

The IDB has established its own policies and safeguards to ensure that projects financed by the IDB group are sustainable. These include the following environmental policies:

- OP-703 – Environmental and Safeguards Compliance Policy; and
- OP-704 – Natural and Unexpected Disasters Policy.

7.5.1.2 Project Description

Once the Project's design is finalized, the construction Contractor needs to prepare the COEMP and include specific details on the proposed works, duration, relevant plans, etc. The following provide guidance on what should be included in this section.

- **Scope of Construction Works:** Description of the full range of construction works / activities proposed (e.g., clearing of land, placement of poles, bridge piles and other infrastructure, filter rock, geotextile fabric and armour rock; installation of drainage structures; etc.).

- **Description of the Construction (Disturbance) Footprint:** Full description of the existing land areas that will be disturbed by the construction works and those immediately adjacent;
- **Timing of Works:** Provide a description of both the total duration of the works and the time of year they will occur. The latter would include consideration of expected climate during this time (e.g. anticipated rainfall / storm events, wind direction and speeds);
- **Site Plan:** The project site plan would clearly show the full extent of the proposed works area of the construction project. This would typically include a map with the full construction boundary and disturbance footprint marked clearly over a current aerial photograph (i.e., including all construction activities, associated laydown areas etc.). It would also include site specific information, for example the location of any important waterways, ditches or adjacent vegetation to be protected, national heritage listed areas, or the location of sediment and erosion traps, electrical services, etc.

7.5.1.3 Project Roles, Responsibilities and Contacts

All positions across the Project have environmental responsibilities to some extent. These vary in relation to duties described in Table 7-2, but everyone has a base level duty of care to prevent environmental harm.

Table 7-2: Project Roles, Responsibilities and Contact Details to be Finalized by the Construction Contractor for the CEMP

Position	Responsibilities	Line Manager	Name	Contact Details*
Project Manager				
Site Supervisor				
Environment Manager				
HSE Representative				

7.5.1.4 Training, Awareness and Competency

The CEMP prepared by the construction Contractor must include a code of conduct to be followed by all employees and outline how environmental training, awareness and competency will be delivered / assessed throughout the Project, to ensure the relevant aspects of this CEMP are communicated to the project team and front line staff (including contractors and sub-contractors) in compliance with the local labor laws and regulations and ILO standards to which Suriname is party to, as described in Section 3.1 of this report. Examples may include:

- Site Environment Induction
- Daily Pre-Start Meetings
- Environmental Toolbox Talks
- Incident bulletins
- Sub-contractors kick-off meeting
- Contractor and client site kick-off meeting

7.5.1.5 Environment Management

This section presents a summary of the environmental risks and controls that have been identified for the proposed construction project. The Contractor should determine what additional risks and proposed

management controls are required based on their final design and work method statements. A project risk assessment or job hazard analysis for specific task(s) should be performed.

The following tables are based on the EA that has been performed. Note that this is not an exhaustive list, and it would be expected that Contractor develop risk management strategies, controls, etc. that suit the scale/nature of finalized construction project.

Air Quality and Dust Management

AIR QUALITY AND DUST MANAGEMENT			
Objective(s)	1. To ensure the impacts of air quality and dust on adjacent areas and the community are minimised.		
Management Strategy	Air quality and dust issues managed principally by emission controls at source, and administrative controls during works.		
		Responsibility	Timing
Control(s)	The air quality impacts could be minimized using the following measures: • Maintain all construction equipment in accordance with manufacturer's specifications. • Avoid burning non-vegetative wastes (refuse, etc.) at construction sites. • Avoid unnecessary idling of construction equipment or delivery trucks when not in use. • Dust impacts could be minimized using the following measures: • Area to be disturbed minimized. Clearance lots to be approved by Project Manager. • Where dust is identified as an issue, dust control measures will be implemented. These will primarily be the use of water carts, but may include surface treatments. • Vehicle movements controlled (Traffic Management Plan) and kept to established tracks and haul roads. • Dust awareness issues in environmental induction process.		
Performance Indicator(s)	No complaints from adjacent commercial premises and/or community.		
Monitoring	Daily inspection of works sites to occur, including: • visual check for dust crossing the site boundaries. • visual check of high potential dust areas, such as haul roads, stockpiles and operational areas.		
Reporting	Any complaints or incidents to be reported to PPA project manager.		
Corrective Action(s)	• Investigate cause of excessive dust. • Implement controls immediately (e.g., water carts). • Implement corrective measures prior to the recommencement of site works. • Implement administrative controls if required, such as rescheduling of dust generating activities to more favourable weather conditions.		

Noise Management

NOISE MANAGEMENT			
Objective(s)	1. To minimize the impacts of noise on the amenity of the surrounding areas. 2. Construction activities undertaken in accordance with best practice controls.		
Management Strategy	Noise to be managed primarily through administrative and equipment controls during the construction phase.		
		Responsibility	Timing
Control(s)	The noise impacts associated with the Project components could be minimized using the following measures: • Maintain all construction equipment in accordance with manufacturer's specifications. • Schedule construction and rehabilitation work during daylight hours when increased noise levels are more tolerable. • Schedule construction and rehabilitation work to minimize activity during peak periods of tourism and recreation (weekends, holidays, etc.). • Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g., commercial businesses, churches, and tourists) of construction activities. • Use vibratory piling instead of impact piling for the construction of the bridged piles, if possible, to avoid generating impulsive noise. • Pre-start checks and maintenance schedules to ensure equipment performance is as required. • Noise-dampening equipment to be used on equipment with excessive noise generating characteristics.		
Performance Indicator(s)	No complaints from adjacent commercial premises and/or community.		
Monitoring	• Daily inspection of works sites to occur. • Service logs for equipment/machinery used on site.		
Reporting	Any complaints or incidents to be reported to PPA project manager.		
Corrective Action(s)	• Investigate cause of excessive noise. • Implement corrective measures prior to the recommencement of site works. • Reschedule of noise-generating activities to reduce noise annoyance.		

Sediment and Erosion Control

SEDIMENT AND EROSION CONTROL			
Objective(s)	1. To ensure that the effects of erosion and sedimentation on the environment are minimized. 2. Minimize soil disturbance, degradation and erosion.		
Management Strategy	Ensure that direct impacts (land disturbance) are limited to the works area, and that secondary impacts do not impact adjacent areas.		
		Responsibility	Timing
Control(s)	Measures to be applied include: • Disturbance area will be minimized and clearly demarcated. • Works will only be conducted within the works zone. • Vehicle movements will be restricted to the defined roads/tracks. • Where possible, works area will be designed to ensure stormwater runoff drains into the site. • Where runoff from the site is required, it will be via the longest flow path possible to ensure maximise sediment retention. Flows to undisturbed areas will be prioritised. • Where required, sediment controls will be put in place. These will include, but not be limited to, rock check dams, sediment basins, sediment fences and silt socks. • Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff).		
Performance Indicator(s)	No evidence of significant sediment deposition outside the works area. No evidence of significant rilling, gullies or other instances of run-off erosion.		
Monitoring	• Daily inspection of work site to occur. • Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff). Review will include removal of accumulated sediments as required.		
Reporting	• Incident report for non-conformance of sediment control. • Logging of sediment control structures - location and condition during weekly site inspection.		
Corrective Action(s)	• Investigate cause of sediment control failure. • Review flow path and determine most appropriate controls are in place, additional controls which can be place in-stream and/or changes that can be made to flow path • Review similar controls on-site (even though these may not have failed) for similarities.		

Turbidity

TURBIDITY			
Objective(s)	1. To minimize the volume of fine sediments / silts introduced into the Suriname River through various construction activities. 2. To minimize / manage the spread of sediments generated by construction activities		
Management Strategy	Undertake monitoring of turbidity through observations and in-situ measurements to proactively manage turbid plumes / sediment input.		
		Responsibility	Timing
Control(s)	Mitigation measures to minimize the potential impacts of the Project include: • Monitoring for turbid plumes generated by piling of the bridge, drilling and material placement activities will be undertaken. Observations will be recorded daily during those activities and will be from an elevated location ensuring line of sight is maximised. These observations will include (but are not limited to) recorded information (*pro forma*) and site photographs demonstrating: • Plume extent (e.g. estimated distance in metres from the drill rig or construction work face), • Plume direction • Prevailing metocean conditions (e.g., wind, tide, swell) • Start-up and shut down times for drilling / piling operations • Any other notable visual characteristics of the plume or piling / drilling activity. • All material from drilling / mucking out operations will be recovered on land and not discharged directly into the marine environment.		
Performance Indicator(s)	No plumes of sediment released, or complaints from community.		
Monitoring	• Daily (documented) observations and panoramic photographs of turbid plumes generated by work activities • Daily inspections of worksite		
Reporting	Incidents (including breaches of this management plan) to be reported immediately to the Project Manager and Environment Manager.		
Corrective Action(s)	• Should turbidity be identified, response will be to cease the work creating the plume until monitoring levels fall within compliance. • Should the monitoring levels exceed the requirements on a continual basis, Contractor shall investigate additional measures to control turbidity		

Oil and Other Noxious Substances

OIL AND OTHER NOXIOUS SUBSTANCES			
Objective(s)	1. To minimize the potential for spills of oils and other noxious substances to as low as reasonably practicable.		
Management Strategy	Reduce quantity of hydrocarbons stored to that required, implement appropriate controls and provide appropriate training and resources for a spill response.		
		Responsibility	Timing
Control(s)	• All hydrocarbons to be stored in an appropriate bund that is capable of holding 110% of a spill from the largest container, or 10% of total volume of stored liquids, whichever is greater. • Refuelling of vehicles/equipment will be undertaken on land (not over water), unless the task is not possible. • To reduce the impact of a spill, the lowest volume of hydrocarbons required will be stored in proximity to the Suriname River and in the onshore lay down areas. • A copy of the current hydrocarbon MSDS will be kept at an appropriate location on site. • Drip trays shall be placed under mechanical stationary equipment such as gensets if such equipment is not internally bunded. • Onsite spill response training will be carried out on a periodic basis. All deficiencies • identified through training and testing of the procedures will be documented and rectified immediately. • All equipment will be regularly serviced to reduce emissions and reduce the chance of oil leaks on site and in marine environments. Appropriate controls in place to contain hydrocarbon leaks should they occur whilst servicing. Controls may include use of drip trays when changing oil and transporting waste oils in bunded containers. • Only qualified personnel are to carry out services on plant, equipment and vessels. • Training / awareness to be included in site induction (including all staff, contractors, subbies etc.). • Appropriate volume and type of spill response materials will be available at each work site • Spill will be contained and cleaned-up immediately. Resultant wastes (soils, rags and absorbent material) appropriately stored and disposed of by an appropriately licenced waste contractor as controlled waste. • All spills reported and investigated as required.		
Performance Indicator(s)	• Minor spills (<10L) to land contained, controlled and all contamination removed / cleaned-up within 24 hours. • No spills to riverine waters. • No contamination of soil or surface / ground waters. • No spills that require an emergency response		
Monitoring	• Incident report outlining corrective actions taken and preventative measures to be implemented • Statistics reported in weekly meetings and monthly reports.		

OIL AND OTHER NOXIOUS SUBSTANCES			
Reporting	All marine spills (regardless of volume) to be reported to the MPWTC.		
Corrective Action(s)	• Stop work immediately, contain spill (if safe). Investigate cause of spill and assess. Implement improvements as required. • Investigate and assess adequacy of response – implement improvements as required. • Implement corrective measures prior to the recommencement of site works.		

Housekeeping and Wastes

HOUSEKEEPING AND WASTES			
Objective(s)	1. Reduce waste volume, maximize recycling, reuse and recovery, prevent any construction waste/litter entering the environment.		
Management Strategy	Minimize environmental impacts through appropriate controls and site inductions of employees and sub-contractors.		
		Responsibility	Timing
Control(s)	• Provide appropriate waste bins, type, volume and service frequency to accommodate anticipated waste streams. • All loads arriving or leaving the site will be appropriately secured. • Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads. • Ensure licensed contractors are used to collect controlled wastes.		
Performance Indicator(s)	• Hazardous materials all appropriately disposed. • Recycling of all recyclable construction metal waste. • Records kept of waste leaving site.		
Monitoring	• Daily inspection of work site to occur. Review of waste bins (% full, time to next service). • Waste volumes leaving site from waste contractors		
Reporting	Environmental incident reports.	Project Manager	Throughout project
Corrective Action(s)	• Investigate cause of inappropriate waste disposal. • Review cause of issue and develop response, such as variation to bin size, service schedule or waste separation awareness. • Implement controls.	Project Manager	Throughout project

7.5.2 Construction Health and Safety Management Plan

This Construction Health and Safety Plan (CHSP) provides a working template that will be used by the selected construction contractor (the Contractor) appointed by the Project Proponent (the MPWTC). It details the typical requirements and focus areas for health and safety, however it is recognized that the selected Contractor will have their own policies and procedures that will need to be inputted to this plan. It also recognizes that as the Contractor develops the Project designs, this will influence how construction will be undertaken, and these aspects will need to be integrated into this plan.

7.5.2.1 Introduction

Overview

This document is the Construction Health and Safety Plan (CHSP) for the Dr. Jules Sedney Port and Roads Intervention Project (the "Project"), a Category B Project that focuses on the Port and roads interventions and improvements and comprises two components:

- Improvements of the Port access and land utilization; and
- Road upgrades, improvements, and safety optimization.

The CHSP sets out the expectations of the Project Proponent (i.e., the Ministry of Public Works, Transport and Communication, MPWTC, and its partner, the Inter-American Development Bank, IDB) and defines how the Contractor will implement and manage environmental matters.

Objectives

The CHSP will ensure that the Project is delivered in full compliance with legal requirements, and ensures:

- All workers (including subcontractors are fully trained and experienced to do the tasks requested of them;
- Implements measures to eliminate hazards, and where elimination is not possible, puts in place controls to ensure that hazards and risks are minimized to acceptable levels; and
- Ensures protection and well-being of the surrounding communities and visitors.

It is intended that through the implementation of this plan:

- Hazards that may be encountered during the project are identified;
- Assessments are made to quantify the risk; and
- Control measures that require being introduced are implemented to minimize the risks.

The CSHP is a dynamic document that will change and develop throughout the Project. The Plan will be reviewed monthly to ensure that the content reflects the needs of the Project. Additionally, the Plan will be reviewed in light of any unforeseen occurrence.

7.5.2.2 Project Description

Once the Project's design is finalized, the construction Contractor needs to prepare the CEMP and include specific details on the proposed works, duration, relevant plans, etc. The following provide guidance on what is needed.

- **Scope of Construction Works:** Description of the full range of construction works / activities proposed (e.g. clearing of land, placement of piles for the bridge, filter rock, geotextile fabric and armour rock; installation of piles; etc.).
- **Description of the Construction (Disturbance) Footprint:** Full description of the existing land area that will be disturbed by the construction works and those immediately adjacent;
- **Timing of Works:** Provide a description of both the total duration of the works and the time of year they will occur. The latter would include consideration of expected climate during this time (e.g., anticipated rainfall / storm events, wind direction and speeds);
- **Site Plan:** The project site plan would clearly show the full extent of the proposed works area of the construction project. This would typically include a map with the full construction boundary and disturbance footprint marked clearly over a current aerial photograph (i.e., including all construction activities, associated laydown areas etc.). It would also include site specific information, for example the location of any important waterways or adjacent vegetation to be protected, national heritage listed areas, or the location of sediment and erosion traps, electrical services, etc.

7.5.2.3 Site Conditions and Requirements

Details must be presented clearly in this plan related to existing site conditions, security and restrictions. This should cover items such as:

- Personal Protective Equipment Requirements - Safety footwear, dust masks, safety goggles, hi-vis vests appropriate gloves and hard hats will be provided and worn as set out by the specific work activities by all site operatives and visitors.
- Existing Services – The Contractor will take all reasonable precautions including carrying out cable detection to avoid contact with live services. This will only be undertaken by competent persons.
- Tree Protection - Temporary protective fencing will be installed if trees and/or vegetation is to be protected.
- Ground Conditions - A Site investigation has not been completed, but will be prior to works commencing and the results will be fed into this plan.
- Potential Risks to Construction Workers – to consider items such as:
    - The concentrations of contaminants at the site are understood to be low and are unlikely to require measures beyond that required for health and safety purposes on a construction site. But suitable precautions should be in place.
    - Health and safety measures for work in excavations and confined spaces below ground put in place.
    - Management of water ingress into excavations, and suitable fencing and protection where excavations are open.
- Cross reference the requirements of the Construction Environmental Management Plan.
- Site security will be maintained during the construction phase. Fencing will be erected to form a secure construction site to prevent entry by children, members of the public, trespassers and vandals. Warning signage to be placed at strategic points on the perimeter fencing. Information signage to be placed at the site entrance.

- The Contractor will liaise with the local residents and businesses prior to any works being undertaken to make them aware of works taking place and address any concerns by these affected parties. Access to the work sites will have secure gates will prevent entry to unauthorised persons.
- Working hours will be generally 0800-1700 on weekdays, 0900-1400 on Saturdays. No works will be permitted on Sunday's or Bank Holidays.
- Priority will be given to maintaining continuous safe access.

7.5.2.4 Policy and Systems

This Section must include an outline of the Contractors policy and management systems for the Project.

7.5.2.5 Project Roles, Responsibilities and Contacts

All positions across the project have health and safety responsibilities. These vary in relation to duties described in Table 7-3, but everyone has a base level duty of care to manage health and safety and avoid accidents and incidents.

Table 7-3: Project Roles, Responsibilities and Contact Details to be Finalized by the Construction Contractor for the CHSP

Position	Responsibilities	Line Manager	Name	Contact Details*
Project Manager				
Site Supervisor				
Health & Safety Manager				
HSE Representative				

7.5.2.6 Training, Awareness and Competency

The CHSP prepared by the construction Contractor must outline how health and safety training, awareness and competency will be delivered / assessed throughout the project, to ensure the relevant aspects of this CHSP are communicated to the project team and front line staff (including contractors and sub-contractors). Examples may include:

- Site Health & Safety Induction
- Daily Pre-Start Meetings
- Health & Safety Toolbox Talks
- Incident bulletins
- Sub-contractors kick-off meeting
- Contractor and client site kick-off meeting

The Contractor must also detail its organization and arrangements for the promotion of safety, health, and welfare. Overall responsibility for the site and its management will be the Contractor. On the first arrival at site, allowance must be made for:

- Site induction for individuals, which will include ‘‘Site Safety Rules‘‘.
- Mandatory Booking in and out of site (includes lunch and breaks).
- Registering workers with appropriate training and competency certificates where necessary.

- Providing inspection and other certificates for equipment and machinery to be used safely.
- Daily / weekly site briefing.
- Demonstrating how contractors will monitor safety and its duration and issuing copies of these reports to the Site Project Manager.
- Pre-existing health issues.

7.5.2.7 Complaints

A complaints procedure shall be outlined within the Contractor's safety management system and shall be available and used whenever a member of the public wishes to raise a complaint.

7.5.2.8 General Monitoring Arrangements

Safety standards will be monitored by the Contractor through:

- A continuous inspection process by the Site Project Manager is in force. A checklist for these inspections is included with the site safety records. These inspections will include all contractors working on the site and a report of all actions required will be given to the contractor's foremen with instructions to rectify non-conformance in a timely manner.
- Once per week the Site Project Manager or appointed representative will inspect fire equipment, first aid equipment (and replenish if necessary), registers and site documentation.
- Monthly by the Contract Manager or appointed representative, who will carry out an inspection of the site and produce a written safety inspection report for distribution.
- The scheduled progress meeting chaired by the senior Contractor representative will as part of agenda discuss health and safety reports, and relevant discussions between the Client, the Contractor and other relevant stakeholders.

7.5.2.9 Emergency Procedures

The Contractor shall document emergency procedures covering the following:

- On-site facilities and responsibilities e.g., First Aid kits and designated First Aiders.
- Escalation procedures for incidents and accidents.
- Numbers for local emergency services and details of nearby hospitals and other emergency needs.
- Site evacuation procedures and an Emergency Plan for different types of emergencies e.g. fire, flooding, etc.
- Incident reporting requirements and accident investigation procedures.

More information on emergency procedures are provided in the Contingency Plan provided in the next Section.

7.5.2.10 Health and Safety Risk Management

This section will be completed by the Contractor to present a summary of the key health and safety risks and controls that have been identified for the proposed construction project. The Contractor should determine what additional risks and proposed management controls are required based on their final design and work method statements. A project risk assessment or job hazard analysis for specific task(s) should be performed.

The following table template should be used for each of the following health and safety risks:

- Excavations
- Working over and on water – Saramacca Canal
- Use of heavy equipment
- Use of and contact with power tools
- Working at heights
- Manual handling
- Live services
- Tag out procedures
- Noise, vibration, and dust
- Hot works
- Confined Spaces
- Spills
- Traffic management and protection of neighbouring communities/businesses.
- Storage of waste materials
- Temporary works

Note that this is not an exhaustive list, and it would be expected that Contractors develop risk management strategies, controls, etc. that suit the scale/nature of finalized construction project.

Template

H&S RISK			
H&S Risk Identified			
Method statements and Risk assessment	Either detail here or refer to separate document		
Management Strategy			
		Responsibility	Timing
Control(s)			
PPE Requirements			
Performance Indicator(s)			
Monitoring			
Reporting			
Corrective Action(s)			

7.5.3 Construction Contingency Plan

This Contingency Plan (CP) provides a working template that will be used by the selected construction contractor (the Contractor) appointed by the Project Proponent (the MPWTC). It details the typical requirements and focus areas for emergency management, however it is recognized that the selected Contractor will have their own policies and procedures that will need to be inputted to this plan. It also recognizes that as the Contractor develops the Project designs, this will influence how construction will be undertaken, and these aspects will need to be integrated into this plan.

7.5.3.1 Introduction

Overview

This Contingency Plan considers general actions to be taken into consideration in case of emergencies related to the construction of the Project. Although some events can be prevented, as is the case with spills, fires, explosions, etc.; there are others that cannot be controlled; however, impacts can be mitigated by being prepared, as is the case with natural hazards such as: flooding and strong winds, etc. All of these events must be considered in a contingency plan.

The Contingency Plan is a live document and requires that the construction contractor carry out training activities and periodic drills for personnel, as well as continuous review and update of the physical and operational data, as well as equipment and products.

This Contingency Plan is closely linked to the Disaster Management Plan Framework, which is based on the IDB's Operational Policy OP-704 (Policy on Disaster Risk Management).

Objectives

The main objectives of this Contingency Plan are:

- Prevent or control operational emergencies or possible industrial accidents that may arise during the construction phase of the Project.
- Establish procedures and plans to respond in a timely and efficient manner, and with the necessary resources, to fires, accidents, attacks and any other emergency situation that may arise.
- Prevent the consequences of a major event (fire, spills of dangerous products) from damaging human lives and property.
- Manage equipment and installations through periodic inspections.

The contingency plan presents the most important guidelines for subsequent adoption and implementation by contractors. One of the fundamental purposes is to protect and safeguard the human life of all those involved and reduce the losses of public and private property.

There are three elements that significantly influence the success of any contingency plan, which are:

- Resources: appropriate personnel and equipment;
- Strategies, techniques and action plan; and
- Response management: leadership, cooperation and communication.

7.5.3.2 Emergency Levels

For the operation of the Contingency Plan, it is important to first characterize the emergency by seriousness of the situation in order to apply the appropriate level of response:

Figure 7-2: Emergency Levels

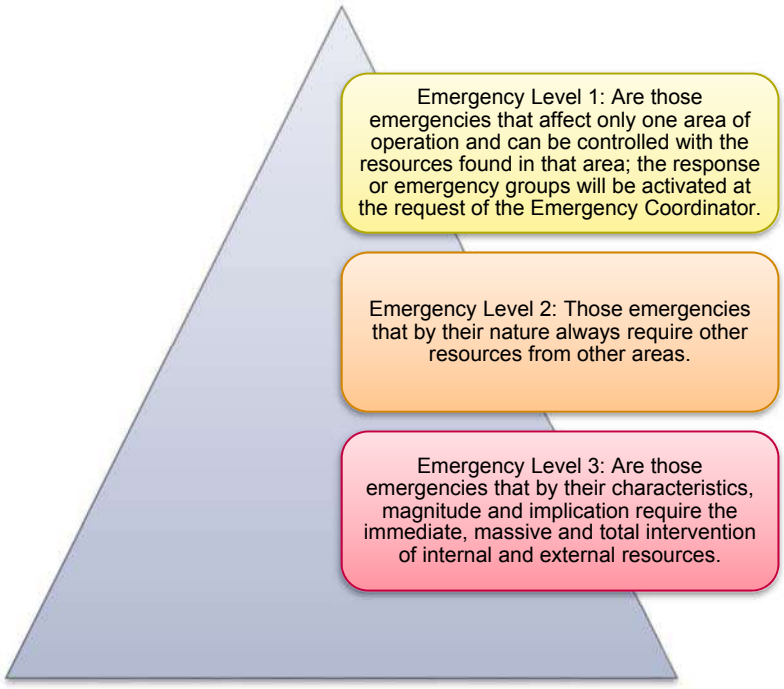


Figure Source: ERM, 2018.

7.5.3.3 Procedures to be Followed During the Implementation of the Contingency Plan

Considerations for the designation of the appropriate response measures:

- **Identification of Available Resources.** The most important resource to respond to possible contingencies is the people present at the Project site. The actions to be developed will depend to a large extent on the knowledge, confidence and capacity of the staff to carry out the actions previously assigned in the respective plan. It is imperative that the people at the Project site meet training requirements and are provided with the appropriate personal protective equipment (PPE) and information to fulfill their mission.
- **Access to information.** Provide all the necessary information in a concise manner to minimize confusion, and to avoid rumors and exaggeration. Obtaining timely and updated information is a dynamic process, and is the best way to provide feedback to the plan.
- **Communication.** The problems associated with communication are mainly related to the content of the messages, the means of transmission, and the interpretation by the person who receives it. Communication systems used internally should be prepared to handle a specific amount of information during an incident.
- **Priority setting.** At the scene of an incident, the personnel in charge of responding to the emergency must be able to alter priorities quickly, in order to face possible changing and/or unexpected situations.

- **Coordination between the Authorities.** An emergency coordinator must be determined for the Project by the contractor during the construction phase. This emergency coordinator will be in charge of coordinating with the appropriate authorities during an emergency.
- **Communication with the communities.** Throughout the construction phase, contractors must take communication initiatives with communities for their safety. These initiatives may include an emergency alert system, a method to provide information on Project activities and how to respond, collaborate with communities to establish action plans, organize demonstrations or training in how to respond to emergencies for communities, and/or identify the emergency response team to communities to establish a relationship before an emergency occurs.

Construction Phase

It is the contractor's and Project sponsor's responsibility to be in charge of risk management, this responsibility is shared with subcontractors if applicable. The Project proponent, as supervisor and owner of the project will have to ensure that the contractors manage risks and prepare an appropriate contingency plan as required. Therefore, the contractors and/or subcontractors will be required to comply with all safety, occupational health and environmental procedures to complete and deliver the work without incidents. As previously stated, Contingency Plans are live documents that may be revised and adapted if necessary according to the appropriate requirements for the construction activities.

The Contractors and Sponsor will ensure compliance with the standards as required based on the type of work, by jobs or disciplines. Such obligations include but are not limited to:

- Guarantee workers with safe conditions in the workplace.
- Instruct and train workers regarding the prevention of accidents, occupational diseases, the risks to which they are exposed in the performance of their work; as well as the use of personal protection equipment according to the work done, through training sessions, posters, etc.
- Design a program of occupational health and safety according to the activities to be performed that contains safety measures to be implemented, in order to avoid injury to personnel or property damage.
- Provide workers with personal protection equipment, according to the work done to prevent injuries.
- Regarding vehicles, machinery and equipment, comply with preventive and / or corrective maintenance programs and safety requirements.
- Organize and maintain health and safety services such as first aid kits in accessible places and ensure staff is knowledgeable.
- Record in writing any statements made by the workers in relation to unsafe conditions and the worker's environment, and carry out corrective measures immediately.
- Report any occupational diseases, work accidents and any other unsafe condition that is present in the workplace.

Employees will have to fulfill the following obligations:

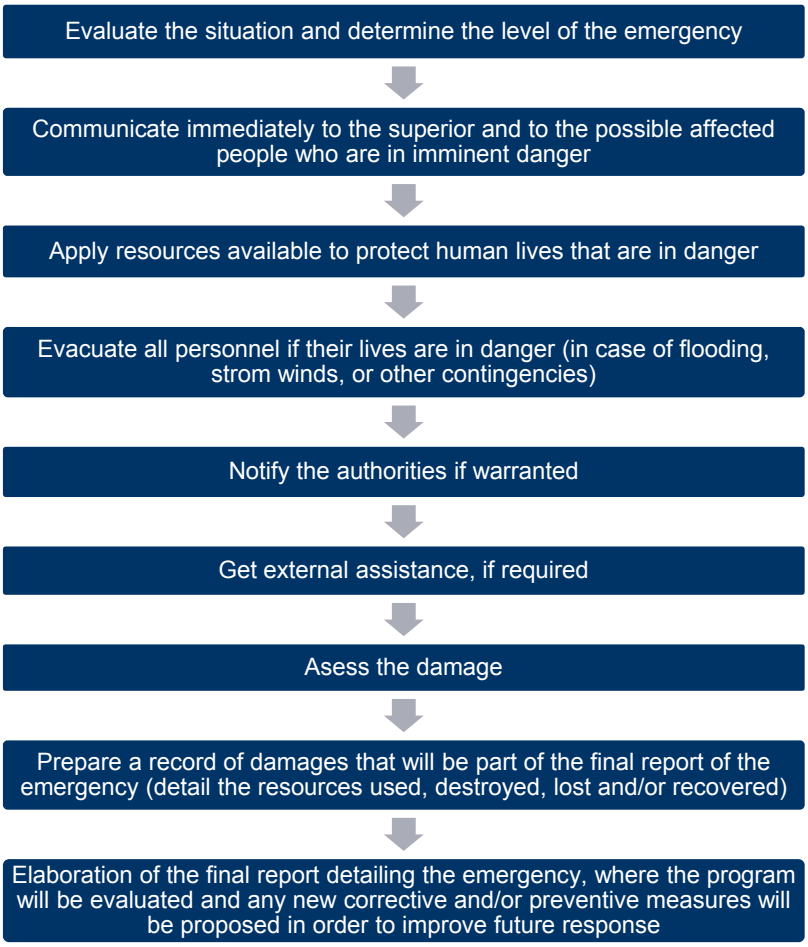
- Exercising their specific functions in accordance with the work contract in order to avoid risks and protect their personal safety and health, and that of their work colleagues.
- Immediately report to supervisors any unsafe condition that could threaten their physical integrity or their own health and / or that of other workers.

- Use and maintain personal protection equipment as required, and immediately report to the person responsible for its supply, of the loss, deterioration or expiration of the same.
- Bring to the attention of your superior if you feel that the requested safety or security measures do not appropriately manage the risk.
- Immediately comply with any request that is made for the benefit of your safety and that of others.
- Care for and maintain sanitation and security facilities facilitated to the workers during the construction phase.
- Adhere to all safety and security requests made in the training materials, posters and posted notices.
- Accept the provisions of the medical service and the competent bodies in matters of occupational safety for the prevention, treatment of occupational or non-occupational diseases, and occupational accidents.

Emergency Procedures

The following Section describes the actions and procedures to be considered by the Contractors and Sponsor in case of emergencies and events that may arise.

Figure 7-3: General Procedures during an Emergency



Source: ERM, 2018.

The Contractor or Sponsor must lay out a sequence of actions to be followed in the event of an unplanned event or accident, which may be as follows:

- Notification: Inform all personnel of the accident.
- Verification and evaluation: Confirm that the notification provides an accurate representation of the status of the works and associated risk at the moment that the notification of the event is received.

A notification scheme must be included in the Contingency Plan to include the main local authorities, (may include: the municipalities where the projects are developed, the local police, and/or the local firefighters).

Calling Plan

The Contractor or Sponsor must prepare a calling plan consisting of three types of communications, internal, external, and support.

- Internal Calls: The internal calls include the communication of the emergency to top management personnel, as well as the members of the Contingency Plan who are outside the facilities.
- External Calls: Communication of the emergency to the appropriate Government Authorities, depending on the type of occurrence.
- Support Calls: Support personnel in order to control the emergency (dependent on the type), for example the fire brigade, the national police, ambulance service, medical attention if necessary, government authorities, etc.

Emergency Committee

An Emergency Committee must be organized by the Contractor or Sponsor for the construction phase. It is recommended that the Committee be composed of:

- Environmental supervisor
- Security Supervisor
- Maintenance supervisor

7.5.3.4 Types of Contingencies

The types of contingencies that may arise in the project areas are classified according to their origin:

- Natural phenomena, such as flooding, strong winds, etc.
- Operational emergencies or incidents normally caused by operations, fires, falling machinery, etc.
- Industrial accidents of personnel or contractors, normally caused by unsafe acts, unsafe conditions or as a consequence of the natural phenomena or operational emergencies previously stated.
- Social phenomena such as sabotage, terrorism, robberies, etc.

7.5.3.5 Phases Considered for Each Event

Prevention Process

The best way to control an event and the impact that these may have on the environment is to prevent them from happening by implementing preventive measures. Preventive measures are described below.

Work Permits

All projects must comply with the requirements and procedures established by local law, including those related to work permits in order to prevent unnecessary risks and/or accidents, and must comply with the following:

- It is necessary to obtain work permits in all areas with risk where work is carried, and they must be issued by authorized personnel.
- No work will be started before the respective work permit has been issued and it has been verified that the recommendations and demands required have been complied with.
- Supervisors authorized to issue and receive work permits will be responsible for the correct issuance of the same. They will also be responsible for ensuring that the security conditions are maintained during the time required to carry out the work.
- A work permit will not be issued, covering several areas with different risks. As a general rule, each specific job will require a separate permit.

Personal Protective Equipment (PPE)

- Personal protective equipment will be mandatory. They will not prevent accidents, but will eliminate or reduce the severity of an injury.
- It is the responsibility of the contractors to provide their workers with the personal protection equipment required in the execution of any work that generates risks.
- The equipment will be new and of good quality.
- It is the responsibility of the immediate supervisor of each worker to determine the need for personal protective equipment and to ensure that the worker makes use of them.
- The worker will be responsible for the care, conservation and proper use of any equipment entrusted to him.

Organization and order

Prior to the start of the work, the Contractor or Sponsor will develop a safety, organization and order program for direction, providing guidance everything from inspections to identify faults, to the types of collection waste/trash receptacles provided for the different types of wastes (organic, inorganic waste, solid waste, liquid, and hazardous waste). Transportation and final disposal method, in accordance with the national regulations, must also be included. In addition, the following requirements will be fulfilled:

- Each employee will keep their work site clean and in good condition.
- The employee will notify his supervisor about spills of oil, grease, etc., and will be cleaned as soon as they occur.
- All tools, screws and any other material equipment used in the performance of a job will be kept in order, and these objects should not be placed in places where they can be dangerous.
- The flammable substances and wastes will be handled and stored accordingly in order to avoid the risk of spontaneous fire.
- There should be a staging area or adequate space for orderly storage of bulky objects, equipment, or materials.
- Every workplace should be provided with fresh and potable water in sufficient quantity for workers to use.

- The toilets and bathrooms (one toiled for every 20 workers) will be kept in optimal conditions and with sufficient supply of toilet paper, water and soap.
- If employees eat at the workplace, the workplace should have a dedicate area for eating, protected from weather elements. No waste and debris will be left in place and the use of Styrofoam food containers is prohibit.

Training

Every worker, new or old, will receive operational training from their immediate supervisor (supervisor), in order to develop knowledge and skills for the safe execution of the assigned work, especially on:

- Industrial safety corresponding to construction.
- Occupational health.
- Fire Prevention.
- First aid.
- Personal protective equipment.
- Organization and order.
- Accident prevention.
- Accident analysis.
- Fire protection.
- Works that require written permission for their execution.
- Emergency control.
- Factors of physical risks (electrical, mechanical, noise and vibrations, lighting, heat, ventilation, etc.)
- Factors of chemical risks (smoke, gases in the environment (vapors, fumes), toxic, alkaline and corrosive substances, etc.)
- Other risk factors (health, third-party actions, environmental, etc.).

Emergency Response Actions

The Contractor or Sponsor shall prepare a list of general emergency response actions to include:

- Upon receiving notice of an emergency, immediately evaluate the level of emergency and determine which response measures are necessary, notifying the corresponding response groups.
- If necessary and in accordance with the magnitude of the event, order the evacuation of the area or facilities and initiate the respective response procedures.
- Notify the relevant authorities.
- Consult the emergency response procedures in order to verify the appropriate response for each emergency, ensure all the response procedures have been applied and record descriptive information of the event.
- Restrict access to the event area.

Procedures to be followed during a Natural Disaster

Procedure to be followed in case of earthquake

Preparation

- Train operational personnel to respond to emergencies caused by earthquakes or earthquakes, by means of evacuation drills, so that personnel are prepared for these events.
- If an earthquake is of great intensity, ensure an orderly and safe evacuation.
- Provide vertical and horizontal signaling of evacuation routes in case of earthquakes, as well as the location of fire extinguishers to control the occurrence of fire.

During the earthquake

- Stop work being executed in order to avoid accidents.
- Immediately leave the work area.
- If inside a facility, look for strong structures: under a door frame, next to a pillar or to a strong wall.
- If you are outside of a facility, stay away from structures that may collapse.
- Extinguish any signs of fire.
- If possible, protect yourself by getting to an open place where there is no possibility of falling structures.
- If the earthquake occurs during the night, flashlights should be used; Never matches, candles or lighters.
- Stay away from electric cables and glass.

After the earthquake

- Staff should report to a meeting point or main office.
- Disconnect any power supply and water immediately.
- Look for traces of short circuits before reconnecting them.
- DO NOT light matches (or smoke) before making sure there are no leaks or spillage of flammable material.
- Avoid getting close to broken electrical wires.
- Act in accordance with established procedures in case of fire and / or spill, depending on what happens.
- Resume operations as soon as you are sure that the operational conditions are safe.
- Proceed to clean debris and artifacts that obstruct the operations of the same.
- After the earthquake is over, damage to the equipment and facilities must be assessed, as well as preparing a report as required.
- In the event of an earthquake that exceeds the design capabilities of the Project and significant structural damage occurs, the Contractor must suspend operations and follow the procedures defined for those cases.
- Perform the inspection and evaluation of the components that have been affected. The maintenance staff will be required to report the damage to the Emergency Coordinator and the

level of risk involved in continuing work. Once the approval of Engineering and Maintenance has been obtained, work activities may resume.

General Actions in the Presence of Hurricanes and Floods

In the case of occurrence of threats due to extreme weather conditions, the following actions should be considered:

Preparation

- Train operational personnel to act in the event of hurricane and flooding emergencies, so that personnel are prepared for these events.
- Inspect emergency equipment and make sure it is ready for use. Ensure emergency equipment includes drinking water and canned food.
- Secure with ropes or chains all equipment that cannot be secured inside a building.
- Place the vehicles in a manner so they are protected against hurricane winds.
- Call the relevant authorities for the Project or Operation, the Police and the security company, if any, and indicate that only the minimum emergency personnel will be left on site.
- Close the main gate if able to.
- The Coordinator will determine, according to the prevailing or progressive conditions, if emergency stop procedures should be executed.

After the Emergency

- Equipment will not be energized/turned on until it has been checked by expert electricians/mechanics.
- In case of spills or fires, implement response procedures in accordance with the procedures related to these events in the contingency plan.
- Take a tour and assess the damages incurred.
- Proceed to repair minor damages and those necessary to provide immediate service.
- Proceed to clean debris and artifacts that obstruct the operations of the same.
- Prepare a written report at the end of the emergency. Said report shall contain the results of estimation of damages to the property of the company, affected persons, damages to private properties, and to the environment.
- Response plans should be updated based on the emergency to remain effective.

Spills

Equipment and Materials Needed for Spill Response

The contractors will have the following materials to deal with spill incidents:

- Absorbent material, such as sand, sawdust, absorbent cloths (depending on spilled material).
- Safety equipment such as gloves, plastic aprons, goggles, and boots.
- Appropriate containers for the collected material.
- Photographic camera to document the incident.

Fires and/or Explosions

A fire can lead to serious damage to equipment or personnel, and should be taken care of as quickly as possible. The following recommendations should be included in the Contractor's Contingency Plan in case of a fire.

Before a Fire

- Provide training to all personnel through courses on fire practices and simulations of accidents, use of fire extinguishers, etc.
- Have infrastructure and equipment for fire protection, and extinguishers that work in different environments depending on the type of project (for example, Class A extinguishers for ordinary combustibles such as wood and paper, Class B extinguishers for use on flammable liquids like grease, gasoline and oil, etc.).
- Develop rigorous preventive maintenance programs for all types of equipment, inspect and recharge fire extinguishers, etc.
- Identification and signage of safe areas and establish evacuation routes in all facilities or work fronts.
- Keep extinguishers in good condition.
- Provide first aid kit, battery-operated flashlights, extra batteries, etc. on site.

During a Fire

- Evacuate and or stop work in the area and / or facilities.
- Communicate with the local Fire Brigade, National Police and other entities depending on the severity of the emergency.
- Protect mouth and nose with damp cloths.
- Keep calm and avoid running.
- Assist affected people immediately, if any.
- If appropriate, try to put out the fire with the use of extinguishers and other existing means. Ensure extinguishers are periodically inspected to ensure they are in working condition.
- If any equipment is involved in the fire or explosion, the operator must manually disconnect the electrical power that feeds the equipment, as long as it can be done safely or without risk to human life.

In the event that the fire cannot be fought directly with the extinguishers, or there is danger to the personnel, the actions to be taken are:

- Notify firefighters immediately for help.
- Evacuate the place to the meeting point previously agreed in the training plan and risk drills.
- Once the firefighters have determined that the emergency has ended, the emergency coordinator of the project owner should be informed.
- Proceed along with the maintenance crew to an inventory of damages and then make a detailed report on the matter.

After a Fire

- Clean the affected area.
- Remove all debris.
- Repair and / or demolish affected facilities in case of major damages.
- When the fire has been extinguished, proceed with the maintenance crew to prepare an inventory of damages and then make a detailed report on the matter.

Adequate Staff Training

Practices or simulations should be carried out every six months (can include coordination with the local Fire Department), and should include response procedures for personnel all personnel.

Use and Disposal of Fire Extinguishers

- Fire extinguishers must be located in appropriate places and easily accessible.
- Every extinguisher must have a plaque with the information about the kind of fire for which it is suitable and expiration date. Also, they must have operation and maintenance instructions.
- Each extinguisher must be inspected every two months, tested and maintained in accordance with the manufacturer's recommendations; similarly, they must carry a label with test dates and expiration date.
- If an extinguisher is used, it will be refilled immediately; or if necessary, it will be replaced immediately.

Falls from Heights, Cut Wounds, Electrocution and Burns

Before

- Training for personnel should include industrial safety so that they do not commit unsafe acts and use the appropriate protective implements, such as a helmet, boots, safety glasses, restraint harness, etc.
- Also, training of personnel in the implementation of first aid, so that they may help injured coworkers or themselves, until the arrival of medical or paramedical personnel to the place of the accident or their transfer to a hospital for professional attention.
- Provision of personal protection equipment to all workers, as necessary.

During

In case of an accident in the facilities, the staff will act as follows:

- If it is a minor accident, apply first aid to the injured person and transfer them immediately to the nearest clinic or hospital so that they can be seen by a doctor, in order to rule out possible after-effects.
- If it is a serious fall from heights, shelter the injured person and request an ambulance for immediate transfer to a hospital.
- If a person is not breathing, provide rescue breathing (mouth-to-mouth breathing or mouth-to-nose) and request an ambulance for urgent medical attention.

- In case of burn, do not apply home remedies to the injured only water at the time and request an ambulance for its transfer to the clinic or hospital soon.
- For hemorrhage from a puncture wound, hold a gauze in place to avoid blood loss. If located in the extremities, make a tourniquet to cut blood loss, loosening the tourniquet every 10 minutes to avoid gangrene and to move the injured person to a nearby assistance center.
- If trapped with weight on the chest, lever the heavy element and remove it so that the victim does not suffocate, until the arrival of the ambulance.
- If the victim has suffered an electric shock, ensure they are breathing, provide rescue breathing (mouth-to-mouth breathing or mouth-to-nose), simultaneously request medical assistance or transfer to a clinic or hospital.

Immediate attention to an injured person through knowledge of First Aid can save a life. Always seek the appropriate medical attention by a professional.

After

- Analyze the causes of the accident and the actions taken to assist.
- Prepare the preliminary and final report of the industrial accident.

Equipment or Infrastructure Failure

- The person who detects a fault or failure will immediately notify the Supervisor or Chief of Operations identifying themselves and indicating the place and type of emergency.
- Try as much as possible to isolate the area or prevent vehicles or people from approaching.
- After overcoming the problem, analyze the root cause of the emergency/fault or failure.
- Prepare preliminary and final reports and submit to the appropriate authorities in a correct and timely manner.

Attacks and Sabotage

- Provide strict control of the entry of personnel into the facilities by a contracted Security Company, as well as provide surveillance in strategic areas, as necessary.
- In the event of an attack or sabotage, the person who detects it will immediately notify the emergency supervisor of the emergency, indicating the place and equipment affected.
- The shift leader will immediately inform the Police and personnel in charge of the surveillance of the facilities, to neutralize the aggressors.
- If an attack leads to an emergency event (such as a spill or fire), the response strategy to the specific type of emergency will be determined and instructions will be given to the external support units: police, fire brigades, etc.

Prepare preliminary and final reports and submit to the appropriate authorities in a correct and timely manner.

7.5.4 Stakeholder Engagement Plan

This section provides the framework for the development of a Project-specific Stakeholder Engagement Plan (SEP). The IDB's Environmental and Social Safeguards (specifically the policies OP 703-B.6 and OP-102) require development of an SEP that is appropriately scaled to the project's risks, impacts and

development stage. This SEP should be developed by the EPC Contractor prior to onset of the construction phase, with the purpose of setting out the approach that the Project will follow to implement a two-way engagement and consultation program with stakeholders over the life of the Project.

A stakeholder is defined by the IDB as "…individuals, groups, or institutions that have a stake, or an interest, in the project: They may be affected by it (either positively or negatively), or they may have an interest in it and be in a position to influence its outcomes." This SEP framework focuses on engagement with external stakeholders, meaning those not directly involved in the construction, operation, permitting or financing of the Project.

A SEP is a 'living' document and is developed progressively, and updates issued, as a project moves through the various phases of planning and implementation.

A typical SEP structure is as follows:

- Section 1 provides background information about the Project and outlines the objectives of stakeholder engagement;
- Section 2 outlines national and international requirements for stakeholder engagement;
- Section 3 provides an overview of the local context, and describes how stakeholders are identified and the methods and tools used to support engagement;
- Section 4 summarizes stakeholder engagement undertaken to date by the Project proponent and developer;
- Section 5 describes roles, responsibilities and resources for stakeholder engagement;
- Section 6 outlines a grievance mechanism for the Project which allows for a consistent and transparent means to receive, respond to and address stakeholder concerns and complaints; and
- Section 7 describes the monitoring and reporting of stakeholder engagement activities.

Development, update and implementation of the SEP for this Project will be the responsibility of the EPC contractor.

7.5.4.1 Section 1: Background and Objectives

Stakeholder engagement (including consultation and the disclosure of information) is a key element of project planning, development, and implementation. Effective stakeholder engagement assists good design, builds strong relationships with local communities, and reduces the potential for delays through the early identification of issues to be addressed as a project progresses.

The activities of engagement are guided by international best practice, as well as all applicable laws and regulations in Suriname.

The aims of stakeholder engagement, and of the Project SEP, are to:

- Promote the development of respectful and open relationships between stakeholders and the Project proponent and developer during the Project life-cycle;
- Identify Project stakeholders and understand their interests, concerns and influence in relation to Project activities, particularly during the construction phase;
- Provide stakeholders with timely information about the Project, in ways that are appropriate to their interests and needs, and also appropriate to the level of expected risk and adverse impact;
- Provide stakeholders the opportunity to express their opinions and concerns in relation to the Project, and for these to be reflected in the Project's Environmental and Social Management

System (ESMS), and decisions about Project construction and operations activities, where possible;

- Support compliance with Surinamese legislation for public consultation and disclosure and alignment with financing standards and guidelines for stakeholder engagement; and
- Record and resolve any grievances arising from Project-related activities through a formal Grievance Procedure.

Additionally, should a livelihood survey and census indicate that the Project could result in economic displacement, the SEP will also:

- Provide the framework for stakeholder involvement in identifying appropriate processes for compensating displaced individuals and businesses.

As required by the Bank's Disclosure of Information Policy (OP-102) and Directive B.6 of the Environment Safeguard Policy (OP-703), projects categorized as a Category B Project by the Bank (as is the case with this Project), require at least one public consultation event in order to discuss the results of this EA and ESMP. A public consultation was organized by the Project Proponent, the MPWTC on 20 February 2019 in Paramaribo as discussed in more detail in Section 8.2 of this report.

7.5.4.2 Section 2: Regulatory Framework

This section should provide the regulatory framework that governs the Project including national legislation and policy, as well as applicable Bank policies.

Surinamese regulatory requirements and applicable IDB Policies are outlined in Section 3.0 of this EA document.

7.5.4.3 Section 3: Stakeholder Analysis

Local Context Overview

It is helpful to group stakeholders based on common interests and characteristics. Use of a number of 'stakeholder categories' helps structure activities for stakeholders of the Project, including a summary of the anticipated interest of these groups with respect to the Project and within the local context (e.g., potential impacts, benefits, concerns). A database of stakeholders should be developed and continue to be updated as additional stakeholders are identified. Typical stakeholder categories used in this step include:

- National government
- Regional and local governments
- Local population
- Local community groups
- Land and resource users and rights holders
- Local businesses
- Business development or worker associations
- Providers of local services and infrastructure
- Interested non-governmental organizations
- Media

- Academic and research organizations

Stakeholder Identification and Mapping

The process of stakeholder identification includes identifying individuals, groups, local communities and other stakeholders who may be affected by the project; identifying broader stakeholders who may be able to influence the outcome of the project; identifying legitimate stakeholder representatives (such as elected officials, non-elected community leaders, etc.); and, mapping the impact zones by placing the Affected Communities within a geographic area.

As part of the stakeholder identification process, it is important to include vulnerable individuals and groups who may find it more difficult to participate in engagement and to understand how each stakeholder may be affected, or perceives they may be affected, so that engagement can be tailored to inform them and understand their views and concerns in an appropriate manner.

Examples of this may be performing engagement activities specifically for women, single-caregiver households, visible minorities, separate from those for the general public to ensure their voices are adequately heard and considered.

The appropriate type of engagement is determined by a number of factors, including the likely impact of the project on the stakeholder (often related to location), their influence over the project, and their preferences and abilities to access information and participate in consultation.

A list of stakeholders was prepared for the public disclosure event held in February 2019 in order to present the results of this EA and ESMP. This stakeholder list is included in Appendix B of this report. As the Project progresses and is more clearly defined, it will be the responsibility of the EPC to update this stakeholder list and continue open communication protocols with the stakeholders as described in the following sections.

Disclosure and Engagement Methods and Materials

The engagement process encourages meaningful participation by stakeholders. The Project proponent and EPC will employ a range of methods and channels for disclosing information in order to tailor disclosure to the interests and needs of the various stakeholder groups, and will also produce materials appropriate for specific stakeholders and types of engagement. This may include: interviews with stakeholder representatives and key informants; surveys, polls, and questionnaires; public meetings, workshops, and/or focus groups with specific groups; and other participatory methods.

Feedback mechanisms (also referred to as Project contact vehicles) are adapted to suit the needs and preferences of different stakeholders and their physical locations. To give stakeholders easy and convenient access to the Project, the following contact vehicles should be considered:

- Toll-free number for general Project inquiries
- General email address
- Mailing address

The contact vehicles must be monitored regularly and response protocols will be developed to ensure all inquiries are tracked for reporting purposes and that responses are provided. Designated personnel from the MPWTC or the EPC should serve as identified points of contact for stakeholders.

7.5.4.4 Section 4: Completed Stakeholder Engagement

As a living document, the SEP should be updated to document stakeholder engagement activities as they are conducted, including public consultation meetings, community meetings, and interaction with the

various government entities involved in planning, permitting and approvals for various components of the Project. A brief summary of the events, along with appended minutes and attendance sheets, should be provided. The stakeholder database should also be updated with new information obtained over the course of the engagement events.

7.5.4.5 Section 5: Roles, Responsibilities and Resources

MPWTC should allocate staff and resources devoted to managing and implementing the Project's SEP. As the formal stakeholder engagement process commences, MPWTC will identify the primary staff members responsible for stakeholder engagement at all levels as it pertains to the environmental and social components of the Project.

MPWTC should continually update the stakeholder register as additional stakeholders are identified, or as new information regarding stakeholders becomes known. MPWTC should also complete attendance records at every meeting, and have designated note-takers at each meeting to document stakeholder feedback and questions.

7.5.4.6 Section 6: Grievance Mechanism

The Project should establish and publicize a Grievance Mechanism for implementation throughout the Project's construction phase. This should be designed to accommodate grievances of any type from nuisance impacts like noise and dust, to complaints associated with the compensation process for economically displaced businesses or persons.

A framework for development of a Project-specific Grievance Mechanism is provided in Section 7.5.5 of this document.

7.5.4.7 Section 7: Monitoring and Reporting

Monitoring

It is important to monitor stakeholder engagement to ensure that consultation and disclosure efforts are effective, and in particular that stakeholders have been meaningfully consulted throughout the process. Stakeholder engagement monitoring is managed through the Program's Environmental and Social Management Plan (ESMP).

Monitoring should include:

- auditing implementation of the Stakeholder Engagement Plan;
- monitoring consultation activities conducted with government authorities and non-governmental stakeholders;
- monitoring the effectiveness of the engagement processes in managing impacts and expectations by tracking feedback received from engagement activities; and
- monitoring and analyzing any grievances received.

Tracking Stakeholder Engagement Activities

Performance will be reviewed regularly against the SEP. Tracking of stakeholder engagement will be used to assess the effectiveness of the Program's stakeholder engagement activities. Indicators for tracking will include, among others:

- place and time of formal engagement events and level of participation including by specific stakeholder categories and groups (e.g. women, single-caregiver households);

- number of comments by topic and type of stakeholder, and details of feedback provided through the Grievance Procedure or other means (office visits, emails, phone calls) always removing identifying information to ensure continued confidentiality;
- numbers and types of grievances and the nature and timing of their resolution;
- recording and tracking commitments made to stakeholders; and
- community attitudes and perceptions on Program activities based on media reports and stakeholder feedback.

Program Reporting

Annual Reports will summarize all activity for the period, and provide a summary of issues raised and how they have been addressed. Potential issues include timeliness of responses and corrective and mitigation measures taken to address grievances, and analysis of trends in key performance indicators (KPIs). These may include:

- total numbers of stakeholders engaged according to stakeholder category;
- numbers of comments and queries received according to topic and responses;:
- Number of people enrolled in support programs;
- Number of people completing the support program;
- Social Indicators over time:
- Level of access to services/utilities;
- Health indicators (types and quantities of illnesses);
- Security incidents;
- Responses to satisfaction surveys;
- Media spots (positive, negative and neutral);
- Social Media trends; and
- protests, strikes, posters, fliers against the project.
- numbers of grievances lodged; and
- grievance resolution timeliness.

The SEP will be reviewed on a regular basis and revised as needed to reflect completed engagement activities and revise and confirm future engagement plans.

7.5.5 Grievance Mechanism

During any construction Project, stakeholders may have complaints about Project activities and this type of feedback is managed through the Project's Grievance Mechanism (GM).

A grievance is a complaint that a stakeholder has about the activities of the Project that might stem from:

- A specific incident – such as a road accident, property damage or night-time noise;
- The behavior of workers – such as disrespectful or discriminatory actions;
- An environmental impact – such as soil contamination, or damage to agriculture;
- A social impact – such as disruption of economic or recreational activities; and

- Other types of impacts – such as traffic, health, and cultural heritage impacts.

7.5.5.1 Objectives

Specific objectives of the GM are:

- To help the Project proponent and EPC identify issues and concerns early, so that they can be addressed quickly and proactively;
- To continuously improve Project performance in all areas; and
- To demonstrate the Project's commitment to meaningful stakeholder engagement, and respect for local opinions and concerns.

The EPC will use the GM, working in partnership with the MPWTC and with oversight from the IDB, as a critical component of the broader stakeholder engagement activities, including monitoring and reporting.

A member of the EPC team will be assigned as the person in charge of managing the GM, including the internal processes for ensuring grievance resolution. This individual should work closely with the competent team involved in similar actions as part of the Stakeholder Engagement Plan to ensure consistency in the content and processes involved, as well as to share information and lessons learned, and to prevent stakeholder fatigue from over-engagement.

7.5.5.2 Grievance Procedure Overview

A grievance procedure is a program that seeks to compile, register, and resolve grievances, complaints, concerns or questions from stakeholders of any kinds. In this case, the mechanism is designed for any person, household or group impacted by displacement and resettlement as a result of Project activities. The implementation of a GM will complement any proactive or preventative policies or procedures already in place, ensuring that when administrative controls do not adequately address an issue, there is recourse for resolution.

7.5.5.3 Guiding Principles

The GM must be in compliance with international standards, including the IDB's Operational Policy 7.10 on Involuntary Resettlement and International Finance Corporation's Performance Standards (2012), particularly Performance Standard 1 on Assessment and Management of Environmental and Social Risks and Impacts and Performance Standard 5 on Land Acquisition and Resettlement.

To this end, the guiding principles for the GM should be the following:

- Provision of information: All affected people should be informed about the GM from the first time engagement takes place, early in the Program planning process, and details about how it operates should be easily available, for example, in public areas impacted by the Project including shops, schools, churches etc.
- Transparency of the process: Affected Populations must know to whom they can turn in the event of a grievance and the support and sources of advice that are available to them.
- Ensuring up to date information: The process should be regularly reviewed and kept up to date, for example, by referencing any new statutory guidelines, changes in routes or benefits.
- Confidentiality: The process should ensure that a complaint is dealt with confidentially.
- Non-retribution: Procedures should guarantee that any project affected person that raising a complaint will not be subject to any reprisal.

- Reasonable timescales: Procedures should allow for time to investigate grievances fully, but should aim for swift resolutions. The longer a grievance is allowed to continue, the harder it can be for both sides to get back to normal afterwards. Time limits should be set for each stage of the process, for example, a maximum time between a grievance being raised and the setting up of a meeting to investigate it.
- Right of appeal: An Affected Person should have the right to appeal to a higher level of Project management if he or she is not happy with the initial finding.
- Right to be accompanied: In any meetings or hearings, the aggrieved party should have the right to be accompanied by a colleague, friend or legal representative.
- Recordkeeping: Written records should be kept at all stages. The initial complaint should be in writing if possible, along with the response, notes of any meetings and the findings and the reasons for the findings.

7.5.5.4 Scope

The GM should be implemented and active throughout all points of the Project construction phase, and every Project-affected person should have access to it.

7.5.5.5 Activities during Implementation

The activities below offer suggestions on how each of the components of the GM should be implemented. Although the content of each of these is flexible and should be built based on the specific context (and as such can be modified and changed as needed, so long as there is sufficient notification with stakeholders to ensure continued accessibility of the process), the content of the GM should remain consistent with this guideline.

Communication

- Office hours from a member of the EPC team;
- Phone numbers or internet, depending on accessibility of technology; and
- Feedback boxes, as well as clearly signposted maps showing where they are located – preferably in highly transited areas including schools, churches etc.

Receipt and Registration of Grievances or Complaints into the System

- Establish forms to be filled in with all necessary information – clarity that if a grievance is submitted verbally, it must be transcribed as soon as possible after.
- Details should be compiled – electronically if possible, and registers of chain of custody and communication must be established.
- When a grievance is received with a name attached, the aggrieved party must be notified within a specific timeline that their grievance has been registered, as well as providing a timeline for future activities, including the timeline by when the Project should have a proposed resolution.
- When a grievance is received without a name attached, the grievance must be addressed and documented within a pre-specified timeframe. The report should be compiled with others of the same sort, and the relevant information (general concerns, how they have been addressed) should be periodically posted somewhere public, where they can be seen. This should in no way infringe on the confidentiality of any aggrieved party and should not include any specifics (e.g.

Complaints about timeline for compensation – have completed an investigation as to the hold-up, and have started discussions with the bank to speed-up payments).

Evaluation and categorization of grievances

- Categorization should differentiate based on relevance (question rather than complaint, request, issue not associated to the project), and urgency (risk to life or property), extent (individual complaints vs. group complaints) etc.
- Where necessary/relevant an interview with the aggrieved party could be helpful, including requesting further details.
- Directing the grievance to the relevant teams for follow up.

Prioritization of grievances and response time

- Must identify a specific response time for confirming receipt of grievance, for completing an investigation and for providing an initial offering of resolution. If at any point these timelines are not addressed, this must also be justified in the documentation.

Options for resolution or response

- Options for response should include: including unilateral response; bilateral response (the aggrieved party and the Company can offer a solution together); third party response (though a mediator); or through a judicial process, outside of the mechanism. Considering the purpose of the mechanism is to effectively address concerns before they escalate, it is important to maximize the opportunities for bilateral response wherever possible.
- Preparing the response
- Closing the case

7.5.5.6 Resources and Costs

- A budget should be put in place to pay for any responses involving compensation (in kind or monetary), as well as for the time of those involved in investigating and addressing any issues.
- The relevant management staff should be involved in the grievance process from the earliest point in the process, and decision makers should be involved in the process from the onset, to ensure timely turnaround of responses.
- The grievance must be escalated as needed, and there must be clarity on the part of all management staff the importance of appropriate responses to grievances.

Responsible parties

The GM should be implemented throughout every phase of the Project by an appropriate team, led preferably by the same person who leads the Stakeholder Engagement activities. The composition of the team responsible for the implementation should be sufficient to cover the necessities (considering number of project affected households, the magnitude of impact, the ratio of economic vs. physical displacement, if any, etc.)

Indicators and Monitoring

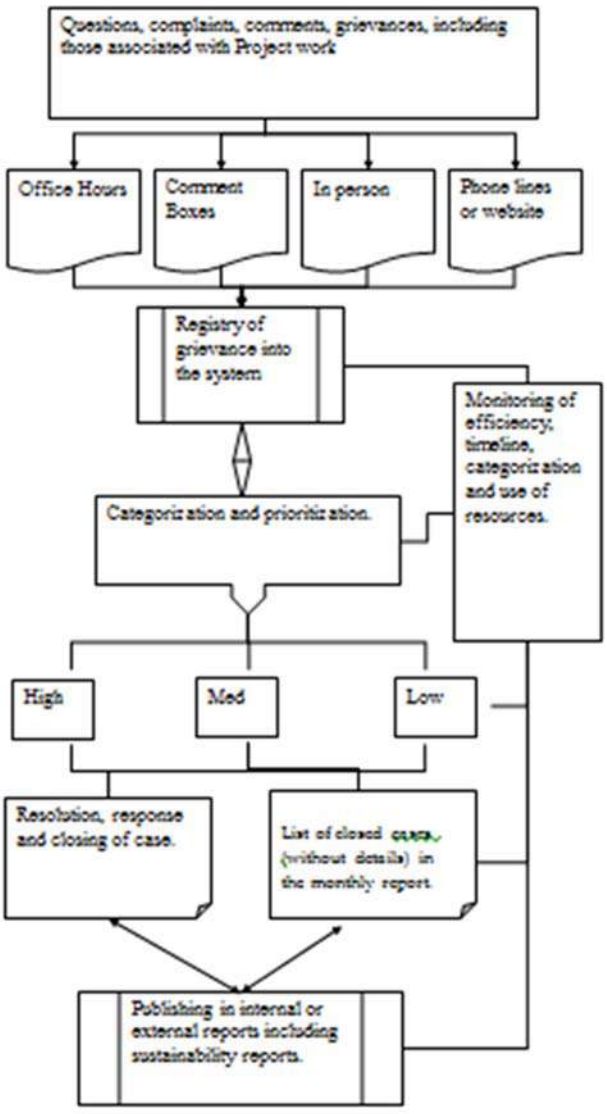
There are a number of indicators that should be considered in order to make best use of the GM as a tool throughout the life of the Program. These include, but are not limited to:

- Number of grievances registered (by week, month);
- Time in resolving grievances or complaints;
- Number of complaints or grievances by category (i.e. payment, treatment, damage etc.)
- Number of grievances not completed within the timeline
- Cases of re-incidence – when the same issues come up several times

Procedure

The flow chart pictured in Figure 7-4 below illustrates a suggested GM procedure.

Figure 7-4: Suggested Grievance Mechanism Procedure



7.5.6 Compensation and Livelihood Restoration Plan

7.5.6.1 Introduction

While there are no anticipated physical resettlement activities, the construction phase of the *Improving Transport Logistics and Competitiveness in Suriname* (SU-L1057) project could potentially result in temporary economic displacement of formal and informal enterprises. All efforts will be made to avoid such displacement, but in the event that such occurs, this Compensation and Livelihood Restoration Plan (CLRP) guideline has been prepared for implementation by the MWPTC and the EPC contractor for implementation prior to and during the construction phase. It outlines the process necessary to ensure the reestablishment of the socioeconomic conditions of people displaced as a result of the Project, with as much specific context as possible.

Once the final Project design and construction plan are complete and a livelihoods census and engagement with Affected Communities to assess the number of affected businesses/individuals have been conducted, it will be necessary to develop a to appropriately manage and mitigate economic displacement.

For the purposes of this plan, the following definitions[8] are used:

- **Affected population:** People who are directly affected by project related activities through the loss of employment, housing, land or other assets.
- **Compensation:** Money or payment in kind to which the affected people are entitled, as decreed by government regulations or laws.
- **Project Affected Persons (PAP):** Persons affected by the Project.
- **Project Impacts:** The direct and indirect physical and socioeconomic impacts caused by the project within the project area.
- **Rehabilitation:** Reestablishment of livelihoods, living conditions and social systems.
- **Relocation:** Moving of people, assets, and public infrastructure.
- **Resettlement:** The entire process of relocation and rehabilitation caused by project related activities; in the case of this Project, this refers to relocation and rehabilitation of economic resources only, as no resettlement of residential communities or households will be required.
- **Resettlement Impacts:** The direct physical and socioeconomic impacts of resettlement activities in the project and host areas.
- **Vulnerable Groups:** Distinct groups of people that may suffer disproportionately from project-related activities.

7.5.6.2 Purpose

Some of the most significant impacts created by development projects can be those associated with economic displacement, which refers to “the loss of income streams or means of livelihood resulting from land acquisition or obstructed access to resources associated with a project”[9].

[8] Inter-American Development Bank, “Involuntary Resettlement in IDB Projects: Principles and Guidelines,” http://services.iadb.org/wmsfiles/products/Publications/362003.pdf

[9] IFC Handbook for Preparing a Resettlement Action Plan, 2002

The purpose of a CLRP is to provide a framework to guide the Program in managing potential economic displacement impacts resulting from Project activities.

7.5.6.3 Objectives

In accordance with the IDB's policy OP-710, the objective of the CLRP is to minimize Project-related disruptions to the affected population—in this case temporary economic displacement for businesses operating along roadway segments slated for improvements, lasting for a portion of the construction period. While the duration of construction activities is not currently known, it is estimated at a few weeks for each road segment. The Project will not result in any physical displacement and no residences are affected.

According to OP-710 when temporary relocation is necessary, special consideration will be given to avoiding irreversible negative impacts (such as permanent loss of employment), providing satisfactory temporary services, and, where appropriate, compensating for transitional hardships. This CLRP has been prepared in order to meet these objectives and ensure that any hardships encountered due to temporary relocation of productive activities in the affected areas will be mitigated or compensated. With these measures, affected persons can be assured that their productive capacity and income levels are maintained at an equivalent or better level as compared to before the Project.

7.5.6.4 Scope

At the time of writing, finalized project description information is not available to understand whether temporary economic displacement can be avoided in its entirety. As such, displacement-focused consultation and engagement activities have not taken place, meaning that a full understanding of the scope of activities are is yet unknown. As such, this document is intended to determine the likely risks and impacts, the potential scale of the restoration, and the likely procedures through which compensation should be managed.

7.5.6.5 Livelihoods Restoration Process

Identification and Categorization of Displaced Groups

Groups likely to be displaced in some way by Project activities first need to be categorized in order to determine the level and type of support the Project would be responsible for providing. Compensation and rehabilitation programs should be developed based on the magnitude and significance of the impact felt by businesses or households as a result of economic displacement.

While from time to time it is possible that compensation and rehabilitation could be considered on a case-by-case basis, it is helpful to have overarching guidelines establishing eligibility, so as to ensure the most effective and responsible use of resources available, and so as to minimize the potential rise of expectations on the part of community members.

Process for Displacement Consultation and Activities

Identification of Project-Affected Communities

In order to identify the specific Affected Populations, the following should be undertaken:

- **Public consultation** should be conducted to identify groups affected by the Project (see Stakeholder Engagement Plan for further details) and determine what adverse impacts the Project may have on their livelihoods. In order to understand what specific impacts may be

experienced, consultation should be carried out with local government, formal and informal community leaders, business associations, or other community representatives.

- **Thematic mapping** should be developed using existing maps and baseline information to identify populations, infrastructure, cultural property, and land use patterns in the Project area. This information serves as an important starting point for planning further displacement consultation activities.
- A **census** should be undertaken that enumerates and registers Affected Populations and their location. Through this step, the Project establishes a list of eligible beneficiaries of the livelihood restoration process, and is protected from spurious claims by those seeking benefits. This census also provides a base understanding and framework for any additional socioeconomic data collection required, and a baseline for future monitoring and evaluation. Data should be collected on each individual or business' key economic activities; income; and social networks among others. Enumerators should be clear on the specific plans for compensation, including the fact that lack of legal land title does not disqualify people from livelihood restoration assistance.
- All interactions should consider **potential vulnerabilities** of Affected Populations including female or elder-owned businesses, people with disabilities, minorities, and ensure that full access to the process is provided accordingly.
- An **inventory** should be collected of any assets pertaining to businesses or economic activities that could be lost or affected. Privately-owned assets could include shops, stalls or other structures, and other types of private non-moveable assets. In assigning value to these assets, it is critical that the Program consults with the Affected Population regarding the methods and formulas for assigning value to assets lost and income forgone as a result of the Project. These inventories should be countersigned by the asset owners.

Dissemination of Information

In order to be successful, the CLRP must be prepared through a process of public consultation with all interested and affected parties. In order to achieve this, affected populations and stakeholders should be informed of the availability of compensation for lost income or assets, their eligibility for compensation, assistance around economic resettlement, and redress of any associated grievances or feedback.

To achieve this, public consultations should be held to present the information included in the CLRP and to collect ideas and concerns about the CLRP and its implementation. In doing this, the Project should make Affected Communities aware of their rights around displacement. As well, copies of the CLRP should be made available to all stakeholders.

Stakeholders in the Project Area should be made aware of opportunities to attend public consultation meetings where they can learn about the details of the Project. These meetings should be held with communities, community organizations, local government departments and agencies, and be ongoing throughout the Project cycle, including during the planning, implementation, monitoring and evaluation of compensation payments and livelihood restoration activities.

During these meetings, stakeholders should be informed of the Project, its planned activities, and plans for livelihood restoration and compensation. These meetings should also provide stakeholders with opportunity to ask questions and provide insights into potential impacts or areas of sensitivity. The sessions should be widely advertised via signage, word-of-mouth, and announcements at community organizations and events. They should (a) provide information on the Project and associated displacement impacts, and (b) allow for attendees to ask questions and voice concerns. They should also indicate specific steps to be taken for stakeholders who will be economically displaced. Meetings should be documented via meeting minutes and photographs, and publicly disclosed.

A consultation log should be developed and used to record the date, location, host organization, type of settlement, issues discussed, and action taken, for all consultations undertaken regarding livelihood restoration activities.

Specific activities involved in the dissemination plan include the following:

- Disclosure of the Compensation and Livelihood Restoration Plan, Stakeholder Engagement Plan, and Environmental and Social Management Plan mitigation measures;
- Procedures for addressing grievances through a Grievance Mechanism;
- Land, property, and assets evaluation procedure;
- Process and rates for compensation;
- Inventory and valuation of properties and assets; and
- Provision of compensation.

7.5.6.6 Design of Income Restoration and Development Initiatives

Compensation and income restoration and development schemes should be designed in consultation with Affected Populations, including input regarding the mitigation of effects and promotion of development opportunities. Local authorities and community-based organizations should also be consulted throughout this process, and should include implementation schedules, programs for consultation and participation, dispute resolution mechanisms, budgets, and schedules for monitoring and evaluation, as well as mechanisms for correcting any issues that arise during monitoring and evaluation.

The following entitlement matrix identifies currently known resettlement impacts and impacted parties, along with suggested entitlements (see Table 7-4). This should be further developed and used as a basis for more specific entitlement actions as more information on impacts become available via additional recommended stakeholder engagement and surveys outlined in Table 7-1 above.

Table 7-4: Entitlement Matrix

Impacted Asset	Entitled Parties & Eligibility	Entitlements
Buildings and structures	Owners and/or occupants of buildings/ structures along affected roadways	It is not expected that any buildings or structures will be affected. In the event of accidental impacts to buildings or structures, owners of any such structures would receive in-kind or cash compensation for repairs.
Business establishments	Owners of businesses along affected roadways	In-kind or cash compensation in the event of damage to storefronts or other business assets. Appropriate phasing and management of construction activities to maintain access to businesses to the extent practicable. Procurement of goods and services from local businesses as relevant and appropriate to meet Project needs. Improved public access to businesses in the area after completion of Project construction.
Access routes	Residents, business owners, workers and other commuters in DAI affected by traffic and limitations on access	Improved access and traffic flow in the area after completion of Project construction. Appropriate management of construction areas to minimize traffic disruptions and maintain access to businesses and residents. Hiring of workers from the local community during the construction phase, to the extent practicable.
Living heritage	Administrators	In-kind or cash compensation in the event of accidental damage to living

Impacted Asset	Entitled Parties & Eligibility	Entitlements
sites	and users of places of worship and other living heritage sites in the Project DAI	heritage structures. Appropriate management to be determined in collaboration with local authorities, site administrators, and others as appropriate to maintain access and avoid disruption.

7.5.7 Traffic and Pedestrian Management Plan

This Traffic and Pedestrian Management Plan (TPMP) provides a working template that will be used by the selected construction contractor (the Contractor) appointed by the Project Proponent (the MPWTC). It details the specific mitigation requirements and focus areas identified through the Environmental and Social Impact Assessment, but also recognizes that the selected Contractor will have their own policies and procedures that will need to be inputted to this plan. It also recognizes that as the Contractor develops the Project designs, this may influence how construction will be undertaken and progress, and these aspects will need to be integrated into this plan.

7.5.7.1 Introduction

Overview

This Traffic and Pedestrian Management Plan (TPMP) for the Dr. Jules Sedney Port and Roads Intervention Project (the "Project") sets out the expectations of the Project Proponent (i.e., the Ministry of Public Works, Transportation, and Communication, MPWTC, and its partner, the Inter-American Development Bank, IDB) and defines how the Contractor will implement and manage environmental matters.

Objectives

The purpose of the TPMP is to minimize the interface wherever possible between the public (pedestrians, visitors, tourists, residents, etc.) and site and project-related traffic, as well as minimize economic losses of local businesses throughout construction. This document provides practical guidance on the planning and control measures that will be implemented.

The objectives of this plan are:

- Minimize the impact on the public road network approaching and adjacent to the project by road based construction traffic. This will be achieved by identifying clear controls on routes, vehicle types, vehicle frequency, vehicle quality and hours of site operation.
- To establish main principles for vehicle and pedestrian movement within the site boundary maintaining positive segregation between personnel and vehicles.
- To provide measures to help minimize economic losses of local businesses during construction.

The main construction Contractor is responsible for the execution of the plan, and the plan as a document is 'dynamic', and will be revised and added to as the project evolves.

7.5.7.2 Project Description

This section needs to include specific details on the proposed works, duration, relevant plans, and other characteristics of the project. The following provide guidance on what is needed.

- **Scope of Construction Works:** Description of the full range of construction works / activities proposed (e.g., clearing of land, placement of poles, filter rock, geotextile fabric and armour rock; installation of piles at the bridge crossing; etc.).
- **Description of the Construction (Disturbance) Footprint:** Full description of the existing land area that will be disturbed by the construction works and those immediately adjacent;
- **Timing of Works:** Provide a description of both the total duration of the works and the time of year they will occur. The latter would include consideration of expected climate during this time (e.g. anticipated rainfall and storms events, wind direction and speeds);
- **Site Plan:** The project site plan would clearly show the full extent of the proposed works area of the construction project. This would typically include a map with the full construction boundary and disturbance footprint marked clearly over a current aerial photograph (i.e. including all construction activities, associated laydown areas, etc.). It would also include site specific information, for example the location of any important waterways or adjacent vegetation to be protected, national heritage listed areas, or the location of sediment and erosion traps, electrical services, etc.

7.5.7.3 Project Roles, Responsibilities and Contacts

All positions across the project have traffic and pedestrian responsibilities to some extent. These vary in relation to duties described in Table 7-5, but everyone has a base level duty of care to prevent environmental harm.

Table 7-5: Project Roles, Responsibilities and Contact Details to be Finalized by the Construction Contractor for the TPMP

Position	Responsibilities	Line Manager	Name	Contact Details*
Project Manager				
Site Supervisor				
Environment Manager				
HSE Representative				

7.5.7.4 Training, Awareness and Competency

The TPMP prepared by the construction Contractor must outline how traffic training, awareness, and competency will be delivered / assessed throughout the Project, to ensure the relevant aspects of this TPMP are communicated to the Project team and front line staff (including contractors and sub-contractors). Examples may include:

- Site Induction
- Daily Pre-Start Meetings
- Toolbox Talks
- Incident bulletins
- Sub-contractors kick-off meeting
- Contractor and client site kick-off meeting

This awareness and training must also be extended to delivery drivers and trade contractors.

7.5.7.5 Communication with Relevant Stakeholders

The Project proponent (MWPTC) will maintain an open line of communication with the affected stakeholders. Prior to commencement of the work, the TPMP should be disclosed to the appropriate stakeholders in order to ensure all concerns and issues are appropriately mitigated. Any issues and concerns expressed during public consultations should be addressed in the updated TPMP. In addition to disclosure of the TPMP, the public must also be made aware of available communication methods in order for them to express any issues and/or concerns (see Section 7.5.5, Grievance Mechanism, above). It is important that the GM is made available to the public at all times, and that handling of any grievances is done in an expedited manner. All grievances as well as their resolutions shall be recorded.

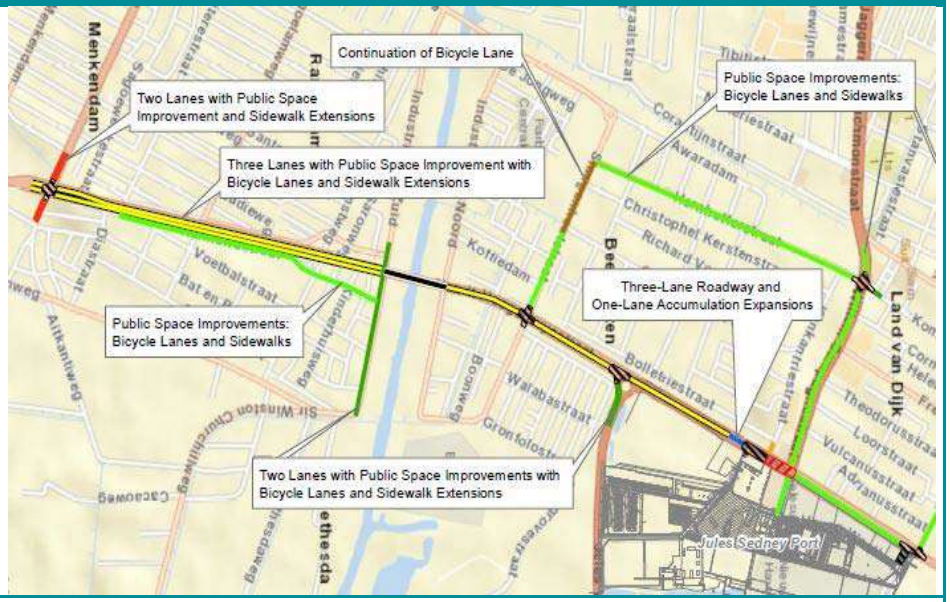
7.5.7.6 Traffic and Pedestrian Management

Work Area Considerations

This section presents a summary of the risks and controls that have been identified per work areas for the proposed construction Project when considering traffic management and interface with pedestrians. The Contractor should determine what additional risks and proposed management controls are required based on their final design and work method statements. A project risk assessment or job hazard analysis for specific task(s) should be performed.

The following table is based on the assessment that has been performed. Note that the table does not contain an exhaustive list of potential issues, and it would be expected that Contractor develop risk management strategies, controls, etc. that suit the scale/nature of finalized construction Project.

Roads Intervention Work Areas

ROADS INTERVENTIONS WORK AREAS		
Work Area and Route Maps	**Route Maps:** Maps will need to be shown that identify the main roads and pedestrian and cycle footpaths, construction site access points and delivery locations that will be affected by construction activities and which will be used for deliveries. The following aspects need to be carefully considered (as shown in the figure to the right): • **Roads:** vehicular and bicycle traffic along the MLD – Van 't Hogerhuysstraat • **Parking:** parking areas along these roads • **Pedestrians and cycles**	
Specific Considerations	The contractor should identify and prepare specific actions – including the following aspects: • During the proposed roads improvements and interventions construction phase, especially along the MLD – Van 't Hogerhuysstraat maintain the traffic and schedule construction activities, to the extent possible, to be conducted not during peak times (e.g., early in the morning or night). • Deploy traffic, safety, and road detour signs in close cooperation with the Traffic Police. • Coordinate the delivery of construction materials at times that minimize impacts to the existing traffic.	

7.5.7.7 Specific Work Practices

This section presents a summary of the risks and controls that have been identified for specific work practices when considering traffic management and interface with pedestrians. The Contractor should determine what additional risks and proposed management controls are required based on their final design and work method statements. A project risk assessment or job hazard analysis for specific task(s) should be performed.

The following tables are based on the assessment that has been performed. Note that these do not contain an exhaustive list of potential issues, and it would be expected that Contractor develop risk management strategies, controls etc. that suit the scale/nature of finalized construction Project.

Local Business Impacts

PEDESTRIAN SAFETY			
Objective(s)	1. Help Minimize Economic Losses of Local Businesses		
Management Strategy	Management Controls		
		Responsibility	Timing
Control(s)	Measures to be applied include: • Coordinate the delivery of construction materials at times that minimize impacts to the local businessess. • Provide contact information to all residences and business in the Project area (email, phone number) • Alert all residences and business commencement of work at least two weeks before construction starts • Establish measures to ensure continuous access to businesses: • Provide access lanes • Install signs to indicated that businesses are open (e.g., “XXX is OPEN”) • Provide to all residences and businesses weekly updates on project construction progress and schedule, including expected date of completion		
Performance Indicator(s)	Number of complaints received through the Grievance Mechanism		
Monitoring	Communication protocols, public disclosure events		
Reporting	Incident report on grievances received and resolution.		
Corrective Action(s)	• Investigate grievances • Review controls and requirements		

Pedestrian Safety

PEDESTRIAN SAFETY			
Objective(s)	2. To ensure and protect pedestrians both inside and outside the construction work sites. 3. Ensure clear separation of pedestrians from work activities and traffic.		
Management Strategy	Controls, signage and physical separation.		
		Responsibility	Timing
Control(s)	Measures to be applied include: • Ensure pedestrian routes are clearly separated from vehicle routes by fencing and/or a kerb, or other suitable means. • Ensure pedestrian routes are wide enough to safely accommodate the number of people likely to use them at peak times. • Ensure pedestrian routes allow easy access to relevant local work, tourist and residential areas. • Ensure pedestrian routes are kept free of obstructions. • Ensure pedestrian routes are clearly and suitably signed. • Ensure pedestrians can safely cross the main vehicle routes. • Ensure pedestrians have a clear view of traffic movements at crossings and at gates which lead onto traffic routes. • Ensure pedestrians have clearly marked, separate access for use at loading bays and site gates. • Ensure pedestrian routes provide safe access to welfare facilities.		
Performance Indicator(s)	No accidents or incidents.		
Monitoring	Daily inspection of work areas, route signage and protection.		
Reporting	Incident report for non-conformance of pedestrian issues.		
Corrective Action(s)	• Investigate cause of any accident/incident/near miss. • Review controls and requirements		

Vehicle Routes

VEHICLE ROUTES			
Objective(s)	1. To ensure clear and well-signed vehicle routes into and out of the construction site. 2. Ensure non-construction traffic impacts are minimized.		
Management Strategy	Controls, signage and physical separation.		
		Responsibility	Timing
Control(s)	Measures to be applied include: • Ensure routes suitably consider pedestrian issues (as above). • Ensure routes are wide enough to safely accommodate the number of vehicles likely to use them at peak times. • Ensure routes allow easy access to delivery areas. • Ensure routes free of obstructions, and are clearly and suitably signed. • Ensure routes eliminate or reduce the need for reversing. • Ensure that at the final point of exit can the driver see pedestrians on the pavement. • Ensure temporary structures are protected from vehicle impact. • Ensure provision of suitable parking areas. • Ensure routes are planned to reduce the need for excessive vehicle movement. • Ensure measures to prevent vehicles depositing mud on the roadways.		
Performance Indicator(s)	No accidents or incidents.		
Monitoring	Daily inspection of work areas, route signage and protection.		
Reporting	Incident report for non-conformance of traffic movements.		
Corrective Action(s)	• Investigate cause of any accident/incident/near miss. • Review controls and requirements		

Vehicle Reversing

VEHICLE REVERSING			
Objective(s)	To minimize vehicle reversing by following the reversing hierarchy.		
Management Strategy	Management controls.		
		Responsibility	Timing
Control(s)	Implementation of the reversing hierarchy: 1. *Eliminate need to reverse* — Implement one-way systems around the site and in loading and unloading areas Provide designated turning areas. 2. *Reduce reversing operations* — Reduce the number of vehicle movements as far as possible. Instruct drivers not to reverse, unless absolutely necessary. 3. *Ensure adequate visibly for drivers* — If possible, consider use of CCTV, convex mirrors, Fresnel lens, etc. to overcome restrictions to visibility from the driver's seat, particularly at the sides and rear of vehicle. Design vehicle reversing areas which: • Allow adequate space for vehicles to manoeuvre safely • Exclude pedestrians; and • Are clearly signed and have physical stops or buffers to warn drivers that they have reached the limit of safe reversing areas. 4. *Ensure safe systems of work are followed* — Ensure everyone on site understands site rules on vehicle safety. Drivers and signallers need to be in constant communication during reversing operations. Signallers should not be put at risk from vehicle movement, e.g. by standing directly behind reversing vehicles. Ensure all vehicles on site are fitted with appropriate warning devices. 5. *Provide warnings when vehicles are reversing* — Ensure reversing warning lights and alarms are in good working order and instruct workers to keep clear of moving vehicles.		
Performance Indicator(s)	No accidents or incidents.		
Monitoring	Daily briefings of drivers and contractors. Inspection of driving practices.		
Reporting	Incident report for non-conformance of traffic movements.		
Corrective Action(s)	• Investigate cause of any accident/incident/near miss. • Review controls and requirements		

Drivers Safe Work Practices

Drivers Safe Work Practices			
Objective(s)	1. To minimize vehicle incidents through good driver behaviours and practices.		
Management Strategy	Management controls.		
		Responsibility	Timing
Control(s)	Implementation of the following safe work practices for drivers: • Only operate vehicles if you are competent and authorized to drive them • Do not drive with impaired abilities (ill health, poor vision, prescribed/illegal drugs or alcohol) • Make sure you fully understand the operating procedures of the vehicles you control • Know the site routes and follow them. Take care at pedestrian crossovers. • Understand the system of signals used on site • Visiting drivers: seek appropriate authority to enter the site and operate vehicles • Know the safe operating limitations of your vehicles ,particularly relating to safe maximum loads and gradients • Carry out daily checks on your vehicles and report all defects immediately to supervisors • Follow site procedures and comply with all Site rules • Do not drive at excessive speeds • Wear appropriate PPE when out of the cab • Ensure that windows and mirrors are kept dean and dear • Keep the vehicle tidy and free from items which may hinder the operation of vehicle controls • Do not allow passengers to ride on vehicles unless safe seating is provided • Park vehicles on flat ground wherever possible, with the engine switched off, the handbrake and trailer brake applied and where necessary use wheel chocks • Do not reverse without reversing aid or banksman assistance • Where visibility from the driving position is restricted, use visibility aids or a signaller. Stop if you lose site of the signaller or the visibility aids become defective. • Do not remain on vehicles during loading operations, unless the drivers position is adequately protected • Ensure loads are safe to transport • Do not attempts to get off moving vehicles • Do not make adjustments with the engine running and guards removed • Do not smoke during refuelling operations • Do not use a mobile phone whilst driving on site		
Performance Indicator(s)	No accidents or incidents.		

Monitoring	Daily briefings of drivers and contractors. Inspection of driving practices.		
Reporting	Incident report for non-conformance of traffic movements.		
Corrective Action(s)	• Investigate cause of any accident/incident/near miss. • Review controls and requirements.		

Signalers/Banksman Practices

SIGNALERS/Banksman Practices			
Objective(s)	1. To minimize vehicle incidents through good driver behaviors and practices.		
Management Strategy	Management controls.		
		Responsibility	Timing
Control(s)	Implementation of the following practices: • Use relevant safety procedures and correct signalling systems • Ensure drivers understand the correct signalling systems • Signal instructions clearly • Ensure you are visible to the driver and the driver is visible to you; if not, stop the vehicle moving • Stand in a safe location at all times • Warn pedestrians and make sure they are kept away from vehicle operations • Wear appropriate protective clothing, including high-visibility clothing • Report work hazards to supervisors • Make sure you can get to and from your work location safely • Do not ride on the vehicle you are directly unless you are in a designated safe position • Do not direct vehicles if your ability is affected by alcohol or drugs • Do not use a mobile phone whilst directing vehicles		
Performance Indicator(s)	No accidents or incidents.		
Monitoring	Daily briefings of drivers and contractors. Inspection of driving practices.		
Reporting	Incident report for non-conformance of traffic movements.		
Corrective Action(s)	• Investigate cause of any accident/incident/near miss. • Review controls and requirements.		

Construction Equipment

Other Plant and Equipment			
Objective(s)	To minimize equipment incidents through good operator behaviours and practices.		
Management Strategy	Management controls.		
		Responsibility	Timing
Control(s)	Implementation of the following practices: • Allow only competent people to drive construction equipment • Provide stop blocks at the edges of excavations, pits, spoil heaps, etc. to prevent equipment falling. The blocks need to be positioned a sufficient distance away from any unsupported edges and slopes to prevent the weight of the vehicle causing collapse • Do not operate the site equipment controls unless seated on the driving seat • Do not carry passengers unless purpose built seats are provided • Do not drive on gradients in excess of those safe for the plant/equipment (see manufactures instructions) • Avoid manoeuvring on sloping ground • Drive at appropriate speeds for site conditions • Load on a flat ground with brakes applied • Get off equipment when it's being loaded • Ensure loads are distributed evenly and do not let them obscure your vision • Securely fix loads which may cause danger if they move • Stop the vehicle, take out of gear and apply parking brake, before tipping loads • Do not drive around with the skip in the vertical discharge position • Use the appropriate towing pins (not bent pieces of reinforcement bars) • Do not leave the engine running when you leave the vehicle • Be aware of the difference in performance of the site equipment when loaded and unloaded, particularly speed, braking and stability on slopes • Be aware of the different handling and braking characteristics of the vehicle in the wet or icy conditions • Do not alter tyre pressures outside the manufacturers specifications • Do not use a mobile phone while operating equipment		
Performance Indicator(s)	No accidents or incidents.		
Monitoring	Daily briefings of drivers and contractors. Inspection of driving/operating practices.		
Reporting	Incident report for non-conformance of plant and equipment movements.		

Corrective Action(s)	• Investigate cause of any accident/incident/near miss. • Review controls and requirements.		

7.6 Operation Phase

This Operation ESMP provides recommendations and preliminary plans that should be further developed and included by NV Havenbeheer Suriname into the existing Environmental and Social Management System already in place at the Port in order to achieve compliance with international best practice in environmental protection.

Given that the Project comprises two main components: improvements of the Port access and land utilization within the Port, and road upgrades, improvements, and safety optimization outside of the Port, the operation phase of the Project would only apply to those activities implemented within the Port.

7.6.1 Operation Environmental and Social Management Plan

7.6.1.1 Objective of this Environmental and Social Management Plan

This ESMP is designed to establish a framework for the proper management and mitigation measures to be implemented during the operation of the proposed Port improvement Projects. Project activities will be carried out by NV Havenbeheer Suriname and its management companies, so this Plan includes strategies that will them to manage, mitigate, and avoid adverse effects to environmental and social receptors which could potentially be directly or indirectly affected by Project activities.

7.6.1.2 Key Impacts

The proposed Project has the potential to affect the environmental and social conditions within the Port area. Project activities within the Port area that will lead to changes in operation are limited to improved traffic flow patterns, increased warehouse/storage space and improved/increase parking areas. Potential negative impacts during the operational phase of the Project are not expected to change much from those resulting from current operating conditions of the Port; however could require changes to the current Environmental and Social Management System (ESMS). Negative impacts could be caused by the following Project activities:

- Changes to traffic patterns could lead to operational health and safety impacts;
- Changes to storage areas and handling procedures for hazardous materials and hazardous wastes; and
- Changes to emergency response procedures and emergency response equipment storage/staging areas.

This EA for the Project determined that the proposed Port improvement activities are not expected to have impacts on flora or fauna or cultural resources in the Port area during the operation phase of the Project.

7.6.1.3 Environmental Policy

Operation of the Port is the responsibility of NV Havenbeheer Suriname who already maintains and implements an ESMS. This ESMS will have to be updated to ensure that any changes in operation resulting from Project activities comply with relevant local regulations, international agreements, as well as IDB policies and safeguards.

7.6.1.4 Organization and Responsibilities

The Executing Agency of the Project's operation phase covered by this ESMP would be NV Havenbeheer Suriname. NV Havenbeheer Suriname counts with a Health, Safety, Environment and Quality Department that would be responsible for ensuring that the ESMS is updated and implemented and that:

- All contractors in charge of Port management and activities implement the requirements in the ESMS and comply with local and international regulations regarding the handling and disposal of hazardous materials and hazardous wastes, and implement the appropriate labor and health and safety regulations. These requirements must be spelled out in all tender documents and contracts.
- All contractors in charge of Port management and activities perform data collection and monitoring.
- All contracts include payment schedules based on quantifiable deliverables (documentation for the appropriate transportation and disposal of wastes).

7.6.1.5 Environmental, Social, and Safety Training

As must be specified in contract documents, all Port contractors must be trained in the appropriate handling and disposal of the hazardous materials that relate to their specific tasks.

Contractors must be trained in emergency response procedures which must include spills, releases, storm events, and fires. The NV Havenbeheer Suriname Managers are responsible for ensuring that contractors hired guarantee that training is up-to-date for all pertinent personnel.

7.6.1.6 Environmental and Social Management Program

Mitigation Measures and Management Controls

If mitigation measures are properly updated and implemented, the Project impacts are considered to be negligible. Project operation activities will be confined to inside the Port, with no disturbance to new, undeveloped areas.

The negligible impacts of the Project will be mitigated and managed with the application of industry-standard best practices. Table 7-6 summarizes these best practices. Any contractor or supplier that may be involved in the Project will be required to incorporate the proposed mitigation measures and management controls within their own working procedures and plans.

Table 7-6: Environmental and Social Management Program – Updates to Existing Mitigation Measures and Management Controls

Impact	Resource	Source of the Impact	Recommended Mitigation/ Management Measure or Embedded Control	Responsible to Execute
Physical				
Soil and groundwater contamination from spills	Soils / Hydrology	• Inappropriate storage/use of hazardous materials due to changes in operational procedures • Inappropriate disposal/storage of hazardous waste due to changes in operational procedures	• Update existing ESMS and Hazardous Materials/Hazardous Waste Management Plans to ensure they include: o Appropriate waste bins, type, volume and service frequency to accommodate anticipated waste streams. o All loads arriving or leaving the site are appropriately secured. o Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads. o Ensure licensed contractors are used to collect controlled wastes. • Train all appropriate personnel in changes to hazardous material/hazardous waste management resulting from changes to operational procedures	NV Havenbeheer Suriname and contractors that may participate in Port operations.
Social				
Fire and explosion	Fire hazard risk	• Fires caused by changes operational procedures at the Port.	• Update existing ESMS and Hazardous Materials/Hazardous Waste Management Plan to ensure they include: o Emergency response procedures as described below o Prohibitions of smoking or ignition sources in areas not approved for such use.	NV Havenbeheer Suriname and contractors that may participate in Port operations.
Exposure to hazardous chemicals	Human health	• Accidental spills due to changes to operational procedures (e.g., used oils and lubricants, used battery acid), during collection and transportation	• Update existing ESMS and Hazardous Materials/Hazardous Waste Management Plan to ensure they include: o Spill kits with the appropriate personal protective equipment (PPE) necessary for the type of spill (such as gloves and eye protection). • Ensure removal contractors are trained in any new spill response changes	NV Havenbeheer Suriname and contractors that may participate in Port operations.
Changes to traffic patterns/increased traffic flow	Human health	• Implementation of new traffic patterns as a result of modifications to the Port	• Ensure the ESMS is updated with new traffic and security procedures • Train all appropriate personnel in changes to traffic patterns and security procedures as appropriate	NV Havenbeheer Suriname and contractors that may participate in Port operations.

Monitoring and Evaluation

During the operation of the Port, NV Havenbeheer Suriname will verify that activities are conducted in compliance with the ESMS and applicable regulatory requirements.

NV Havenbeheer Suriname will verify the following:

- Appropriate transportation and disposal of hazardous waste.
- Maintenance of transportation and disposal documentation
- Health and safety procedures.

NV Havenbeheer Suriname will maintain all documents relating to the following:

- Physical environment: report any event related to the physical environment, such unanticipated spills and releases.
- Occupational health and safety (OHS): discuss the OHS performance and detail any event or incident, its causes and consequences, an analysis of root causes, and measures taken to prevent similar events in the future.
- Community grievances: provide details of community grievances including list of grievances, how grievances were solved, list of any pending grievances, and root causes of grievances.

Emergency Plan

To respond to emergencies, including spills or leaks during the use or transport of the hazardous substances/wastes, or from fires or extreme weather events, NV Havenbeheer Suriname must update the current emergency response plan to handle and mitigate any emergency. This emergency response plan must be made available to all employees and contractors working at the Port. The following activities should be carried out in case of emergencies:

Spills and leaks:

- Provide spill kits with the appropriate spill response equipment depending on the types of materials handled: oil, battery acid, etc. Spill kits should also contain the appropriate PPE necessary for the type of spill (such as gloves and eye protection).
- During an emergency spill, use the emergency kit to contain the spill. If required, contain the spill using available materials such as soil berms and/or wood planks.
- If materials are leaked, contain the leak and clean up and dispose of material accordingly. Remove spilled materials and place it in an appropriate container for disposal, only if able to do so safely.
- Investigate and report the cause of the spill and retroactively implement procedures to prevent it from happening again.

Fires:

- Provide training to personnel on the causes of fires, extinguishing methods, and equipment use.
- Evacuate the area if there is the possibility for an explosion.
- Prohibit smoking anywhere where there is a fire hazard.
- Assist anyone affected, performing first aid if needed, and transport them to the nearest hospital/clinic if necessary.

- After the fire and once it is safe to enter, ventilate the areas and remove any remaining residual materials for their proper disposal.
- Investigate and report the cause of the fire and retroactively implement procedures to prevent it from happening again.

Work Accidents:

- Provide information and/or training to all employees who are at risk.
- Ensure the used of PPE when required and provide a first aid kit for minor accidents/lesions at the work place.
- In case of an emergency, report the emergency to the supervisors and if needed, transport affected personnel to the nearest hospital/clinic.
- Investigate and report the cause of the accident and retroactively implement procedures to prevent it from happening again.

Community Grievance Mechanism

NV Havenbeheer Suriname will update their current grievance mechanism as needed based on any changes to Port operations. The grievance mechanism must include the following best practice elements:

- A transparent grievance receipt and registration system to provide culturally appropriate ways for stakeholders to register grievances and confirm they have been received;
- Grievance eligibility assessment to determine if the issues raised in the grievance fall within the scope of the grievance mechanism and the grievances are eligible to file in the grievance mechanism;
- Grievance evaluation to clarify the issues and concerns raised in the grievance, gather information, and identify whether and how the issues may be resolved;
- Problem solving, with or without the assistance of independent, third parties, that include:
    - Internal decision-making processes, whereby issues are handled by designated members of the Project Management Team or other company officials, using clearly articulated standards and criteria, to develop and propose a company response to the grievance and to allow for an appeals process;
    - Joint problem solving, in which the company and the complainant engage in direct dialogue arranged by an Environmental and Social Responsibility Officer; or
    - Third-party mediation to determine a solution when a voluntary agreement is not possible;
- Grievance tracking, monitoring, and reporting, consisting of an internal grievance documentation and tracking system, monitoring of the status of each grievance, and monthly reporting and evaluation of the grievance mechanism, key issues and areas for improvement;
- Company-community feedback and information sharing to strengthen the grievance resolution processes, including asking stakeholder how the grievance mechanism may be strengthened, and ensuring that the mechanism is understood, accessible and appropriate for all stakeholders; and
- Organizational learning and identification of systemic problems and the need for changes to policies and procedures to prevent recurrent future disputes, as identified in monthly and annual evaluations and reports.

8. STAKEHOLDER ENGAGEMENT

Stakeholder consultation is an integral part of a robust EA process, with the level and methods of consultation designed to be commensurate with the Project's complexity, the anticipated significance of its impacts, and the level of public interest in the Project.

According to the IDB's Environment Safeguard Policy (OP-703), timely and appropriate consultations must be carried out in the context of environmental impact assessments, with at least two consultations for all Category A projects and one consultation for all Category B projects. Taking into account the Category B designation for this Project, the following stakeholder engagement activities have been conducted as part of this EA process:

8.1 Scoping Phase Consultations

In October-November 2018, ERM and IDB conducted two engagements with key stakeholders to obtain information required to better understand potential impacts (both adverse and beneficial) of the Project. These engagements are summarized below.

1. *30 October 2018*: ERM and IDB met with the Port Management Company (NV Havenbeheer, Suriname) to collect key information regarding the Port Environmental Health and Safety procedures and the Environmental and Social Management System. In attendance were Drs. Reza Shakeel Karg and Maya Tapsi from the Port Authority, as well as representatives of the IDB and several consultants to the IDB (ERM, Transconsult and Deloitte).
2. *1 November, 2018*: ERM and IDB conducted a meeting with key port terminal stakeholders. The purpose of the meeting was to provide a presentation on the proposed Project to stakeholders, solicit questions and feedback, and identify any potential concerns on the part of stakeholders with respect to Project activities. Port terminal operators described their concerns with the current operations at the port and expressed their belief that the Project would bring welcome benefits to the port and terminal operations. No specific concerns relating to potential adverse impacts of the Project were raised. Participants of this meeting consisted of representatives from Integra Marine & Freight Services N.V., VSH United Group Company, CMA CGM Suriname N.V., Haukes, IDB, and several consultants to the IDB (ERM, Transconsult and Deloitte).

8.2 Public Disclosure Phase Consultation

Consistent with the Bank's policies mentioned above, a public consultation was organized by the he main Project Proponent, the MPWTC on 20 February 2019. The purpose of the meeting was to provide an overview of the Project and its impacts to Affected Communities and other stakeholders, disclose the results of the EA, describe the mitigation and enhancement measures that will be implemented, and solicit feedback and questions from attendees.

8.2.1 Disclosure and Engagement Methods and Materials

The public consultation process encourages meaningful participation by stakeholders. The Project executing agency employed a range of methods and channels for disclosing information in order to tailor disclosure to the interests and needs of the various stakeholder groups, and produced materials appropriate for the specific stakeholders types.

Consultation with informed stakeholders to discuss the plans and activities of the Project including the potential impacts and opportunities associated with them, is a two-way process that allows the

incorporation of feedback from interested parties in the design and Project planning. The Project included the following considerations for participation activities:

- Programming: All forms of participation were carried out in a timely manner. Invitations to meetings were sent in advance of participation activities, to ensure that interested parties had the opportunity to participate without interruption in their meetings, personal schedules. The meeting was widely advertised to Affected Communities and other relevant stakeholders (see invitations in Appendix B). This includes the general populations of the affected neighborhoods, local business owners and the relevant associations representing them, other industrial tenants adjacent to the Port site, and organizations representing public and private transportation operators such as bus and taxi services;
- Location: The consultation meeting was carried out in a place of easy access, and where the attendees could arrive without greater difficulty, cost or travel time. As previously mentioned, the meeting took place on Wednesday the 20th of February at the at the Courtyard Marriot in Paramaribo, at 6:30 pm local time.
- Cultural Adequacy: All forms of participation of stakeholders in the activities were designed to meet the needs of the beneficiaries, in order to ensure that everyone had the opportunity to participate freely and informally;
- Language: the public consultation meeting was conducted in the local language (Dutch) using simple terminology (non-technical and concise) and effective communication tools (including verbal alternatives, based on images or other, written format). This ensured that all participants had the opportunity to understand Project information and participate actively in the discussions
- Recording and Feedback: all group participation activities were recorded using meeting minutes and photography, and an attendee sign in sheet to ensure the transparency of the consultation process (see Appendix B).

The consultation allowed for ample time for a live questions and comment period so that stakeholders could freely express their concerns. All questions and comments were recorded and are included in Appendix B of this EA.

8.2.2 Monitoring and Reporting

8.2.2.1 Monitoring

It is important to monitor stakeholder engagement to ensure that consultation and disclosure efforts are effective, and in particular that stakeholders have been meaningfully consulted. During the public consultation event, the following key issues were monitored:

- Consultation activities were conducted with government authorities and non-governmental stakeholders;
- Effectiveness of the engagement processes by tracking feedback received;
- Analysis of grievances received;
- Recording the level of participation including by specific stakeholder categories and groups (e.g. women);
- Recording the number of comments by topic and type of stakeholder, and details of feedback provided;
- Recording and tracking commitments made to stakeholders; and

- Recording community attitudes and perceptions on Project activities.

8.2.2.2 Reporting

This EA and the ESMP were updated to include the results of the consultation process. Complaints and/or concerns received were addressed during the meeting and no additional impacts and mitigation measures resulted from the consultation. As mentioned above, a list of attendees, as well as minutes of the public consultation event, and the presentation are included as Appendix B.

8.2.3 Results of the Public Consultation Meeting

8.2.3.1 Attendance and Execution

The public consultation event had approximately 50 attendees (approximately 1:1 female to male ratio), and included key stakeholders from government organizations as well as specific Port and community stakeholders (see Appendix B for the attendee list). Attendance to the meeting was significant and attendees were very participative and showed interest and support for the Project.

A brief presentation within the broader context of Project was made by the Government of Suriname and then the results of the Environmental and Social Analysis of the project and its respective Environmental and Social Management Plan were presented. Finally, attendees were given the opportunity to ask questions and comments, and Project representatives offered necessary answers. The event lasted one and a half hours.

8.2.3.2 Key Questions and Comments from the Participants

Key issues and concerns expressed by the stakeholders present during the public consultation revolved mainly around the traffic study and changes within the Port that would affect current Port management companies and their investments (see Appendix B for public consultation meeting minutes). There were no questions with regards to the EA and mitigation and management measures. Key concerns about the Project included the following:

- Concerns with to traffic projections and future estimates (70% increase in 10 years)
- Concerns with regards to the local cost of road improvements versus the benefit
- Concerns with regards to how specific changes within the Port would be chosen (to ensure minimal impacts to current Port management companies), and
- Questions with regards to road improvement specific actions, as these have not been finalized.

Stakeholders did express support for additional parking within the Port as parking on the roads is currently required leading to traffic and inefficiency.

8.2.3.3 Conclusion of the Public Consultation

Based on the types of questions raised during the public consultation, there does not appear to be any discontent or apprehension with the Project; however, the stakeholders present expressed interest in being involved in the final decision process prior to finalization of Project specific designs. Upon the conclusion of the stakeholder consultation, the MPWTC expressed the importance of stakeholder involvement and reiterated that an email is available for expressing any concerns or ideas. In addition, the MPWTC stated that more consultation events would be held once the Project design is further along. With regards to environmental and social issues, there were no concerns raised.

It will be the responsibility of the MPWTC to ensure continued communication with the local stakeholders as well as the appropriate implementation of the GM in order address any concerns during the construction and operation of the Project, as described in Sections 7.5 and 7.6 of this EA.

9. CONCLUSIONS

9.1 Impact Assessment Overview and Environmental Characterization

Table 9-1 summarizes the key impacts of the Project on the resources assessed in this EA. Based on the In accordance with the IDB's OP-703, screening and classification, the Project will have impacts on the environment and the community, and is therefore classified as Category "B." Category B projects "are likely to cause mostly local and short-term negative" impacts, for which "effective mitigation measures are readily available". The table summarizes each key impact identified in the EA and their pre-mitigation impact significance rating, the associated mitigation measure(s), and the post-mitigation impact significance rating, as developed through the impact assessment process defined in Section 6.1 of this EA.

In summary, the EA determined that the Project would likely result in some environmental and social impacts, but these impacts could be readily mitigated and managed, as long as the actions identified in the Table 9-1 below (see Section 6.0) and in the ESMP are effectively implemented, including the monitoring measures described in Table 7-1). In addition to implementing measures to minimize or avoid the potential adverse impacts of the Project, measures to enhance the positive effects of Project activities, as described in the ESMP, could be implemented to maximize the short- and long-term benefits of the Project. Ultimately, implementation of the Project would result in positive environmental and social outcomes, because the proposed Project will improve the handling of cargo at the Port terminal and traffic in the area.

Table 9-1: Environmental and Social Impact Assessment Summary – Improvement in Dr. Jules Sedney Port Expansion Project

Impact Significant Ratings

Negligible
Minor
Moderate
Major
Positive

Resource/ Receptor and Impact	Project Phase	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Air Quality				
Emissions from construction vehicles and equipment.	Construction	Moderate	• Maintain all construction equipment in accordance with manufacturer's specifications. • Suppress dust as needed in unpaved areas (e.g., use of water sprays). • Avoid burning non-vegetative wastes (refuse, etc.) at construction sites. • Avoid unnecessary idling of construction equipment or delivery trucks when not in use. • Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site. • Cover work vehicles transporting friable materials to prevent materials being spread around and off the site. • Minimize drop heights of materials • Develop and implement a grievance	Minor

Resource/ Receptor and Impact	Project Phase	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
			procedure in the event of any dust and/or exhaust emissions compliants being received.	
Noise				
Noise generated by construction equipment and activities	Construction	Moderate	• Maintain all construction equipment in accordance with manufacturer's specifications. • Schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable. • Schedule construction, modification, and rehabilitation work to minimize activity during peak periods of traffic. • Develop and implement a Construction Communications Plan to inform adjacent receptors (e.g., residents, commercial businesses, churches, and hotels) of construction activities. • Provide acoustic enclosures, if necessary. • Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies). • Avoid unnecessary idling of construction equipment and trucks.	Minor
Natural Disasters and Risks				
Flood risks due to the location of the port and road improvements	Construction/Operation	Moderate	• All new road construction and improvements should include a properly designed drainage system intended to remove water efficiently from the roads and other Project improvement sites. • Construct properly engineered drainage structures along the Marin Luther Kingweg, where there is open drainage channel that will be covered, to prevent the risk of flooding. In these area drainage solutions will require careful calculations and consideration of potential hydrological climate change. • In the same sections of the Martin Luther Kingweg, the distance between the existing buildings (that lie below the level of the road) and the expanded road may be extremely reduced, exposing it to noise, vibration, dust and potential flooding during the construction as well as operation of the road. It is recommended to carefully identify	Minor

Resource/ Receptor and Impact	Project Phase	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
			those sections and review the design to ensure that adequate distance is maintained between the road and the immediately adjacent buildings.	
Waste				
Waste generated by construction and activities	Construction	Minor	• Provide appropriate waste bins, type, volume and service frequency to accommodate anticipated waste streams. • All loads arriving or leaving the site will be appropriately secured. • Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads. • Ensure licensed contractors are used to collect controlled wastes.	Negligible
Traffic				
Decreased pedestrian and traffic safety Increased traffic congestion and disruption. Decreased access to critical facilities, shopping, bus stops etc.	Construction	Minor	• Implement Traffic and Pedestrian Management Plan to include early notification of road closures, detour signage, and safety programs and measures for pedestrians and bicyclists. • Incorporate public transportation alternatives (e.g., pedestrian and bus) into Traffic and Pedestrian Management. • Implement Traffic and Pedestrian Management Plan to maintain continuous access through careful staging and sequencing of construction activities and provision of alternatives where needed	Negligible
Biodiversity				
Loss or disturbance of vegetation. Wildlife injury or mortality. Habitat alteration - aquatic	Construction	Minor to Negligible	• When designing and planning work elements, minimize temporary and permanent construction footprints, • Demarcate work area with fencing to minimize disturbance or removal of natural vegetation, • Conduct canal- and mangrove-related works outside the waterbird breeding season (April – Sept) • Minimize lighting • Implement above measures to minimize noise and air pollution, • Implement Erosion and Sediment Control Management Plan as well as a Spill Prevention, Control and Countermeasures Plan to include: • Sediment control procedures during in-water works to minimize the release of fine sediments to adjacent waterways and recommends work to	Negligible

Resource/ Receptor and Impact	Project Phase	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
			occur during low flow periods and/or dry periods for the Suriname River and Saramacca Canal during the months of August to November. • Demarcate work areas with fencing to minimize disturbance or removal of natural vegetation; • Plan equipment access locations that minimize impacts to riparian areas, where possible; avoid areas with less stable structure such as steep banks; and • Minimize temporary stockpiling and place stockpiles outside of the active floodplain. Prevent runoff from stockpiles from entering creeks by using erosion control measures such as silt fences and/or straw wattles.	
Social				
Loss of income for businesses	Construction	Moderate to Minor	• Phase construction activities, create alternate entrances, walkways, detours and parking areas as needed • Provide oportunities for local employment • Develop and implement a Traffic and Pedestrian Management Plan (see Section 7.4.8). • Develop and implement a Livelihood Restoration Plan (see Section 7.4.7) for potentially Affected Persons. • Continue stakeholder engagement through Project implementation through the use of the Stakeholder Engagement and Communications Plan (see Section 7.4.4). • Implement a Grievance Mechanims to receive and respond to grievances (see Section 7.4.5).	Minor to Negligible
Provision of construction jobs to local companies and materials sourced from the local economy	Construction	Negligible	• Implement job quotas for local employment and sourcing requirements for construction contractors based on the size and scope of the Project	Negligible
Impacts on potential vulnerable groups (gender or disability related)	Construction	Negligible	• Ensure adequate ground surfaces and associated infrastructure (such as ramps) for patron mobility (e.g., high heels and crutches) at construction sites; and • Conduct Gender Awareness Training for contractors and their staff.	Negligible
Health and Safety				
Impacts on health and safety of workers and public	Construction	Moderate	• Develop and implement a Construction Health and Safety Plan (see Section 7.4.2) • Implement good housekeeping	Minor

Resource/ Receptor and Impact	Project Phase	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
			practices in and around the Project construction sites including elimination of standing water or, if not practicable, treatment of standing water to kill mosquito larvae • Appropriate and timely engagement of stakeholders, to ensure that they are well-informed of the nature and duration of Project activities, and have a good understanding of associated safety risks. • Implement stakeholder outreach to vulnerable subpopulations or to those responsible for maintaining their safety • Establish and publicize a Grievance Mechanism to receive and respond to grievances (see Section 7.4.5).	
Cultural Resources				
Possible disruption to the use of living heritage sites	Construction	Moderate	• Conduct an exhaustive inventory of buildings and structures in the Project area prior to the onset of construction. • Perform meaningful stakeholder engagement with affected communities to identify living heritage and other structures: places and features that may have historical, cultural or aesthetic importance to members of the community. • For sites such as churches, mosques and mandirs, engage with the administrators of these institutions to understand their operating and peak hours and regular events such as worship services, allowing for coordination and planning to avoid or minimize undue disruptions. • Develop plans in consultation with stakeholders to ensure their protection during the construction phase.	Minor
Damage to undiscovered archaeological sites due to construction of subsurface Project components	Construction	Minor	• Implement a simple Project Chance Finds Procedure (CFP) during all Project ground work.	Negligible

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APPENDIX A IMPROVING TRANSPORT LOGISTICS AND COMPETITIVENESS IN SURINAME (SU-L1057)- DR. JULES SEDNEY PORT EXPANSION PROJECT: ENVIRONMENTAL, SOCIAL, AND SAFETY REVIEW OF EXISTING PORT OPERATIONS

REPUBLIEK SURINAME
MINSTRY OF PUBLIC WORKS
TRANSPORT AND COMMUNICATION

IDB
Inter-American
Development Bank

Inter-American Development Bank
1300 New York Ave, NW
Washington, DC 20577

Improving Transport Logistics and Competiveness in Suriname (SU-L1057)

Appendix A

Final Environmental, Social, and Health & Safety Review of Existing Port Operations

28 February 20199

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The business of sustainability

ERM

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Improving Transport Logistics and Competiveness in Suriname (SU-L1057)

Appendix A

Final Environmental, Social, and Health & Safety Review of Existing Port Operations

Ricardo Calvo, PhD
Partner in Charge

Herbert Pirela, PhD
Project Manager

Environmental Resources Management, Inc.
1776 I (Eye) St. NW Suite 200
Washington, DC 20006

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Acronyms and Abbreviations

EHS	Environmental and Health & Safety
EMS	Environmental Management System
ESHS	Environmental, Social, and Health & Safety
ESMS	Environmental and Social Management System
H&S	Health & Safety
HSMS	Health & Safety Management System
IDB	Inter-American Development Bank
IFC	International Finance Corporation
ILO	International Labour Organization
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organization
IPS	Integra Port Services
ISO	International Organization for Standardization
km	Kilometer
MARPOL	Marine Pollution – MARPOL 73/78 (The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978)
MAS	Maritime Authority of Suriname
NIMOS	National Institute for Environment & Development
OSHA	Occupational Safety and Health Administration
RTG	Rubber-Tyred Gantry
SMS	Safety Management System
SOLAS	The International Convention for the Safety of Life at Sea (SOLAS Convention)
TEU	Twenty-foot Equivalent
URS	United Registrar of Systems

1. INTRODUCTION

1.1 Background

The Dr. Jules Sedney Port of Paramaribo (the "Port", formerly Nieuwe Haven) is located on the left bank of the Suriname River, 21 miles (39 km) inland. The Port covers about 600 hectares and has about 600 meters of river-facing common quay, enabling approximately four vessels to berth simultaneously. The Port handles about 50 percent of Suriname's seaborne trade by volume.

Served by some 15 international carriers, the Port's current throughput capacity is approximately 100,000 twenty-foot equivalent units (TEU). In addition, the port handles some 200,000 tonnes of breakbulk cargo plus 160,000 tonnes of liquid bulk (Deloitte 2018).

The Port is run on a public-private basis, where NV Havenbeheer Suriname acts as a landlord and cargo handling is the responsibility of two private stevedoring companies: VSH Transport and Integra Port Services/DP World Paramaribo. These two companies own and operate the Port's four large mobile cranes and a range of related equipment. Figure 1-1 shows the layout of existing Port facilities.

1.1.1 NV Havenbeheer Suriname

Set up in 1971, NV Havenbeheer Suriname is an autonomous, state-owned, limited liability company charged with administering the nation's two main ports: the Dr. Jules Sedney Port of Paramaribo and the Port of Nieuw Nickerie.

The company, which employs nearly 200 people, acts as a port authority and as a landlord. As such, it is not involved in cargo handling operations, and does not own or operate any cranes or terminal handling equipment. Cargo handling operations are the responsibility of private stevedoring companies under long-term contract.

As the governing authority, NV Havenbeheer Suriname is responsible for the day-to-day management of the Port and for its long-term development.

1.1.2 VSH Transport

VSH Transport, founded in October 1965, performs a wide range of activities consisting of port operations, stevedoring, warehousing, local transport, custom brokerage, and offshore support services.

Their Port operations and stevedoring handles all kinds off vessels, including but not limited to containers, general cargo (break-bulk, roll-on/roll-off (ro-ro), passengers (pax) cruisers, and navy. VHS Transport currently works in a 34,000 square meters (m^2) terminal area, with 1,600 m^2 of Warehouse space (see Figure 1-1; VSH Transport 2018). Their equipment at the Port terminal consists of:

- One Liebherr LHM 280 Mobile Harbor Crane (max. 84 ton),
- Three Hyster Reach Stacker 45-31CH 1,
- One Hyster Empty Handler H500,
- One Taylor Empty Handler,
- Eight terminal trailers, and
- Eight small forklifts.

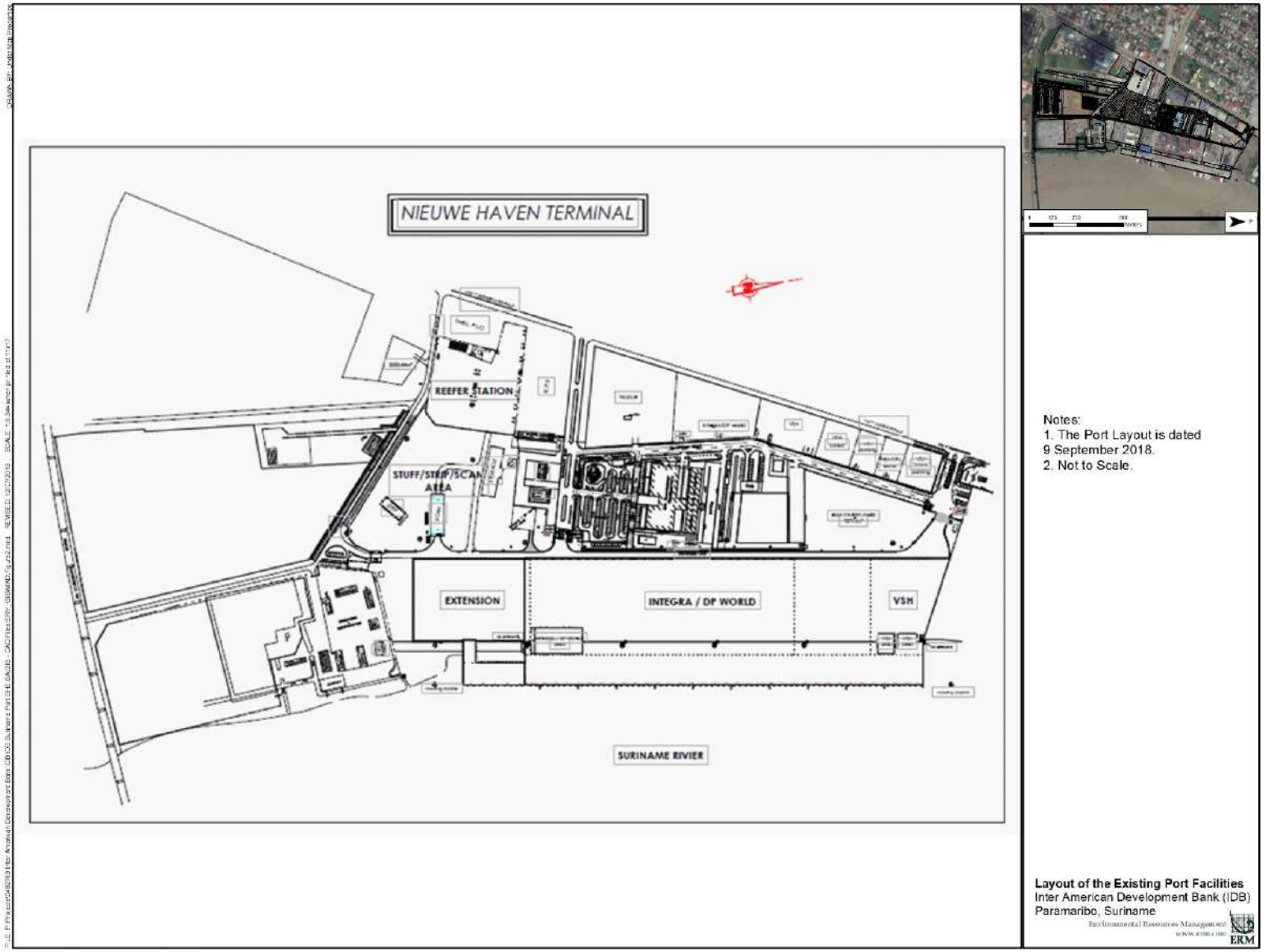

Figure 1-1: Layout of the Existing Port Facilities

VSH Transport is TRACE Certified[1] and has received the following certifications[2] by DNV-GL[3]:

- ISO 9001:2015
- ISO 14001:2015
- OHSAS 18001:2007

1.1.3 Integra Port Services/DP World Paramaribo

Integra Port Services (IPS) was founded in June 2008 and is a subsidiary company of the Holding Integra Marine & Freight Services. DP World Paramaribo was started in August 2011 when DP World acquired a majority share in IPS. DP World Paramaribo is a subsidiary of DP World.

IPS/DP World Paramaribo has the following accreditation certificates by United Registrar of Systems (URS)[4] (DPW Handbook. 2018):

- ISO 9001:2015
- ISO 14001:2015
- OHSAS 18001:2007

IPS/DP World Paramaribo's activities at the Port include handling containers, ro-ro, and break-bulk cargoes. They have the only mobile harbor cranes and rubber-tyred gantry (RTG) cranes installed in the Port, which allows ship operations to complete during a single 12 hour tidal window. Equipment includes:

- Three Gottwald HMK 260 E mobile cranes,
- Three Paceco-Mitsui 40 tonne capacity rubber tired gantry cranes, and
- A range of yard equipment such as stackers, fork-lift trucks, tractors and chassis.

DP World also operates a separate private terminal near Paramaribo that is focused on handling cargo for the mining, oil and forestry sectors, as well as cement industry.

1.2 Environmental, Social, and Health & Safety Review Objectives

The goal of this Environmental, Social, and Health & Safety (ESHS) review is to assess the compliance status of the existing Port operations, including the Environmental and Social Management System (ESMS) and the Health & Safety Management System (HSMS), against different criteria, standards, and regulatory requirements, such as, Surinamese laws and regulations, and applicable best management practices, international treaties and conventions such as ISO 14001:2015, the Basel Convention and Marine Pollution – MARPOL 73/78 (The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978), among others, and provide recommendations to NV Havenbeheer Suriname. This document provides the findings of an ESHS review of the existing Port operations, based on in-person and email interviews, as well as documents collected from NV Havenbeheer, VSH Transport, and DP World Paramaribo.

The main objectives of this ESHS review are the following:

[1] Has completed a comprehensive due diligence process administered by TRACE International, Inc., the world's leading anti-bribery standard setting organization.

[2] VSH Shipping, "About the Company" https://www.vshshipping.com/index.php/about-the-company/

[3] DNV-GL is an international accredited registrar and classification society headquartered in Høvik, Norway

[4] United Registrar of Systems Limited (URS Certification) is an independent certification body operating in more than 30 countries within the multinational URS Holdings.

- Assess the status of the Port's ESMS.
- Assess the status of the Port's HSMS.
- Assess regulatory compliance of the Port's operations.

The ESHS review included the following activities:

- Data and information collection.
- Evaluation of the legal framework applicable to the Port's operations.
- A document review including the documentation provided by NV Havenbeheer Suriname (Port Management Company) and the two terminal operators VSH Transport and IPS/DP World.

The next section summarizes the regulatory compliance framework, which applies to the Port, while Section 3.0 provides more details on the methodology, and Section 4.0 presents related findings and recommendations. The conclusions are provided in Section 5.0.

2. LEGAL FRAMEWORK

This section presents the existing Surinamese regulatory framework, international treaties and conventions ratified by Suriname, and the general and port specific International Finance Corporation (IFC) Environmental, Health and Safety (EHS) guidelines typically used for international projects.

2.1 National Legislation

Suriname's national legislation is exercised through Laws or Acts of Parliament (Wet, also called Verordening and Landsverordening prior to 1975), Decrees (Decreet), Government Decrees (Staatsbesluit), Presidential Decree (Resolutie), Presidential Orders (Presidentieel Besluit) or Ministerial Orders (Ministeriële Beschikking) targeting various sectors including industry, tourism, nature conservation, etc. Suriname has had legislation on the historic environment since the 1950's. Table 2-1 below provides an overview of key relevant Surinamese environmental, social, and health & safety regulations.

Table 2-1: Overview of the National Legal Framework for Environmental, Social, and Health & Safety Management in Suriname

Title	Objective(s)
Environment and Land/Land Use	
Draft Environmental Act 2002	This draft Act, as it has not yet been passed by Parliament, defines the rules for environmental conservation, management, and protection while promoting sustainable development.
Planverordening G.B. 1973 No. 89 (Planning Act 1973 GB. 1973 no. 89)	The Act established that the Ministry of Planning and Development Cooperation is responsible for a comprehensive and sustainable policy for spatial, ecological, and socioeconomic issues. Provisions for national and regional planning, e.g., land-use policy issues. National Development Program.
Stedebouwkundige Wet G.B. 1972 no. 96 (Urban Planning Act G.B. 1972 no. 96)	The Act established that the Ministry of Public Works Transportation and Communication (Openbare Werken, Transport en Communicatie, OWTC) is responsible for the execution of spatial planning and development of urban areas. Provisions for urban development, including structures and road-related facilities for the Paramaribo district and for residential areas in other districts, where plans have been designed.
Air Quality and Noise	
Hinderwet G.B. 1930 no. 64 z.l.g. bij S.B. 2001 no.63 (Nuisance Act G.B. 1930 no. 64 as amended by S.B. 2001 no. 63)*	The Act defines the permit requirements to control noise and air pollution for industrial development projects. The permits are issued and enforced by local District Commissioners (Buursink 2005; SRK Consulting 2007).
Water/Maritime	
Decreet Havenwezen S.B. 1981 no. 86 (Harbors Decree S.B. 1981 no. 86)*	Provisions for harbor activities, including a prohibition to reject wastes, including oil-contaminated water, in the water.

Title	Objective(s)
Cultural Heritage	
De Natuurbeschermingswet G.B. 1954 no. 26 (Nature Conservation Act G.B. 1954 no. 26)	The Act defines the procedures to establish and manage conservation areas and protect wildlife. The Act specifies that the criteria for designating a nature reserve may include features of cultural, as well as natural and scientific value. All resources contained within nature reserves are protected and specific activities are prohibited unless express authorization from the relevant authorities are granted.
Occupational Health and Safety/Public Health	
Veiligheidswet G.B. 1947 no. 142 z.l.g. bij SB. 1980 no.116 (Occupational Safety and Health Act G.B. 1947 no. 142, as amended by SB. 1980 no.116)*	The Act aims for advancement of safety and hygiene in enterprises so that the chance of accidents and occupational diseases can be reduced to a minimum.

Source: ERM, modified from SRK 2007; Buursink 2005.

Note: Legislations followed by an asterisk (*) are part of those VSH Transport and/or DP World Paramaribo take into account when managing their activities.

Despite the existence of the National Environmental Policy Office, the National Institute for Environment & Development (NIMOS), and environmental, social, and health & safety regulations, there is no overarching law for environmental management in Suriname. Existing Surinamese regulations typically do not contain standards with regards to environmental media, especially for ambient water quality, waste water treatment of discharge quality, ambient air quality, or management of hazardous substances or wastes (Whiting 2016).

2.2 International Treaties and Conventions

The Government of Suriname has ratified several international treaties and conventions. These have been designed to formalize cooperation on regional and global environmental protection strategies. Table 2-2 provides an overview of key relevant environmental, social, and health & safety international treaties and conventions ratified by Suriname.

Table 2-2: Applicable International Environmental, Social, and Health & Safety issues Treaties and Conventions Ratified by Suriname

Treaty/Convention	Objective(s)	Status
Climate Change/Air Quality		
Montreal Protocol on Substances that Deplete the Ozone Layer, 1989*	Protection of the ozone layer.	Suriname acceded in 1997 but subsequent amendments not yet ratified.

Treaty/Convention	Objective(s)	Status
Wastes		
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989*	Protection of human health and the environment against the adverse effects of hazardous wastes. Provisions around: the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal; the restriction of transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management; and a regulatory system applying to cases where transboundary movements are permissible.[5]	Ratified by Suriname in 2011.
Water/Maritime[6]		
Convention on the International Maritime Organization (IMO), 1948*	Establishes the International Maritime Organization (IMO), its purposes and functioning.	Suriname member since 1976.
International Convention for the Prevention of Pollution from Ships - MARPOL 73/78 (Annex I/II/III/IV/V) and MARPOL Protocol 97 (Annex VI)	Main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. Includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes on pollution by oil, noxious liquid substances in bulk, harmful substances in packaged form, and by sewage, garbage and air from ships.[7]	Ratified (all annexes) by Suriname in 1988.
International Convention for the Safety of Life at Sea (SOLAS), 1974*	Specifies minimum standards for the construction, equipment and operation of ships, compatible with their safety (e.g. fire safety).[8]	Ratified by Suriname in 1988.
International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW), 1978*	Establishes basic requirements on training, certification and watchkeeping for seafarers on an international level.	Ratified by Suriname in 2013.
International Convention on Load Lines, 1966	Provisions for determining the freeboard of ships by subdivision and damage stability calculations, containing security measures to ensure the watertight integrity of ships' hulls below the freeboard deck.[9]	Suriname member since 1975.
Convention on Facilitation of International Maritime Traffic (FAL), 1965	Provisions to prevent unnecessary delays in maritime traffic, to aid co-operation between Governments, and to secure the highest practicable degree of uniformity in formalities and other procedures.[10]	Suriname member since 1975.

[5] http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx

[6] http://www.imo.org/en/About/Conventions/StatusOfConventions/Documents/status-x.xlsx

[7] http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx

[8] http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-(SOLAS),-1974.aspx

[9] http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-on-load-lines.aspx

[10] http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-Facilitation-of-International-Maritime-Traffic-(FAL).aspx

Treaty/Convention	Objective(s)	Status
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and London Protocol 1996	Provisions for the international control and prevention of marine pollution by prohibiting the dumping of certain hazardous materials, making a special permit required prior to dumping of a number of other identified materials and a general permit required for other wastes or matter.[11]	Ratified by Suriname om 1980.
International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969	Affirms the right of a coastal State to take such measures on the high seas as may be necessary to prevent, mitigate or eliminate danger to its coastline or related interests from pollution by oil or the threat thereof, following upon a maritime casualty.[12]	Suriname member since 1975.
Biodiversity/Protected Areas		
United Nations Convention on Biological Diversity, 1992	Promotes development of national strategies for the conservation and sustainable use of biological diversity. Often seen as the key document regarding sustainable development.	Ratified by Suriname in 1996. A National Biodiversity Strategy (2006) has been compiled as framework for a National Biodiversity Action Plan.
Human Rights		
American Convention on Human Rights, 1969	International human rights instrument to establish a system of personal liberty and social justice based on respect for the essential rights of persons, within the framework of democratic institutions. The bodies responsible for overseeing compliance are the Inter-American Commission on Human Rights and the Inter-American Court of Human Rights, both of which are organs of the Organization of American States.	Ratified by Suriname in 1987.
Labor/Health & Safety		
Constitution of the International Labor Organization	Promotes opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security, and human dignity.	Suriname member since 1976.

Source: ERM, modified from SRK 2007; United Nations 2017.

Note: Legislations followed by an asterisk (*) are part of those VSH Transport and/or DP World Paramaribo take into account when managing their activities.

2.3 Other Applicable Good International Industry Practice/Guidance

In addition to the local laws and regulations, and international treaties and conventions discussed in Sections 2.1 and 2.2 above, other good international industry practice may also be applicable to the Port. As previously discussed in Section 1.1, the Port Authority NV Havenbeheer Suriname, and both operators, IPS/DP World and VSH Transport abide by other international standards, such as those from the International Organization for Standardization (ISO) and Occupational Safety and Health Administration (OSHA). Other Health & Safety international treaties as described in the IFC EHS Guidelines for Ports, Harbors, and Terminals (the "Guidelines") include:

[11] http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx

[12] http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-Relating-to-Intervention-on-the-High-Seas-in-Cases-of-Oil-Pollution-Casualties.aspx

- International Labour Organization (ILO) Code of Practice for Safety and Health in Ports (2005);
- General Conference of the International ILO Convention concerning Occupational Safety and Health in Dock Work, C-152 (1979);
- General Conference of the ILO Recommendation concerning Occupational Safety and Health in Dock Work, R-160;
- International Maritime Organization (IMO) Code of Practice for Solid Bulk Cargo (IMSBC Code);
- International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code);
- International Code for the Safe Carriage of Grain in Bulk (International Grain Code);
- Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code); and
- International Maritime Dangerous Goods Code (IMDG Code).

The IFC EHS Guidelines are technical reference documents with general and industry-specific examples of good international industry practice that have become globally applied to projects of all sizes. The Guidelines support actions aimed at avoiding, minimizing, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. Furthermore, the IFC EHS Guidelines for Ports, Harbors, and Terminals establish best practices for internationally acceptable standards of conduct for EHS that are applicable to marine and freshwater ports, harbors, and terminals for cargo and passengers, and as such, provide a good overview of national and international legal expectations. Table 2-3 provides the relevant IFC general and industry specific guidelines that apply to the Port and terminal operations.

Table 2-3: General and Port, Harbor, and Terminal Specific IFC EHS Guidelines

Theme/Topic	Guidelines
Environment	
Terrestrial and aquatic habitat alteration and biodiversity	Coastal protection measures (e.g., beach nourishment, sand bypassing, groynes, seawalls, coastal revegetation, etc.) should be considered to minimize adverse impacts from port's physical structures.
	There should be a coastal processes monitoring and management plan (including the monitoring of elements such as shoreline morphology and erosion trends and action triggers).
Climate Change Resiliency	Changing climate conditions should be evaluated on a regular basis (e.g., climate resiliency of cargo handling, storage, transport equipment and cargo transport routes; assessment of port operations' contribution to incremental climate change impacts on habitats of high biodiversity value and rare, threatened or endangered species found in the vicinity of the port).
Water Quality	There should be a Dredging Management Plan, including details on dredging techniques (rate of removal, adapted schedules to minimize turbidity, etc.), hierarchy of management options (e.g. avoidance of dredging, re-use options, and disposal), treatment and discharge quality standards, criteria for suitable land-based or offshore disposal sites.
	Port sewage and stormwater should be managed applying good practices such as preventing surface runoff from process areas or potential sources of contamination, installing filter mechanisms to prevent sediment and particulates from reaching the surface water, installing oil/water separators in all runoff collection areas and regularly maintaining them, managing recovered, contaminated solids or liquids in accordance with general and hazardous waste good practices, etc.

Theme/Topic	Guidelines
	Port operators should provide collection, storage, and transfer and/or treatment services, and facilities of sufficient capacity and type for all wastewater generated by vessels at the port in accordance with MARPOL and national regulations.
Air Emissions	Prevent, minimize, and control exhaust emissions from ships through various means such as validating ship engine performance documentation and certification to ensure compliance with combustion emissions specifications (including NOx, SOx, and PM), within the limits established by international regulations, maintaining cargo transfer equipment (e.g., cranes, forklifts, and trucks) in good working condition to reduce air emissions, encouraging reduced engine idling during on- and off-loading activities, etc.
	Minimize volatile organic compounds (VOC) emissions from fuel and cargo storage, and transfer activities through vapor recovery systems for fuel storage, loading/offloading, and fueling activities, the use of floating top storage tanks, and the adoption of management practices such as limiting or eliminating loading/unloading activities during poor air quality conditions and implementing tank and piping leak detection and repair programs, among others.
	Manage fugitive dust associated with dry bulk materials storage and handling facilities through covering some storage and handling areas; regularly sweeping docks and handling areas, truck and rail storage areas, and paved roadway surfaces; minimizing dry cargo pile heights and containing piles with perimeter walls and/or wind break fencing; etc.
Waste Management	Provide adequate waste reception facilities for port and visiting ships, this in coordination with local governments according to their commitments to the MARPOL Convention, including appropriately sized and located receptacles, and the capacity to deal with seasonal fluctuations.
	Easily identifiable solid waste reception facilities and handling procedures.
	Prohibition of discharging solid waste from vessels while in port in accordance with MARPOL and national regulations.
	Collection and disposal system developed for ship-generated garbage for ships alongside and at anchor, consistent with the International Maritime Organization (IMO) Comprehensive Manual on Port Reception Facilities.
	Closable skips provided at the berths, and towed or self-propelled barges fitted with skips used to collect garbage from ships at anchor.
	Food waste from ships delivered to the port managed in accordance to applicable local regulations intended to protect human and animal health (e.g., rendering, incineration, or landfilling of food waste and mixed waste containing food waste).
Hazardous materials and oil management	Hazardous materials storage protected from vehicle accidents (e.g., reinforced posts, concrete barriers, etc.).
	Use of biodegradable hydraulic oils for hydraulic equipment.
	Presence of secondary containment for above ground liquid storage tanks and tanker truck loading and unloading areas.
	Fueling areas equipped with containment basins in areas with a high risk of accidental releases of oil or hazardous materials (e.g., fueling or fuel transfer locations).
	Fuel dispensing equipment equipped with “breakaway” hose connections for emergency shutdown of flow should the fueling connection be broken by movement.
	Fueling equipment inspected prior to fueling activities to ensure all components are in satisfactory condition.

Theme/Topic	Guidelines
	Spill prevention, control, and countermeasure plan consistent with the IMO Manual on Oil Pollution Section II—Contingency Planning, including: identification of areas sensitive to spills and releases of hazardous materials and locations of any water intakes; responsibilities for managing and reporting spills, releases, and other pollution incidents to Port Authorities and other relevant stakeholders; provision of specialized oil spill response equipment; regular training schedules and simulated spill incident and response exercises for response personnel in spill alert and reporting procedures, deployment of spill control equipment, and emergency care/treatment.
	System in place for proper screening, acceptance, and transport of dangerous cargo based on local and international standards and regulations (e.g., proper shipping name, hazard class, United Nations number, and packing group); training of Port Authority staff in relevant aspects of dangerous goods management, and establishment of segregated and access-controlled storage areas for dangerous goods with emergency response procedures and equipment to ensure collection and/or containment of accidental releases.
Noise and Vibration (including underwater)	Terrestrial noise control measures present at source (e.g., paving and leveling the terminal area, replacing forklifts and reach-stackers with gantry cranes with rubber tires, etc.).
	Underwater noise and vibration control measures such as coordinating and scheduling offshore piling and dredging activities in accordance with sensitive aquatic species migratory patterns and calving/breeding seasons, and establishing low power propulsion zones near ports.
	Noise monitoring programs in place.
Occupational Health and Safety	
Physical Hazards	Means in place for preventing, minimizing, and controlling physical hazards, such a separating people from areas of vehicle traffic and unidirectional vehicle passageways, well maintained and level or only slightly sloped port surface, safe access arrangements (e.g. guard rails and/or properly secured safety nets between ships and the adjacent quay), etc.
Chemical Hazards	Hierarchical approach to chemical hazards prevention including: replacing hazardous substance with less hazardous substitutes, implementing engineering and administrative control measures to keep the level of exposure below internationally established or recognized limits, minimizing the number of employees exposed or likely to be, labeling and marking according to national and internationally recognized requirements and standards[13] with communications being accessible to workers and first-aid personnel, training of workers, safe work practices, and PPE.
Confined Spaces	Confined space entry procedures in place (training, lock-out, gas detection, safety precautions such as equipment, etc.), including procedures that prevent or minimize the use of combustion equipment in the interior of cargo holds and in spaces that do not provide an alternative means of egress.
Exposure to organic and inorganic dust	Practices in place minimizing release of dust into the work environment (e.g. direct piping of liquid and gaseous materials, minimized handling of dry powdered materials, enclosed operations, local exhaust ventilation at emission/release points, vacuum transfer of dry material rather than mechanical or pneumatic conveyance, indoor secure storage, and sealed containers rather than loose storage).
Exposure to noise	Respect of noise limits in function of the various working environments (e.g. control rooms 45-50 dB(A), industry up to a maximum of 110 dB(A)), control of noise at source (e.g. materials insulation), and use of hearing protection as required.

[13] Examples of national and internationally recognized requirements and standards: International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS).

Theme/Topic	Guidelines
Community Health and Safety	
Port Marine Safety	SMS should be implemented to be able to effectively identify and correct unsafe conditions (e.g. in operating ships, from passenger safety to the safe access and maneuvering of chemicals and oil transporting ships inside the harbor and port areas).
	SMS should be informed by initial risk and hazard assessments.
	SMS should include consideration of alterations to coastal processes and seabed and coastal geomorphology that may impact navigational and vessel berthing activities.
	SMS should be adapted as needed based on regular operational hazard assessments of port activities.
	SMS should include procedures to regulate the safe movement of vessels within the harbor (including pilotage procedures, port control and vessel traffic services, navigational aids, and hydrography surveys), protect the general public and communities from dangers arising from offshore activities at the harbor, and prevent events that may result in injury to workers and the public, including fishers and recreational users.
	SMS should include comprehensive emergency preparedness and response plans that provide a coordinated response based on government, port authority, port users, and community resources required to manage the nature and severity of the emergency event.
Port Security	Port operators should have a clear understanding of their responsibilities, including international legal and technical obligations to provide security to passengers, crews, and personnel in port.
	In accordance with applicable international legal requirements, port security arrangements (e.g., access control) may be established through the completion of a Port Facility Security Assessment of port operations followed by the appointment of a Port Facility Security Officer and the preparation of a Port Facility Security Plan, depending on the outcome of the risk assessment.
Visual Impacts	Visual impacts, including excessive background illumination, should be managed during operations through the installation of natural visual barriers such as vegetation or light shades, as applicable.
	The location and color of bulk storage facilities also should be selected with consideration of visual impacts.

3. ENVIRONMENTAL, SOCIAL, AND HEALTH & SAFETY REVIEW METHODOLOGY

3.1 Environmental, Social, and Health & Safety Review Steps

As previously discussed in Section 1.2 above, the objectives of this review are to assess the compliance status of the Port's current operations with its ESMS, HSMS, local laws/regulations, as well as international treaties and conventions and best management practices.

The steps followed to conduct the ESMS and HSMS compliance review of the Port facilities included a site visit and a review of the Port's EHS documents and procedures provided by NV Havenbeheer Suriname, VHS Transport, and IPS/DP World Paramaribo. These steps are described below. A list of documents/data/information and procedures received and reviewed is provided in Section 6.0 of this report.

Step 1: Port Facilities Site Visit and in Person Interviews

A site visit was conducted in November 2018 which included a tour of the general Port facilities and meetings with the relevant Health, Safety, and environmental quality personnel from NV Havenbeheer Suriname, VHS transport, and IPS/DP World Suriname.

Step 2: Review of the Port facilities EHS Documents and Procedures

To conduct the review of the existing EHS documents and procedures, the following list of documents and procedures were requested from NV Havenbeheer Suriname, VHS Transport, and IPS/DP World Paramaribo:

- Organizational Chart.
- Facility Maps/diagrams (GIS/CAD).
- Copy of the ESMS and information on ESMS program implementation, program costs and funding.
- Information on compliance with local laws and regulations, MARPOL and the Basel Convention.
- Information on dredging programs and monitoring (water quality, sediment quality, dredge material handling, etc.).
- Hazardous materials/hazardous waste management plans, information on material storage, use, waste disposal practices (for materials utilized/generated at the Port as well as on ships: oily wastes, mixtures of oil, ballast water, chemical wastes and tank washings containing noxious liquid substances, residues of hazardous substances in packed form, sanitary wastewater (sewage) and garbage).
- Port activity procedures, especially covering air emissions, noise, water contamination, heavy traffic, river traffic/tourism.
- Spill Prevention, Control, and Countermeasures Plans.
- Standard Operating Procedures.
- Social Management Plans.
- Health and Safety Management Plans and/or Programs.
- Emergency Response Plans (including natural hazards, spills, fires and explosions).

- Monitoring Plans/Programs/Results (including ambient air quality, air emissions, noise, water and wastewater, and biological).
- Records: monitoring data, spills, occupational accidents and illnesses, personnel training, fires and other emergencies, public complaints and general public accidents.
- Security Plans.
- Traffic Plans.
- Training Plans.
- Information on: Spill kits, firefighting equipment, first aid kits, emergency response equipment.

The following considerations were taken into account during the review of Port operation documents:

- Where documents provided referenced other documents that were not accessible/or were not provided, it was assumed these documents exist and are in accordance with respected best practices.
- Written comments submitted by NV Havenbeheer Suriname, VSH Transport, and DP World Paramaribo through email interviews were considered supporting evidences when no related documents were provided.

4. ENVIRONMENTAL, SOCIAL, AND HEALTH & SAFETY REVIEW FINDINGS AND RECOMMENDATIONS

Sections 4.1 and 4.2 provide a summary of the findings based on the site visit to the Port facilities and the review of documents received from NV Havenbeheer Suriname (NV Habenbeheer), VSH Transport, and IPS/DP World Paramaribo (DP World Paramaribo) on environmental, social, and health & safety practices in support of their ESMS and their HSMS. Section 4.3 presents the findings of the review of the Port operations in accordance with applicable Surinamese regulatory requirements, the IFC general EHS guidelines, and the guidelines for Ports, Harbors, and Terminals.

4.1 Environmental and Social Management Review

Table 4-1 below provides a summary in tabular form of the results of the review NV Havenbeheer, VSH, and DP World compliance with their ESMS in accordance with the assessment criteria included in the IDB's terms of reference.

Table 4-1: Summary of the Results of the ESMS Compliance Review

Assessment Criteria	Findings	Supporting Documents
Port has developed and implements an Environmental and Social Management System (ESMS)	NV Havenbeheer Suriname: Has a formal environmental management system (EMS) in place. (more information under next criterion). VSH Transport: VSH Transport is ISO 14001:2004 accredited, however, a formal EMS was not provided for review (e.g., procedure, EMS guide). VSH Transport uses two documents to guide the management of its environment-related activities: a Legal Register (Overview of Laws and Legislation) and an Environmental Aspect Register (Overview of Environmental Risks and Quality per Section). Environmental aspects covered under the Environmental Aspect Register include: CO_2 emissions, water pollution, plastic and other waste, air-soil pollution, oil spills, fires, chemical reactions, leaks from packaging, noise, damages to flora and fauna, and shipwrecks. Measures to reduce environmental impacts include but are not limited to: double-sided printing, LED lighting, temperature control, defensive driver training, use of electrical or hybrid transportation means where possible, vehicles maintenance and inspection programs, fire equipment and PPE mandatory for tank operators, appropriate storage of hazardous materials at designated locations, daily inspections of storage areas, spill kits, and fire extinguishers (checklist), a community fund for environmental and welfare projects for the Surinamese population, EHS inspection list for regular maintenance, regular communications and training/practice for employees of the emergency response plan, and sharing of EHS rules and instructions with employees and contractors.	NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015) VSH Transport email interview (ERM VSH 2018), Overview of Laws and Legislation (VSH Legislation 2018), and Overview of Environmental Risks and Quality per Section (VSH Environmental 2018) DP World Environmental Manual (DPW Handbook 2018)

Assessment Criteria	Findings	Supporting Documents
	DP World Paramaribo: DP World implements an certified Integrated Management System (IMS) that includes an EMS and a HSMS developed in line with ISO 9001:2008, OSHAS 18001, and ISO 14001. The IMS also includes a Quality Management System (more information under next criterion). NOTE: Although the Port management systems include health and safety information and training for employees, very few practices are included on social components. Most plans are focused on environmental and health and safety management.	
Port ESMS is consistent with the principles of ISO 14001:2015	NV Havenbeheer Suriname: EMS was elaborated in accordance with ISO 14001:2004. The EMS is designed based on the Plan-Do-Check-Act structure, and as such includes policy, training, audit, review, and other related elements: – An environmental policy statement approved by the Management Board. The Policy covers all activities within the organization and includes a commitment to continuous improvement and prevention of pollution, as well as a commitment to comply with relevant environmental legislation and other requirements. The policy is periodically reviewed and updated by the Management Board. – A register of all environment-related activities. – An environmental legal registry including: contractual, legal (national and regional), and other formal requirements NV Havenbeheer has committed to, with periodic evaluation of compliance and a specific procedure for corrective and preventive measures in line with ISO 9001 (records are maintained). – Clear roles and responsibilities. – Internal (between the various levels and functions of the organization) and external (with contractors and other visitors of the port area) communication procedures (including reception and recording of external stakeholders communications and related response). – Document control procedures. – Regular review of environmental actions and risks and of required control measures. – A disaster response plan.	NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015) VSH Transport email interview (ERM VSH 2018 DP World Environmental Manual (DPW Handbook 2018)

Assessment Criteria	Findings	Supporting Documents
	– Periodic audits. Results are shared with the Management Board and relevant personnel and departments. – A bi-annual Management Review of the EMS following the internal and external audits: looks at what actions have been taken during the year, what other actions should be taken, and makes recommendations for improvement. VSH Transport: A formal EMS following ISO 14001:2015-specific principles was not provided for review (e.g., procedure, EMS guide). Documents provided include: – Action lists to correct deviations - while no EMS was provided, corrective actions are tracked in action-relevant meetings (agent meetings, daily production meeting, weekly HSEQ meeting) until their completion. – Necessary actions are identified through daily inspections, incident investigation, risk/aspect review, legislation register review, and an Annual Management Review. DP World Paramaribo: EMS was elaborated in accordance with ISO 14001:2015, which provides details on the organization's context and stakeholders (specific to the 2015 version of ISO 14001). EMS also includes: – An environmental policy. – Identification of the environmental activities. – Identification of legal requirements (legal registry). – Environmental priorities and objectives. – Ensures planning, process and risk management control, monitoring, preventive and corrective actions. – Audits and activities review.	
Port ESMS includes a Dredging Program to minimize impacts on environmental resources	According to information provided during the Site Visit, dredging in the Suriname River is the responsibility of the Ministry of Public Works and the Maritime Authority of Suriname (MAS) and is not done by NV Havenbeheer Suriname or the Port operating companies; therefore, a dredging program or methodology was not provided. VSH Transport: Based on documents reviewed, maintenance dredging was performed in 2013 in front of the quay with permission from the MAS and following the recommendations of NIMOS (for the discharge of dredging material (recommendations emitted in the context of the	NV Havenbeheer Suriname email interview (ERM NV 2018) VSH Transport email interview (ERM VSH 2018

Assessment Criteria	Findings	Supporting Documents
	Suriname River Dredging Project). No additional details were provided regarding an established methodology for dredging that would minimize impacts on the environment.	DP World Environmental Manual (DPW Handbook 2018)
Port ESMS is consistent with the requirements of the International Convention for the Prevention and management of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto, (MARPOL 73/78), and include related procedures.	NV Havenbeheer Suriname: Per the EMS, terminal operators and their waste management plans must abide by the International Maritime Dangerous Goods (IMDG) Code. The large majority of wastes received at the Port consist of packaging material. NV Havenbeheer Suriname uses a private waste handler, IGD for waste removal and disposal. NV Havenbeheer has a procedure in place to be notified in advance of upcoming ship waste delivery and uses standard forms provided by the IMO. IGD accepts oil wastes and general waste (MARPOL Annexes I and V) but not noxious liquid substances (MARPOL Annex II), chemical waste, ballast water, and other effluents. For accepted wastes, NV Havenbeheer provides reception facilities for ships. Noxious liquid substances, ballast water and other non-accepted effluents, are pumped by trucks coming from off-site. As required by ISO-1400, it is expected that removal and disposal contractors dispose of effluents accordingly. VSH Transport: Uses a private waste handler, IGD (receives and records waste acceptance note from the IGD). Wastes include household wastes, recyclable plastics, and oily wastes. There are no records on quantities collected. DP World Paramaribo: EMS includes waste management procedures applying to container, bulk, and car ships. The waste management procedure covers regular and hazardous wastes. Hazardous waste is managed as follows: – Waste oil collected in 1500 liters container, removed on call by a Contractor (Doerga). – Oil contaminated waste collected in barrels, then transported by the DP World employees to the Suriname Port Services (SPS) Terminal and burned in the on-site incinerator. – Electronic waste is collected by the IT department and remains stored by the ICT department (ICT-storage is how electronic waste is currently handled). – Empty cartridges and toners collected by Josbin Shipping for recycling. – Air conditioning repair/disposal is done by an unknown contractor. – Used fluorescent tubes and glass waste is collected by Stichting Samarja for offsite recycling.	NV Havenbeheer Suriname email interview (ERM NV 2018) VSH Transport email interview (ERM VSH 2018 DP World Environmental Manual (DPW Handbook 2018), and DP World Waste Management Procedure (DPW Waste 2018).

Assessment Criteria	Findings	Supporting Documents
	– Wastes from hazardous substances (stored within a control area that is identified as such) are collected and treated by a contractor (Bux Engineering). The waste management procedure also details the management of non-hazardous waste (office waste including food, paper, wood, glass, tires, metal, plastic, and old PPE). A schedule has been established with the above contractors for the management of the related waste and is included in their waste management procedure.	
Port ESMS includes procedures to adequately address impacts from Port operations	NV Havenbeheer Suriname: EMS does not include procedures to address air emissions, noise, impacts on the community, traffic, and tourism. – The EMS includes a waste management plan to prevent related contamination. – Quarterly inspections and cleaning (as needed) of the oil/water separators that receive stormwater runoff are done by the infrastructure department to prevent oils from going into the river. – As a way of reducing air emissions, NV Havenbeheer Suriname looked for possibilities to provide shore power to ships moored at the quay to eliminate emissions while in port. A hybrid system of solar energy combined with energy from the local energy provider would be the most environmentally suitable option. Yet, this option is constrained by ships not being equipped for connecting to shore power. No additional measures or procedures for reducing air emissions were provided. VSH Transport: Information provided did not include procedures to limit/reduce Port activity air emissions, noise, water contamination, heavy traffic, and impacts on river traffic and tourism. VSH provided a spill control presentation that includes information on in-house emergency services (BHV) and their team members, how to handle an incident alarm, hazardous substances and materials, spill kits and clean ups, and how to document spills. DP World Paramaribo: Waste Management Procedure provided includes measures to prevent atmosphere pollution, that is a "no stationary policy" for machines and equipment and an electricity policy to shut down office lights when nobody is present, with use of sunlight as much as possible. DP World Paramaribo EMS does not include specific procedures to address noise, and impacts on the community, traffic, and tourism.	NV Havenbeheer Suriname email interview (ERM NV 2018). VSH Transport email interview (ERM VSH 2018), and Use of Spill Kits (VSH Spills 2013) DP World Environmental Manual (DPW Handbook 2018), and DP World Waste Management Procedure (DPW Waste 2018)

Assessment Criteria	Findings	Supporting Documents
Port ESMS includes a social management plan	NV Havenbeheer Suriname: EMS mentions the existence of internal (between the various levels and functions of the organization) and external (with contractors and other visitors of the port area) communication procedures (including reception and recording of external stakeholders communications and related response). DP World Paramaribo: Per the EMS, communications responsibilities fall to the General Manager as the main contact to receive questions and complaints from local residents and from the press/media. No other social management information was provided for NV Havenbeheer Suriname, VSH Transport, or DP World.	DP World Environmental Manual (DPW Handbook 2018)
Port ESMS includes an adequate Port monitoring program of environmental aspects.	NV Havenbeheer Suriname: In line with ISO 14001 principles, EMS includes procedures for regularly monitoring and measuring the main characteristics of its work and activities that can affect the environment. Procedures were not available for review. VSH Transport: No evidence of an environmental monitoring program was provided. DP World Paramaribo: In line with ISO 14001 principles, EMS includes procedures for regularly monitoring and measuring the main characteristics of its work and activities that can affect the environment. Monitoring is conducted in accordance with DP World EHS PE01 Monitoring, Measurement, Analysis and Evaluation Standard. Procedures and Standard were not provided. DP World Paramaribo Waste Management Procedure tasks HSEQ department with waste management inspections and relevant department heads to take preventive and corrective measures where needed in line with the related corrective/preventive procedure.	NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015) VSH Transport email interview (ERM VSH 2018) DP Environmental Manual (DPW Handbook 2018), and DP World Waste Management Procedure (DPW Waste 2018)
Port administration includes the human, financial and operational resources to ensure implementation of the ESMS.	NV Havenbeheer Suriname: According to the EMS, a responsible person is in charge of Health & Safety, Environment, and Quality, under the Direction of Corporate Affairs. Additionally, – Tasks, powers and responsibilities with regard to environmental care apply to everyone in the organization. – The management is responsible for the availability of resources that are essential for designing, implement, maintain and improve the environmental management system. Essential resources include: human resources, training and education, infrastructure of the organization, and technological and financial resources.	NV Havenbeheer Suriname Organizational Structure (NV Org. 2018) VSH Transport Organizational Chart (VSH Org. 2018) DP World Organization structure (DPW Org. 2018), and DP World

Assessment Criteria	Findings	Supporting Documents
	– The management of the organization also has designated a specific department, Health & Safety Environment and Quality (HSEQ), which has the following tasks, responsibilities and powers: • set up, implement and implement an environmental management system maintained in accordance with the requirements of the ISO 14001 standard. • plan and implement the internal environmental audits with reports to the management with recommendations for improvement in accordance with the standard. VSH Transport: Two Full-time Employees are dedicated to HSEQ. No additional information with regards to financial resources were available for review. DP World Paramaribo: Corporate structure includes a HSSEQ department. There is a EHS Manager in place. No additional information with regards to financial resources were available for review.	Environmental Manual (DPW Handbook 2018)
Port maintains environmental records	NV Havenbeheer Suriname: No specific information provided with regards to environmental records. For incident records based on their EMS, incidents are analyzed, avoidance measures are implemented, the EMS is updated and records are maintained. VSH Transport: Maintains records of environmental (and Health & Safety (H&S) incidents, incident reports are made and kept for each incident); however environmental records were not made available for review. DP World Paramaribo: Environmental incidents are reported internally. All incidents are handled in accordance with the EHS OP02 Incident Management standard, however incident records were not provided for review.	NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015) VSH Transport Incident Stats (VSH Incidents 2018), Incident Reports (VSH Incidents2 2018) DP World Environmental Manual (DPW Handbook 2018)
Port maintains records of public complaints and accidents involving the general public.	NV Havenbeheer Suriname: EMS mentions the existence of internal (between the various levels and functions of the organization) and external (with contractors and other visitors of the port area) communication procedures (including reception and recording of external stakeholders communications and related response). DP World Paramaribo: Per the EMS, communications responsibilities fall to the General Manager as the main contact to receive questions and complaints from local residents and from the press/media.	DP World Environmental Manual (DPW Handbook 2018)

Assessment Criteria	Findings	Supporting Documents
	No other information on available grievance mechanisms were provided by either DP World, VSH Transport, or NV Havenbeheer Suriname.	
Port maintains an adequate safety and emergency training program for Operations Personnel.	NV Havenbeheer Suriname: HR department has a yearly training plan. Basic safety training was provided for all infrastructure personnel in the past year. Equipment safety training was provided for all those working with some kind of equipment within the company. Information regarding training on other topics was not available for review. VSH Transport: Based on documents reviewed, a robust training program is in place for VSH Transport personnel. The program includes training on defensive driving, fire prevention, the appropriate use of various equipment, signaling, job safety analysis, HAZMAT for cyanide, IMDG for the transportation of dangerous goods, forklift, etc. The list of personnel that is subject to those different trainings include the crane and the forklift operators, managers, maintenance technicians, HSEQ staff, and various other roles within the organizational structure. DP World Paramaribo: Waste Management Procedure mentions that employees and contractors are subject to a waste type awareness training provided by DP World. Based on documents reviews, DP World maintains a training calendar on the different training topics required by type of personnel (e.g. emergency spill response, risk management, internal auditing), and keeps a related training record.	NV Havenbeheer Suriname email interview (ERM NV 2018) VSH Transport Training Dashboard (VSH Training1 2018) and Training Matrix (VSH Training 2018) DP World Waste Management Procedure, 2018 DP World Overview of performed and ongoing training (DPW Training1 2018), Trainings matrix DPWP 2018_Engineering (DPW Training2 2018) Training matrix DPWP 2018_HSSEQ (DPW Training3 2018) , and Training matrix DPWP 2018_Operations (DPW Training4 2018)

4.2 Health and Safety Management Review

Table 4-2 below provides a summary in tabular form of the results of the review NV Havenbeheer, VSH, and DP World compliance with their HSMS.

Table 4-2: Summary of the Results of the HSMS Compliance Review

Assessment Criteria	Findings	Supporting Documents
Port's Health and Safety Plan and Program (plans and procedures) include the necessary detail measures, procedures, equipment, training, responsibilities, and resources required to adequately control,	NV Havenbeheer Suriname: A formal HSMS was not provided for review. Based on documents reviewed and personnel interviewed, NV Havenbeheer Suriname conducts risk assessments, job safety analysis, personnel training, and incident recording. NV Havenbeheer Suriname also has guidelines for truck inspections and requirements for the safe transport of goods. Those guidelines and requirements were not provided for review.	NV Havenbeheer email interview (ERM NV 2018) VSH Transport email interview (ERM VSH 2018), Overview of Laws and Legislation (VSH Legislation 2018), and

Assessment Criteria	Findings	Supporting Documents
respond and remediate potential project risks, accidents and emergencies.	VSH Transport: A formal HSMS was not provided for review and the HSEQ manual is outdated and needs revisions. VSH Transport uses two documents to guide the management of its H&S related activities and work: a Legal Register (Overview of Laws and Legislation) and an Environmental Risk Register (Overview of Environmental Risk and Quality per Section). VSH Transport uses the environmental risk register to identify and assess H&S hazards (e.g. storage-related accidents) and establish related control measures (e.g. induction training). DP World Paramaribo: A formal HSMS was not provided for review. However, DP World's Integrated Management System (IMS) indicates that DP World has a certified HSMS developed in line with ISO 9001:2008, OSHAS 18001, and ISO 14001. The HSMS and the EMS are part of the IMS, along with their Quality Management System. DP World also has a legal registry that includes health and safety-related requirements and a Global EHS Policy where DP World commits to a 'Zero Harm' culture. In addition, DP World Paramaribo also have a "Fit to Work" initiative seeking "to promote a consistent approach to the management of health, welfare and safety issues in our work environment" and includes a five-stage program/implementation plan on various topics (Health Promotion, to Medical Assessment, Fatigue Management, Occupation Rehabilitation, Ergonomics, Employee Assistance and Drug and Alcohol).	Overview of Environmental Risk and Quality per Section (VSH Environmental 2018) DP World Environmental Manual (DPW Handbook 2018), Global Health, Safety and Environment Policy (DPW Health1 2018), and Fit To Work Program and Proposal (DPW Health 2018)
Port HSMS implements operational measures for general harbor safety, including signals, wind directional instruments and emergency procedures.	NV Havenbeheer Suriname: Aside from security personnel (~55 people), other operational measures for harbor safety include limiting speed on roads outside and in the port, requirements for safe transport of cargo by trucks, pedestrian walkways, and PPE requirements. NV Havenbeheer Suriname also conducts risk assessments. VSH Transport: Risk Register includes assessment of harbor safety risks, for instance falling from a container, colliding with another truck, accidental energy release, etc. For identified risks, an action plan is prepared to assign preventive and corrective measures and responsible persons to implement them. In terms of emergency procedures, VSH provided a spill control presentation that includes information on in-house emergency services (BHV) and their team members, how to handle an incident alarm, hazardous substances	NV email interview (ERM NV 2018)., and NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015 VSH Transport email interview (ERM VSH 2018), and Overview of Environmental Risk and Quality per Section (VSH Environmental 2018)

Assessment Criteria	Findings	Supporting Documents
	and materials, spill kits and clean ups, and how to document spills. No other information on harbor safety operational measures was provided by either NV Havenbeheer Suriname or DP World.	
Port HSMS implements operational measures to ensure unauthorized personnel are prevented from entering hazardous or restricted areas.	The Port's security is the responsibility of NV Havenbeheer Suriname. According to information collected and as observed during the Site Visit, the Port facility is entirely fenced in and has staffed security gates and security patrols (approximately 55 security personnel).	NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015)
Port HSMS implements operational measures for handling, storage and transport of hazardous materials.	VSH Transport: provides a spill control presentation that includes information on how to handle hazardous substances and materials. No other information on H&S operational measures relating to hazardous materials was provided by either NV Havenbeheer Suriname or DP World. According to information reviewed, H&S training including the appropriate use of PPE is provided by NV Havenbeheer Suriname and all operators, however, the training materials and/or programs were not provided for review.	VSH Transport Spill response (VSH Spills 2013)
Port's Contingency and Emergency Plans and procedures are adequate and complete.	NV Havenbeheer Suriname: Has an Emergency Response Plan named Business Continuity Plan, which has an escalation process from the internal crisis management team to the National Coordination Center for disaster management. VSH Transport: No documentation including a formal emergency response plan or contingency plan or procedures was provided for review. VSH Transport does not store fuel on site. Its equipment is fueled by a subcontractor, most likely on site. No information regarding a related standard operating procedure was provided. Oil/grease storage (used for crane and equipment) is equipped with appropriate ventilation and anti-leak installation that can contain up to 5,400 liters while the biggest oil container on site is of 1,000 liters. There is a dedicated storage area with a concrete floor and regular maintenance of the area. Spill kits, fire extinguishers and emergency eyewash stations and showers are available on site. Spill kits, firefighting equipment, and first aid kits are inspected on a regular basis and replaced if necessary. VSH Transport has a registry of its fire extinguishers' locations and types. VSH	NV Havenbeheer Suriname email interview (ERM NV 2018) VSH Transport email interview (ERM VSH 2018), Spill response (VSH Spills 2013), and Fire Extinguisher Information (VSH Fire 2018). DP World Environmental Manual (DPW Handbook 2018)

Assessment Criteria	Findings	Supporting Documents
	Transport provides a spill control presentation that includes information on in-house emergency services (BHV) and their team members, how to handle an incident alarm, hazardous substances and materials, spill kits and clean ups, and how to document spills. DP World Paramaribo: DP World's Integrated Management System (IMS) indicates that DP World has a certified HSMS developed in line with ISO 9001:2008, OSHAS 18001, and ISO 14001. The HSMS and the EMS are part of the IMS, along with their Quality Management System. DP World also has a legal registry that includes health and safety-related requirements and a Global EHS Policy where DP World commits to a 'Zero Harm' culture. These documents were not provided for review. DP World Environmental Manual refers to an Incidents and Emergencies Standard and an Emergency Management System. This Standard and the Emergency Management System were not provided for review; however, according to DP World Environmental Manual, they seem to only concern environmental emergencies, not H&S emergencies. DP World also has an evacuation plan (not provided), which includes procedures and instructions for action in case of an incident. Those procedures and instructions seem to concern environmental incidents, not H&S incidents. No information was provided regarding how DP World handles H&S incidents.	

4.3 Compliance with Applicable Regulations

In the case of Suriname, as previously discussed in Section 2.1 above, very few standards exist with regards to environmental media. The IFC's general EHS guidelines and the Ports, Harbors, and Terminal EHS guidelines are technical reference documents with general and industry-specific examples of good international industry practice that have become globally applied to projects of all sizes. These guidelines are recommendations (not regulations) based on professional opinion and are typically applied to projects when host country regulations are less stringent, and include the international standards ratified by Suriname which are applicable to the Port. Table 4-1 below provides a summary of the results of the review of NV Havenbeheer, VSH Transport, and DP World's compliance with the applicable Surinamese ratified international treaties, and the general and specific IFC EHS guidelines.

Table 4-3 Findings Based on Ratified Surinamese International Treaties and Conventions and General and Port Specific IFC EHS Guidelines

Theme/Topic	Guidelines (Overview)	Findings
Environment		
Terrestrial and aquatic habitat alteration and biodiversity	Coastal protection measures	No coastal protection specific information was provided for review. No habitat altering activities are currently taking place at the Port; although future construction could impact terrestrial and aquatic habitats near the Port. Based on the interviews and the information provided, maintenance of the Suriname River as well as dredging is not performed by NV Havenbeheer, VSH Transport, or DP World except under special conditions under the supervision of the MAS and NIMOS. Dredging is the responsibility of the Ministry of Public Works and MAS. Port operations are carried out mostly inside the highly developed Port and requirements exist to safeguard discharges going to the coastal environment as well as the cargo coming on and off ships. No coastal monitoring or management Plan exists.
	Coastal processes monitoring and management plan	
Climate Change Resiliency	Climate conditions evaluated on a regular basis	No information was provided with regards to climate change resiliency or evaluations for current Port operations. Climate change resiliency is part of the considerations that would be included in NIMOS requested Environmental and Social Impact Assessments for proposed projects depending on the scale of any proposed future work.
Water Quality	Dredging Management Plan	Based on information received from personnel interviewed and as previously mentioned above, the Ministry of Public Works and the MAS are in charge of dredging and related dredge material discharge/disposal permissions; therefore, it is not performed by NV Havenbeheer, VSH Transport, or DP World.

Theme/Topic	Guidelines (Overview)	Findings
	Port sewage and stormwater management good practices	The Port installations include oil/water separators that receive stormwater runoff and prevent oils from going into the river. NV Havenbeheer Suriname does quarterly inspections of these separators and clean on an as-needed basis. VSH Transport includes water pollution as one of the factors it assesses when evaluating the environmental impacts of its activities. DP World Paramaribo waste management procedures require the implementation of mitigation measures for oil and other waste collection to prevent pollution. Port sewage is discharged to the city's main sewers.
	Port operators provide appropriate facilities for wastewater generated by vessels	Wastewater generated on vessels is not collected by the Port. Local contractors come in to the Port to remove wastewater from the vessels for off-site disposal. No wastewater treatment facilities are located in the Port for vessel waste.
Air Emissions	Prevent, minimize, and control exhaust emissions from ships (MARPOL Annex VI)	NV Havenbeheer Suriname is assessing the option to provide shore power to ships to eliminate emissions while in port, but the option is limited by ships not being equipped to connect to shore power. VSH Transport includes CO_2 emissions as one of the factors it assesses when evaluating the environmental impacts of its activities.. No information regarding exhaust emission prevention, minimization, or control measures were provide.
	Minimize VOC emissions from fuel and cargo storage, and transfer activities through vapor recovery systems	Fuel is not stored on site; however vehicle/equipment fueling is performed on-site by off-site contractors. No information regarding VOC minimization efforts/measures were provided for review.
	Manage fugitive dust associated with dry bulk materials storage and handling facilities	This requirement does not apply as the Port does not handle or store dry bulk materials. Port operations are limited to containers, break-bulk, roll-on/roll-off (ro-ro), and pax (passengers).

Theme/Topic	Guidelines (Overview)	Findings
Waste Management	Provide adequate waste reception facilities for port and visiting ships	NV Havenbeheer Suriname accepts oil waste and garbage (MARPOL Annexes I and V), providing related reception facilities. Accepted wastes are managed by a private waste handler. Noxious liquid substances (MARPOL Annex II), chemical waste, ballast water and other effluents are not accepted by the Port; however are removed from vessels by local contractors for off-site disposal. NV Havenbeheer Suriname requires private terminal operators and their waste management plans to abide by the IMDG Code. VSH Transport uses a private waste handler, IGD (receives and records waste acceptance note from the IGD). Wastes include household wastes, recyclable plastics, and oily wastes. DP World Paramaribo's EMS includes waste management procedures applying to container, bulk, and car ships. The waste management procedure covers regular and hazardous wastes. Non-hazardous waste (office waste including food, paper, wood, glass, tires, metal, plastic, and old PPE) is management and disposed via local contractors. General housekeeping was observed to be in good conditions during the site visit. Trash/debris was not observed on site.
	Easily identifiable solid waste reception facilities and handling procedures	NV Havenbeheer Suriname accepts oil waste and garbage (MARPOL Annexes I and V), providing related reception facilities. As previously mentioned, general housekeeping was observed to be in good conditions during the site visit. Trash/debris was not observed on site.
	Prohibition of discharging solid waste from vessels while in port in accordance with MARPOL and national regulations	Solid waste discharge from vessels into the waterways is prohibited while in Port.
	Collection and disposal system developed for ship-generated garbage for ships alongside and at anchor	As previously mentioned, NV Havenbeheer Suriname accepts oil waste and garbage (MARPOL Annexes I and V), providing related reception facilities and management procedures. General housekeeping was observed to be in good conditions during the site visit. Trash/debris was not observed on site.
	Closable skips provided at the berths, and towed or self-propelled barges fitted with skips used to collect garbage from ships at anchor	
	Food waste from ships delivered to the port managed in accordance to applicable local regulations intended to protect human and animal health	Food wastes are managed as non-hazardous household wastes and in accordance with local regulations.

Theme/Topic	Guidelines (Overview)	Findings
Hazardous materials and oil management	Hazardous materials storage protected from vehicle accidents	According to documents reviewed, there are storage and management procedures for hazardous materials; however, these were not provided for review. The site visit did not include a thorough audit of facilities; therefore, it is not possible to gauge the appropriateness of storage facilities.
	Use of biodegradable hydraulic oils for hydraulic equipment	No information on the type of oils used on site were provided. This is not a regulatory requirement of Suriname.
	Presence of secondary containment for above ground liquid storage tanks and tanker truck loading and unloading areas	Documents received from VSH Transport indicate that oil/grease storage is equipped with secondary containment that can contain up to 5,400 liters (over the amount required for the largest oil container on site - 1,000 liters).
	Fueling areas equipped with containment basins in areas with a high risk of accidental releases of oil or hazardous materials	There are no fueling facilities at the Port and fuel is not stored on site. Equipment is fueled by an off-site subcontractor. No fueling procedures were provided for review.
	Fuel dispensing equipment equipped with “breakaway” hose connections for emergency shutdown of flow	No fueling procedures were provided for review.
	Fueling equipment inspected prior to fueling activities	No fueling procedures were provided for review.
	Spill prevention, control, and countermeasure plan (IMO Manual on Oil Pollution Section II-Contingency Planning)	A spill prevention, control, and countermeasure (SPCC) plan was not available for review or identified in any of the documents reviewed; although individual aspects of an SPCC can be found in other facility documents such as: • VSH Transport oil/grease storage is equipped with appropriate ventilation and secondary containment. There is a dedicated storage area with a concrete floor and regular maintenance of the area. • VSH Transport provides a spill control presentation that includes information on in-house emergency services (BHV) and their team members, how to handle an incident alarm, hazardous substances and materials, spill kits and clean ups, and how to document spills. • DP World Paramaribo trains its staff and contractors on emergency spill response. • NV Havenbeheer Suriname has a safety-training program. • Spill kits, fire extinguishers and emergency eyewash stations and showers are available on site and are inspected on a regular basis and replaced if necessary.

Theme/Topic	Guidelines (Overview)	Findings
	System in place for proper screening, acceptance, and transport of dangerous cargo based on local and international standards and regulations	NV Havenbeheer Suriname has a close working relationship with the US Coast Guard. As part of a policy of continuous assessment, there are regular visits from the federal agency to ensure that the Port of Paramaribo is fully compliant with its own guidelines. At the operational level, the company has stepped up its container inspection procedures as part of a strengthening of internal security at the Port of Paramaribo. In addition to the use in future of a planned high-tech scanner, all containers are now physically checked and resealed by customs before being loaded. In addition, VSH Transport training program includes IMDG training for the transportation of dangerous goods.
Noise and Vibration (including underwater)	Terrestrial noise control measures present at source	No information was provided with regards to noise control measures.
	Underwater noise and vibration control measures	No information was provided with regards to underwater noise and vibration control measures.
	Noise monitoring programs in place	No information was provided with regards to noise monitoring measures.
Occupational Health and Safety		
Physical Hazards	Means in place for preventing, minimizing, and controlling physical hazards	Based on site visit observations and information provided, the Port implements means for controlling physical hazards. Bollards were observed in areas of traffic hazards, as were good signage, road markings for traffic direction and flow as well as parking, fences and handrails. The entire Port is generally level. Facility personnel were observed wearing high visibility vests as well as hard hats and steel toe boots.
Chemical Hazards	Hierarchical approach to chemical hazards prevention	Documents reviewed indicate training of workers on material handling as well as the appropriate use of PPE and safe work practices is provided. No information was provided on chemical use for Port operations, nor was there any information and a hierarchical approach to chemical to chemical use prevention or minimization.
Confined Spaces	Confined space entry procedures in place (training, lock-out, gas detection, safety precautions such as equipment, etc.), including procedures that prevent or minimize the use of combustion equipment in the interior of cargo holds and in spaces that do not provide an alternative means of egress	No information was received with regards to safety procedures for confined space entry.

Theme/Topic	Guidelines (Overview)	Findings
Exposure to organic and inorganic dust	Practices in place minimizing release of dust into the work environment (e.g. direct piping of liquid and gaseous materials, minimized handling of dry powdered materials, enclosed operations, local exhaust ventilation at emission/release points, vacuum transfer of dry material rather than mechanical or pneumatic conveyance, indoor secure storage, and sealed containers rather than loose storage)	Not applicable. As previously discussed, the Port does not handle loose/gaseous material.
Exposure to noise	Respect of noise limits in function of the various working environments (e.g. control rooms 45-50 dB(A), industry up to a maximum of 110 dB(A)), control of noise at source (e.g. materials insulation), and use of hearing protection as required	No information was received with regards to safety procedures for noise exposure. VSH Transport includes noise as one of the factors it assesses when evaluating the environmental impacts of its activities.
Community Health and Safety		
Port Marine Safety	SMS implemented to effectively identify and correct unsafe conditions	VSH Transport: Did not provide a HSMS for review. The HSEQ manual was not provided but was said to be outdated and to need revisions. VSH Transport uses their environmental risk register to identify and assess H&S hazards (e.g., storage-related accidents) and establish related control measures (e.g., induction training). DP World Paramaribo: Has a certified HSMS developed in line with ISO 9001:2008, OSHAS 18001, and ISO 14001. The HSMS and the EMS are part of an Integrated Management System (IMS), with the Quality Management System. DP World also has a legal registry which includes health and safety-related requirements and a Global EHS Policy where DP World commits to a 'Zero Harm' culture. In addition, DP World Paramaribo also have a "Fit to Work" initiative seeking "to promote a consistent approach to the management of health, welfare and safety issues in our work environment" and includes a five-stage program/implementation plan.
	SMS informed by initial risk and hazard assessments	As discussed above, both VSH Transport and DP World conduct health and safety risk assessments and implement response and adaptation measures. In addition, NV Havenbeheer conducts risks assessments and job safety analyses.
	SMS includes consideration of alterations to coastal processes and seabed and coastal geomorphology	As previously discussed, activities within the Suriname River are the responsibility of the Ministry of Public Works and the MAS; therefore, this guideline does not apply.

Theme/Topic	Guidelines (Overview)	Findings
	SMS adapted based on regular operational hazard assessments of port activities	As discussed above, both VSH Transport and DP World conduct health and safety risk assessments and implement response and adaptation measures. DP World Paramaribo's HSMS is certified compliant with ISO 14001, and includes regular assessments of hazards.
	SMS procedures regulate safe movement of vessels, protect the general public and communities from dangers, and prevent events that may result in injury to workers and the public	Not applicable. The MAS is responsible for the safe, efficient, secure and environmentally friendly passage of seagoing vessels to and from Suriname, based on international standards, and the supervision of legal requirements for shipping and ship traffic. MAS is responsible for safety and security in Surinamese waters and issues all shipping notices and 'notices to mariners'.
	SMS includes comprehensive emergency preparedness and response plans	NV Havenbeheer Suriname has an Emergency Response Plan (Business Continuity Plan), which has an escalation process from the internal crisis management team to the National Coordination Center for disaster management. VSH Transport has spill kits, firefighting equipment, and first aid kits inspected on a regular basis and replaced if necessary. They also have a registry of its fire extinguishers locations and types. VSH Transport provides regular communication and practice of the emergency plan to employees. According to information received, VSH Transport is currently developing and emergency response plan; therefore, one was not reviewed. DP World Paramaribo has a procedure for identifying and responding to environmental emergencies and accidents. DP World Incidents and Emergencies Standard and Emergency Management System provide more information. DP World Paramaribo also has an evacuation plan, which includes procedures and instructions for action in case of an incident that may affect the environment. Although documents reviewed indicate that emergency response plans have been prepared and are implemented by NV and DP World, these were not provided for review, therefore no specific health and safety related details are available.
Port Security	Port operators have a clear understanding of their responsibilities	Although information reviewed indicated training is performed and maintained for all security personnel, the contents of the training were not provided for review.

Theme/Topic	Guidelines (Overview)	Findings
	Port security arrangements established	Documents received did not mention a Port Facility Security Plan nor was one provided for review. NV Havenbeheer Suriname has approximately 55 security personnel. Aside from security, other harbor safety operational measures include limiting speed on roads outside and in the port, guidelines / recommendations for safe transport of cargo by trucks, pedestrian walkways, and PPE requirements. NV Havenbeheer Suriname also conducts risk assessments.
Visual Impacts	Visual impacts managed during operations through natural visual barriers or light shades	The Port is located in a highly developed/highly industrialized area of Paramaribo. Containers are stacked/stored on the eastern side of the property behind all of the administrative buildings and warehouses and are not highly visible from the public road.
	Location and color of bulk storage facilities selected with consideration of visual impacts	

5. CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary of the results of the review of the Port's environmental, social, and health and safety operating procedures and their compliance with the existing regulatory framework and management systems.

Environmental and Social Management

- Environmental and Social Management System and consistency with ISO Standards:
    - The Port management entity, NV Havenbeheer Suriname, developed an Environmental Management System (EMS) which is in line with ISO 14001:2015 principles and requires the port operating companies to comply. Both operating companies, VSH Transport and IPS/DP World Suriname are ISO 14001:2015 Certified and include the appropriate requirements for the implementation of monitoring programs, impact and risks assessments, training, etc. DP World implements and Integrated Management System, which combines both Environmental Management as well as Health and Safety. VSH Transport provided documents that indicate an EMS is implemented; however, a general EMS document was not provided for review.
- Consistency with MARPOL 73/78:
    - According to the documents provided, NV Havenbeheer Suriname, VSH Transport and IPS/DP World Suriname all have procedures in place to prevent pollution from ships in accordance with MARPOL.
- Social Management Plan:
    - According to the documents reviewed, there are social management procedures in place; however, a Social Management Plan does not exist nor were any documents provided detailing procedures for managing complaints (internal or from the community) and for accidents involving the general public. A detailed grievance mechanism was not provided for review.
- Monitoring programs:
    - Although the ESMS provided indicate monitoring programs are implemented, actual monitoring procedures, especially for environmental media were not provided for review. No information was provided with regards to such environmental aspects such as VOC and dust emissions, noise, and impacts of activities on natural habitats.
- Human, financial and operational resources for the implementation of the ESMS:
    - The organizational/corporate structures of the Port's management and operating companies include the human resources to appropriately implement the EMS and it appears they provide the adequate training programs and record keeping for the personnel involved. The information provided; however, did not discuss the financial resources available to ensure the implementation of the ESMS or its procedures.
- Records:
    - According to the ESMSs, recordkeeping is an integral part of the management system and should be applied. The documents provided indicate records are appropriately maintained for health and safety; however, not a lot of information was provided with regards to environmental records. Environmental procedures, although discussed in the ESMSs were not provided for review nor were monitoring records (these include hazardous

material/hazardous waste management plans, spill pollution control and countermeasure plan, emergency response plans, monitoring plans, etc.).

Health and Safety Management System

- Adequate Health and Safety Plan and Program:
    - An actual Health and Safety Management System was only provided by IPS/DP World Paramaribo as part of their Integrated Management System; however, according to the documents received for review, both NV Havenbeheer Suriname and VSH Transport have appropriate plans and procedures that provide the necessary measures, equipment, training and resources to adequately control, respond and remediate potential risks, accidents and emergencies.
- Security:
    - Although security procedures were not provided for reviews, security measures implemented at the Port facilities as observed during the site visit and as gathered from the documents reviewed are adequate to ensure the safety and security of the Port.
- Hazardous Materials:
    - According to documents reviewed, the Port implements operational procedures for handling, storage, transport, and adequate disposal of hazardous materials and waste; however, these procedures were not available for review.
- Contingency and Emergency Plans:
    - Documents provided indicate both IPS/DP World Paramaribo and NV Havenbeheer Suriname have formal emergency response plans as well as evacuation plans; however, these documents were not provided for review. Documents provided indicate appropriate levels of training and emergency preparation are provided at the facility, including spill kits, first aid kits, fire extinguishers, etc.
    - Documents provided for VSH transport do not mention a formal emergency response plan; however, a presentation provided includes information on the existence of a trained, in-house emergency services (BHV) team, how to handle an incident alarm, handling hazardous substances and materials, spill kits and clean ups, and how to document spills.

Compliance with Applicable Regulations

It is important to remember that although Suriname has the National Environmental Policy Office, NIMOS, and environmental, social, and health & safety regulations, there is no overarching law for environmental management. Existing Surinamese regulations typically do not contain standards with regards to environmental media, especially for ambient water quality, waste water treatment of discharge quality, ambient air quality, or management of hazardous substances or wastes.

- Environment:
    - Operations at the Port are conducted in an area that is highly developed and highly industrial in nature. There are no green/undeveloped areas left on the site. Activities at the Port, however, have the ability to impact the nearby aquatic habitat present on the Suriname River. Based on the documents reviewed, the Port implements the appropriate measures to ensure their activities on the Port do not impact the Suriname River; however, there are no monitoring procedures in place with regards to the terrestrial or aquatic habitats that surround the port.

- The Port does not implement any programs to evaluate and appropriately respond to climate change impacts. Climate change resiliency is part of the considerations that would be included in NIMOS requested Environmental and Social Impact Assessment for the proposed Project.
- The Port does not implement any monitoring programs for water quality, air emissions, and noise and vibration. There are also no procedures for mitigating impacts to air or noise and vibration, such as ways to prevent, minimize, and control exhaust emissions from both ships and equipment. However, some measures are implemented to ensure Port activities do not negatively impact the surrounding environments such as the appropriate waste management measures, and stormwater management features to ensure polluted runoff does not enter the nearby river.
- Although documents received indicate hazardous material management procedures exists, they were not available for review. Additionally, although fuel is not stored on-site (only oils are), fueling activities do take place onsite. No fueling procedures or a robust, all-inclusive spill, prevention, control and countermeasure (SPCC) plan appear to be available even though most of the material to put together an SPCC plan already exists (such as spill response procedures and equipment, trained personnel, facility maps, emergency contacts, etc.). During the site visit, general housekeeping was observed to be in good condition.

- Occupational Health and Safety
  - As previously mentioned, it appears all parties reviewed implement a robust and up-to date training regimen for all employees, particularly when it comes to health and safety. Good safety practices were observed throughout the facility during the site visit, including the use of the appropriate PPE (high visibility vests, steel toe boots, and hard hats). Although the documents reviewed indicate hazardous materials and hazardous waste management plans exists, none were provided for review, so no information was available on the chemical use and/or prevention/reductions measures which are applied. Additionally, no information was provided on exposure to noise and the relevant safety measures or the prohibition or procedures for confined space entry which are additional hazards that can be associated with activities at ports.
  - Port Security, as discussed above, appear to be adequate to ensure the safety and security of the Port.

Based on the results of the review, the following lists recommendations for NV Havenbeheer Suriname:

Environmental and Social Management System:

1. Update the management systems to a comprehensive ESMS for the Port (aligned with the most recent ISO 14001 framework (ISO 14001:2015) which includes:
   a. A robust social management system with a stakeholder engagement plan and a grievance mechanism. The stakeholder engagement plan should identify relevant stakeholders and spell out communication plans to establish a two-way engagement and consultation program with stakeholders. The grievance mechanism should include both internal and external grievances, and a records system for environmental incidents and public complaints. Identify Human, financial and operational resources for the implementation of the ESMS.
   b. Ensure the management program includes a robust system for recordkeeping.
   c. Identify indicators and monitoring requirements for the Port's activities to include: impacts on terrestrial and aquatic habitat, air emissions (e.g., VOC), noise, vibration, and impacts on local communities (e.g., road traffic, tourism).

d. Conduct an effective management plan and link monitoring results to an action plan in order to improve the ESMS
e. A requirement for all Port Operators to update and adjust their own ESMS to be consistent with the Port Authority's ESMS.
f. All other related procedures and controls.

Health & Safety Management System

2. Develop a comprehensive HSMS for the Port and align all HSMS in coordination with the Port management and port operators. The HSMS should include Emergency preparedness and Response:
    a. Operational Health and Safety Hazards and Emergency Situations
    b. Emergencies caused external events
    c. Develop missing health and safety procedures including (if necessary) a confined space entry procedure, noise exposure, and a Port Security Plan. And
    d. Includes the Port's Security Plan and Hazardous Materials Management Plan,
3. Develop a comprehensive SPCC to include:
    a. Standard operating procedures for fueling operations as well as oil tank filling operations on site in order to prevent spills.
    b. Control measures to prevent spills from reaching water bodies. And,
    c. Countermeasures to contain, clean-up, and mitigate the effects of a spill that reach a water body.

Other Recommendations

Additional best management practices which should be implemented in NV Havenbeheer Suriname ESMS update include:

4. Evaluate climate change on a regular basis and adjust environmental, social, and H&S management systems to increase the climate change resiliency of the Port. Evaluations should include an analysis of local climate change trends in Paramaribo (such as rise in river water level elevations, increases/decreases in rainfall intensities or storms, etc.) in order to include the appropriate mitigation measures in the existing management systems.
5. Monitor the use of oils on site and promote the use of biodegradable oil where possible.
6. Develop an overarching Port EHS organizational structure or plan that would invite key EHS personnel from NV Havenbeheer and the terminal operators to come together for further coordination around environmental, social, and H&S management systems and procedures.

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APPENDIX B PUBLIC CONSULTATION MEETING REPORT

Public Consultation Event

Organization and Execution of the Public Consultation Event

In accordance with IDB Directive B.6, a public consultation was held for the Improving Transport Logistics and Competitiveness in Suriname Project (SU-L1057) on the 20th of February 2019, at the Courtyard Marriot in Paramaribo, at 6:30 pm local time.

The event was led by the Ministry of Public Works Transportation and Communication (MPWTC) in order to present a short description of the Project as well as the results of the Environmental Assessment (EA). The public consultation event had approximately 50 attendees (almost 1:1 female to male ratio), and included key stakeholders from government organizations as well as Port management companies, consultants, and local businesses. Attendance to the meeting was significant and attendees were very participative and showed interest and support for the Project.

A brief presentation of the design elements of the Project was made by the MPWTC and then the results of the EA of the project and its respective Environmental and Social Management Plan (ESMP) were presented by ERM in conjunction with a local sub-consultant. Finally, attendees were given the opportunity to ask questions and provide comments, and Project representatives provided the necessary answers. The event lasted one and a half hours.

Attachments to this report include the presentations given at the consultation (a description of the Project facilitated by the Government of Suriname as well as the environmental and social portion facilitated by ERM), the invitations sent, a list of attendees, and photographs of the event.

Key Questions and Comments from the Participants

Key issues and concerns expressed by the stakeholders present during the public consultation revolved mainly around the traffic study and changes within the Port that would affect current Port management companies and their investments (see Attachment 1 to this Appendix for the meeting recording of questions and answers). There were no questions with regards to the EA and mitigation and management measures. Key concerns about the Project included the following:

- Concerns with to traffic projections and future estimates (70% increase in 10 years)
- Concerns with regards to the local cost of road improvements versus the benefit
- Concerns with regards to how specific changes within the Port would be chosen (to ensure minimal impacts to current Port management companies), and
- Questions with regards to road improvement specific actions, as these have not been finalized.

Stakeholders did express support for additional parking within the Port as parking on the roads is currently required leading to traffic and inefficiency.

Conclusion

Based on the types of questions raised during the public consultation, there does not appear to be any discontent or apprehension with the Project; however, the stakeholders present expressed interest in being involved in the final decision process prior to finalization of Project specific designs. Upon the conclusion of the stakeholder consultation, the MPWTC expressed the importance of stakeholder involvement and reiterated that an email is available for expressing any concerns or ideas. In addition, the MPWTC stated that more consultation events would be held once the Project design is further along. With regards to environmental and social issues, there were no concerns raised.

Attachment 1 – Question and Answer Session

Minutes of the Question and Comments Portion of the Public Consultation Session for

Project SU-L1057: Improving Transport Logistics and Competitiveness in Suriname

Date: 20 Februari 2019
Time: 18:00 (registration); 18:30-20:30 (duration of session)
Facilitator: Joy I. dos Santos-Themen (presenter of ESIA results on behalf of ERM)
Project owner: Ministry of Public Works, Transportation and Communication (PWT&C), of the Republic of Suriname.
Venue: Courtyard Marriott hotel – Paramaribo, Suriname.

Observation - Prior to the session a Safety talk was done by the Hotel representative. The session was opened by Mr Soman on behalf of H.E. the Minister of PWT&C. who welcomed all present. He introduced the Project team consisting of the representatives of the IDB and the Ministry of PWT&C for the Technical part (PWT&C: Henk Wip; IDB: Amado Crotte, Team Leader; Elizabeth Graybill, Environmental Lead; Edgar Zamora, Transport Specialist), and the representatives of ERM Consulting for the ESIA report.

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
Mr. J. Koornaar	SUNECON (Engineering bureau)	Question to Mr. Wip: You anticipate a 70% increase of the problems in other words there will be a 70% increase of the intensity issues. Could you explain that? Ultimately the cars are driven by people, so do you anticipate work increase in the center of the Paramaribo area? There was a slide where the intensity was expected. Where is the 70% coming from?
Representative	IADB	You have spacing in the main corridor so a good forecast will give you that. It is important to mention that several sections of the roads right now are restricted in capacity. And for example some of the roundabouts are 4 times the restricted capacity. The traffic is increasing year after year and after a certain amount of years we were able to estimate an average increase in intensity in transport time. That average increase is 70%. So what we are facing now is due to that travel speed which you are facing now when going to work, and (if we do nothing), that will more than double in a few years' time.
Mr. J. Koornaar	SUNECON	I have a troubled feeling about that. Because ultimately a certain supply of traffic is coming in as you showed me and will give you a time delay. Why would it be a 70% increase if the number of vehicles on the network doesn't increase enormously?

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
Representative	IADB	It is 4 % per year but we are taking 70% in a ten year span. So if you increase 4% than the next year another 4% it is going to start building up, plus you have a certain infrastructure that is already over the capacity.
Mr. J. Koornaar	SUNECON	The core of my question is the 4% in case something happened. Ultimately if work does not increase in Paramaribo would the traffic then increase with 4%? The 70% looks enormously. The second question: The number of lanes you have predicted is three lanes for both directions. You have a peak hour's flow of 10,000 and you expect 5,000 and you want go to I think a certain level of service (LOS). I'm quite sure you haven't reached the best. What kind of service are you looking at, the next twenty years?
Representative	IADB	The LOS you have (currently) is D or even E so we don't know which level Suriname will reach. (But) it could reach E or F in the next couple of years. Right now you are already over your capacity of your lane intersections.
Mr. J. Koornaar	SUNECON	Currently we have 2 lanes and you want to go to 3 lanes. This will be expensive cost- wise. How are you going to work this out? Going from 2 to 3 should be assessed very well in terms of financial feasibility (economic rate of return), 5,000 hours per peak with two lanes to cope with that.
Representative	IADB	You are right. But right now you don't have enough capacity. The traffic lights are more efficient to manage.
Mr. J. Koornaar	SUNECON	But that means you have to optimize the project.
Representative	IADB	That is true. But the design is not only for this year but is a forecast for 10 years.
Mr. J. Koornaar	SUNECON	Yes but again I am linking this back to Paramaribo in terms of work because you need to generate it. It comes from a source. But I hope that the economic rate of return is positive for this project.
Mr. E. Abdillah	SUNECON	I'd like to go back to slide number 8 (*IDB rep shows slide nr 8 but it seems not to be the slide that Mr Abdillah was looking for). You mentioned the two road sections consisting of 3 lanes going South, and 3 lanes going North. My question is: how does this continue from there. Because in Southern direction we will reach Molenpad where we have only 1 road and 2 lanes leading into Zwartenhovenbrugstraat. Does this not represent a bottleneck?
Mr. Wip	Ministry of PWT&C	Actually the traffc in the Zwartenhovenbrugstraat has 2 lanes in Northern direction and 1 lane in Southern direction. The traffic situation can be arranged in several ways considering the 3 lanes from the Van 't Hogerhuysstraat between the traffic light and Molenpad, and whereby the outer left lane would lead into Molenpad and the other two lanes would continue to Zwartenhovenbrugstraat.

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
Mr Soman	Director Ministry PWT&C	At the moment, the Ministry is busy working on improvements in the Zwartenhovenbrugstraat. This road typically has physical (spatial) limitations, that we need to take into account as well. Furthermore its sewage system is completely deteriorated, so we are currently busy with its rehabilitation and whereby we have difficulties even allowing for a pedestrian area on either side of the road. It is also true that within the existing space we are aiming to include 2 (narrow) lanes to facilitate motorcycle traffic. Again, these will be rather narrow because of the physical limitations of this particular area. We need also to remember the utilities infrastructure. To date at least 3 studies were done for the traffic in Paramaribo's city center, proposing a wider (traffic) ring and a smaller ring within. Some other proposals were made as part of another IDB project which is the Paramaribo Urban rehabilitation Project. For these reasons we have not yet put any definitive demarcation/signage in place (in the works done so far on Zwartenhovenbrugstraat), since we are still finalizing the discussions an decisionmaking around improved traffic in Paramaribo's city center. We are indeed talking about a bottleneck situationhere, but the expertise is available and although we will not be able to construct 3 lanes on either side, we will be able to optimize the traffic situation in the so-called triangle around Paramaribo.
Mr. Egon Wielzen	EBS	I have seen the audiovisuals of the new situation. With respect to the adjustments of the lanes, I am curious to know what will be done with the stretch (island) that separates the two ways currently, and with the utilities infrastructure, especially pertaining to the electricity network underneath and above the Van 't Hogerhuysstraat. How will all this be addressed since this will entail significant costs.
Mr Soman	Director Ministry PWT&C	The project is now in preliminary phase, so this is the very first concept that is being presented. Both yourself as mr Koornaar are asking the right questions. The next couple of phases will involve closer interaction between ourselves, the IDB consultants, the utilities, and all the other stakeholders, in order to gradually and through a scientific approach, further define details including costs. We will certainly take your comments into consideration.
Mr. Edward Redjosentono	EBS	Could you give us an idea about the overall timeframe, so that we from EBS ("NV Energie Bedrijven Suriname" - Utilities/Suriname's State Energy Company), can take this into consideration in our long-term planning?
Mr Soman	Director Ministry PWT&C	We plan to be busy working out the technical details of the project for at least another year. The aim is to follow a phased approach so when implementing this project we should keep in mind a period of 4-5 years for the execution phase.

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
Ms. Mervel Kotzebue	General Manager IPS/DP World at the Port	The impacts of any infrastructural modifications (of the road network) will of course affect the Port itself. The Terminal lay-out will most probably need to be modified. To date, investments have been made (at the port). Who is going to pay for such costs. Have there been any discussions with the Port stakeholders at all, so far?
Mr Soman	Director Ministry PWT&C	Good question, and please correct me, Port authorities and consultants here present, as I will try to illustrate what we are busy working on. At this moment, the average handling time per container is at least 5 hours. The objective of this project is to also improve the internal (Port) system in a way that the handling time will decrease to two hours. This is the reason why the project is not named “the paving of Molenpad to Latour including the Willem Campange straat”, rather, that is just one part of the project. (The project has a much broader scope and) in this presentation not all the improvements that will result from the project have been presented yet The idea is to go into more detail over the coming period. We will definitely be consulting further with the Port Authorities, who are already actively engaged in the project, the Customs and the Port Community System. As we progress further into more detailed design phase, these key stakeholders will be consulted. As Mr Wip indicated in one of his slides, is that parking will be regulated as much as possible within Port terrain. So in principle the challenges in this project are not just the road network and utilities, but the broader objective of improved transportation logistics. Our common goal is to also increase competitiveness of our Port.
Ms. Mervel Kotzebue	General Manager IPS/DP World at the Port	I would like to illustrate the following: if I own a warehouse situated at Port North, while the new entrance is planned to be at Port South, what will happen? Should I demolish my warehouse and build it elsewhere? These are my concerns. Will investments already made at the Port, be taken into consideration. How will that be dealt with.
Mr Soman	Director Ministry PWT&C	I would like to invite the representative of the Port Authority to also comment on this.
Mr Ch.Getrouw	NV Havenbeheer	You are right. We don’t intend to demolish. We too are aware of the bottlenecks we have in our Port area, the effects of the road transportation and the current system, and that we must change this system completely. Within this process, Customs play a special role. It actually means that the total flow in the entire chain must be addressed. Whenever we plan to introduce any changes, stakeholders will be consulted since they play a crucial role in the process so they will certainly be involved.

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
		The traffic has to be arranged such that it becomes one integrated system. I understand your concern about consequences and related costs. These aspects will need to be looked at in detail. We have not yet done that but are looking forward to doing this exercise together with you and other key stakeholders.
Mr Soman	Director Ministry PWT&C	Models were developed in which the processing time was reduced to 2 hours. In order to achieve this, we will not only have to install the necessary physical infrastructure, but we will also need to work together with the Port Authorities as you indicated including Customs and other stakeholders at the Port. And we need to develop the regulatory requirements. We therefore want to carefully get our heads together before presenting anything. When more details are available we will gladly visit you to present the models The project as a whole will eventually contribute to improvement. I understand your concern while there is no definitive final design presented about how the new layout would impact you(r activities). When we reach the design phase we will present this to you. I want to emphasize this is the very first public stakeholder meeting and a lot more will follow. It is good to be informed up front so we can jointly look for solutions.
Ms. Mervel Kotzebue	General Manager IPS/DP World at the Port	So who will pay for the additional cost resulting from making the port more competitive?
Mr Soman	Director Ministry PWT&C	What I can tell you with regard to the current situation, those (effects) will physically be minimal.
Mr. K. Bharos	MSC Shipping	I believe we should talk more about strategic aspects. During the presentation I got the idea that this is all about logistical issues only. While if you look at how to position the Port as “Port in the Caribbean:, then I say we must look at it from different perspectives. We did talk about all the stakeholders to be engaged, but I don’t think we should start at the logistical end since that is not where the core of the problem lies. The core of the issue is at the Port itself. It is handling, and usually this is not talked about because then we get to the sore parts. Quality service of the Customs is then in the spotlight and so to of Port Management. There is a reason why trucks park everywhere they can and so deteriorate infrastructure. If activities increase at the port then those factors need to be addressed at once in order to improve the Port of Paramaribo. It is important to look at handling. Take for instance when we have to deal with a commercial container entering as well as a groupage container. The groupage container is stripped at the strip zone

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
		while the companies who own a proper area/warehouse where Customs is present, do the stripping right there. This causes a lot of delay at the Port. Another example is that the truckdriver sometimes is forced to take the truck back because the Asycuda system is down. This is the bare truth. The consequence is that companies are annually significantly impacted by increased costs. Nobody talks about this. I would like to see the totality be addressed in a strategic manner so that development both at the Port as well as with our infrastructure, walk in parallel.
Mr Ch.Getrouw	NV Havenbeheer	We agree with you and when we look at the title of the story then it is indeed about a strategic approach. We did speak to Customs, and they indicate the system is crucial. You will have seen the term Port Community System in our presentation. Within that framework the procedures will become integrated. We now have 4 systems: the terminal operating system, the shipping agent system, the Porth Authority and the Customs system. In a port community system all these systems will be communicating with each other within one unique platform which will allow you to do better planning. The economical value offered by this platform is very big, we should look at other places in the world and try to become a hub in the Guyana Shield. We totally agree with you but will have to do all of this by small steps.
Mr. K. Bharos	MSC Shipping	I would like to see tha approach is to be in parallel with the different disciplines and that need to be so good that it results in what you were looking for.
Mr Ch.Getrouw	NV Havenbeheer	Although this was not in tonight's presentation, you may rest assured that we have been looking into this.
Mr. H. Martinus	Spatial Planners Association Suriname	First question: In the answer of mister Ewald I felt that the city center is seen as part of the traffic system in Paramaribo. An alternative is to place the city center out of the traffic system of Paramaribo but then other roads for the traffic are needed. You mentioned the wider the ring. I am saying this for the moment for it has implications for the important road in your study, the Willem Campagne straat. So I would like you to think about it and to take it into the design. Second question: What role does the new bridge (over the Saramacca channel) play in the traffic system of Paramaribo Nieuwe Haven? The bridge was not discussed during the presentation
Mr Soman	Director Ministry PWT&C	As I mentioned some studies were done, at least 3 in which the inner city, the traffic diversion or traffic regulation is also presented. We are still thinking about how to improve the traffic system and you also came with some out of the box thinking. You

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
		also said something about the Willem Campagne straat so I think maybe it is good to have some thoughts about your opinion/ ideas about that. The (mentioned) Vabi bridge is nearly finished, we are now busy with the adjunction from the Slangenhout straat and the Van't Hogerhuysstraat with a traffic light. We have discussed the place of the new bridge in the traffic system of Paramaribo Nieuwe Haven with the consultants who are busy with the modelling of the new traffic flow. This aspect will also be included in the further studies
Mr. H. Martinus	Spatial Planners Association Suriname	So I see this bridge is exclusive for freight transport from the harbor to anywhere.
Mr Soman	Director Ministry PWT&C	There will be a good connection to the harbor however at this moment there are some land issues, which prevent us to connect with the harbor. This aspect will also discussed within the project stakeholders group.
Jeroen Haukes	Haukes NV CEOO Transport	The best idea I've seen today is the parking place of the Nieuwe Haven. We as transport companies are sending over 60 trucks each day to the harbor without parking place. There is no parking place so we park them on the road. It is impossible to have a harbor without a parking place especially for trucks. A parking place will save you a lot of traffic jams and problems on the road. A harbor without parking place for truck is a big problem. That is one of your biggest problems
Mr Ch.Getrouw	NV Havenbeheer	Instead of using the term parking lot, we use the term logistics. We are talking here about a integrated system. The objective whithin this system is not to wait but rather accomodate efficiency. This will include the installation of an IT plaform that will allow you to plan from your hom/business how long your handling will take (the total chain from tour compny to your company. The previous concerns about Hierbij zal een IT platvorm moeten inkomen zodat u vanuit uw huis/business kan plannen hoelang het gaat duren (de totale keten vanuit uw bedrijf tot aan uw bedrijf). De eerder genoemde vragen en bezorgdheden alsook die van u vinden we allemaal terug in deze scope, maar wel op een ander moment.
Jeroen Haukes	Haukes NV - CEOO Transport	We have seen a little drawing about the roundabout at the bottom of the bridge. If you put the traffic lights over there people of Commewijne will not come to Paramaribo anymore. The people will not be able to pass the bridge. So we have to do something there but I don't think placing a traffic light is a solution for the bridge. I think you will have to make a different exit from the roundabout to the slangenhout straat. A straight one without stops.

Stakeholder Name	Company/ Organization	Questions/Remarks/ Answers
Representative	IADB	The idea is to synchronize traffic lights a so called green wave. Once you get a green light you will get a green light on and on at every intersection. We have already gone through various simulations and we have seen that traffic times decreased when we implement intelligent traffic systems to connect traffic lights to a traffic control center. We have already assessed the number of vehicles that will go through that route and how much time they need to cross from one intersection to the next intersection. Roundabouts have a limit. They are efficient when they haven't exceeded their capacity. When the traffic flow is over the capacity it is more efficient to have traffic lights.
Mr. E. Abdillah	SUNECON	If we link everything now to each other, the traffic handling in the environment, the port etc, Have we thought about in reducing depths in our Suriname river? Have we taken this into consderation in the current studies?
Mr Soman	Director Ministry PWT&C	I would like to clarify that we have not yet incorporated this in the prokect. There is a separate discussion happening though.
Mr. E. Abdillah	SUNECON	I hope you feel our concern
Mr Soman	Director Ministry PWT&C	We have thought of that simulaneously
Mr Soman	Director Ministry PWT&C	Today we had the first public meeting with stakeholders with the aim to infrom you about what has been prepared to date and what the thoughtprocess is. In case there are still any issues that pop up later, please email them to our secretariate. This is also important – to document matters nd so that we can process this into coming reports taking into consideration your insights.

Attachment 2 – Public Consultation Photos


Het doel van de publieke consultatie van vandaag is om:
• De voorgestelde oplossinge
verminderen van verkeersop
presenteren,
• te praten over de moge
alle stakeholders in de
• methodes te ontwerp
negatieve effecten v
elimineren.


EXIT

Attachment 3 – Sign-in Sheet

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Karg	manager Corporate Affairs	N.V. Havenbeheer Sur.	Havenlaan Zuid #5	zskarg@gmail.com	___ Krant ___ Email _X_ Uitnodigingsbrief ___Flyer ___Ander: _____
TALEA	CEO	NV HAVENBEheer	Havenlaan #5	antotalea@gmail.com	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
BELFOR G.R	Man Facility Management	TELESUR		gerrit.belfor@telesur.sr	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
					___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Sandy BOUCHENAFA	Development officer	GPM - Guyane	s.bouchenafa @portdeguyane.fr		___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
S. Koole	—	—	Molenpad 61	Stanleykoole @hotmail.com	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
HEIKERK	HEAD RETAIL BANKING	HAKRINBANK	MIRZANO.HEIKERK@HAKRINBANK.COM		___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
Amber Soemersardjan	Sales Rep	C&C Suremac NV	Eduard Abrahamsweg 18	amber.soemersardjan@suremac.sr	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____

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VAN BRUSSEL	Supervisor	Hauchers NV	Highway	OVANBRUSSEL @HauchersNV.com	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Wielen E	Manager	NV EBS	Saramaccast/	egon.wielen@ebs.sr	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Nontmen A	Read	EBS	"	a.nontmen@ebs.sr	___ Krant ___ Email ✓ Uitnodigingsbrief ___Flyer ___Ander: _____
Powel P	VL	OWTC		ciano_powel@hotmail.com	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Vania BONNETON	Chief of development	GPM Guyane	French Guiana	v.bonneton@portdeguyane.fr	___ Krant ___ Email ___ Uitnodigingsbrief ___ Flyer ___ Ander: _____
VALERIE ESCUDIE	Consultant logistics	SEE'Up	France, Marseilles	V.escudie@see-up.Fr	___ Krant ___ Email ___ Uitnodigingsbrief ___ Flyer ___ Ander: _____
Fer. Hilda.	douane Expediteur Sumac.	Sumac.	Slangenhoutstr.	melitsia.fer@sumaccat.sr.	___ Krant ___ Email ___ Uitnodigingsbrief ___ Flyer ___ Ander: _____
B. KHAN	CONSULTANT	SGS	INDUSTRIEWEG 42	BRIANGACC@GMAIL.COM	✓ Krant ___ Email ___ Uitnodigingsbrief ___ Flyer ___ Ander: _____

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
ABDILLAH EWALD	Project ENGINEER	SUNECON	V. ROOSMALEN STR.	ewalda@yahoo .com	X Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___
Yang zhuxia		Jong Sang keseaban	van't hogerhuy straat.		___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___
Y. Babb-Vechteld	wnd ODVIS LVV	LVV	Cornelis Jong Bawstr.	odvisserij@gmail.com	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___
BUDOC R. L	[illegible] bord Gpn Gyu	GPN.	Gyum.		___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___

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S. Ramdien	laborand	el Adek	Leiweg	Soenadj_Randien	___ Krant ___ Email X Uitnodigingsbrief ___ Flyer ___ Ander: ________
[illegible]	Districtssecr	Commissariaat Commewijne	Wilhelminastraat no 45		___ Krant ___ Email X Uitnodigingsbrief ___ Flyer ___ Ander: ________
Tjon-Akon Aisa	aank. Manager Infrastructure	NV Havenbeheer Suriname	Havenlaan Zuid #5		___ Krant ___ Email X Uitnodigingsbrief ___ Flyer ___ Ander: ________
Boedhoe Roy	C-E-O	R.B.-Enterprises	Industrieweg # 32	roy@rbenterprises.sr	___ Krant ✓ Email ___ Uitnodigingsbrief ___ Flyer ___ Ander: ________

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Playfair L	Hoofd Planning	Wegenautoriteit	Adlimstraat 4	lloyd.playfair@wegenautoriteit.sr	___ Krant ✓ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___________
Zhong	direkteur	Philipson Trading	Van't Hoger-huystraat 35	philipsontrading35@hotmail.com	___ Krant ___ Email ✓ Uitnodigingsbrief ___Flyer ___Ander: ___________
Sastro	operation manager	VSH transport	van 't Hogerhuysstr 9-11	psastro@vshunited.com	___ Krant ✓ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___________
Van Leeuwaarde	Acc exc sales	VSH Shipping	√	mvanleeuwaarde@vshunited.com	(Krant circled) ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___________

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
H. Wijp	Hfd. Verkeer	min. van OWTC		henkwijp@hotmail.com	___ Krant ___ Email _✓_ Uitnodigingsbrief ___Flyer ___Ander: _____
Soehhoe S	~~Marine~~ staf	Marine		Soehhoesiewradj roy@ortlab.ca	___ Krant ___ Email _✓_ Uitnodigingsbrief ___Flyer ___Ander: _____
Maikoe, P	Supervisor Kuldipsingh N.V. →	Kuldipsingh			___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Naz M.	Supervisor OPS	Kuldipsingh		ednazmail@hotmail.com.	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Amado Crotte	Transport Specialist	IDB		amadoc@iadb.org	___ Krant ✓ Email ___ Uitnodigingsbrief ___Flyer ___Ander:
Daniel Pérez	Consultor Transporte	BID		danielpe@iadb.org	___ Krant ✓ Email ___ Uitnodigingsbrief ___Flyer ___Ander:
Jorge Lux	Project Manager	Transconsult		jorge.lux@transconsult.com	___ Krant ✓ Email ___ Uitnodigingsbrief ___Flyer ___Ander:
HEBERT Pirula	environmental scientist	ERM		hebal.pirula@erm.com	___ Krant ✓ Email ___ Uitnodigingsbrief ___Flyer ___Ander: e-mail
Elizabeth BRITO	Environmental Specialist	IDB		ebritoe@iadb.org.	

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Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Abdoelrahiman	District secretaris	Com. Zuid/West	Reyswg Br/106	Ragani_jer @yahoo.com.	___ Krant _X_ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Raghubarsingh	Tech. directeur	RCM NV	Beekhuizenweg 2X	s.raghubarsingh@rcmnv.net	X Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
M. Tapsi	Head HSEQ	N.V. Havenbeheer Suriname	Havenlaan Zuid	aashna.tapsi @havenbeheer.sr	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
E. Redjosentono	EBS	EBS		edwards.redjosentono@ebs.sr	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Naarden Rosanna	Districts-secretaris	commissariaat Para Zuidwest	Leysweg no 106	rosanna naarden @gmail.com	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
DEWOE AWINASH	OWTC	Bekend	Bekend	Bekend	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Martinus Johan		SPASU Ibt engineering consultants	Fayalobistr 18	johan.martinus @uvs.edu	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: SPASU
Noerhuren Ikram	ASD Manager	Havenbeheer	Havenlaan Huid 5	ikramn @hotmail.	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
J Koornaar	Ir	Signecon	Roosmalenstr. 30	jerry_koornaar yahoo.com	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
S. Soman	Dr.	OWTC	Mr Lachmonstr 167	sosaja @yahoo.com	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
M. Danoe	Environmental Officer	NIMOS	J. Lachmonstr. 100 / Hoek Bersabalaan	mdanoe@ nimos.org	___ Krant X Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Amatdawed M.	Logistiek manager	Kuldipsingh	Jacques v. Eerstraat 9	mamatdawed @kuldipsingh.net	___ Krant X Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Ch. Getrouw	Oper. Man	Havenbeheer		charl.getrouw@havenbeheer.sr	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___~~Ander:~~ _____
Changoer S.K	juridische medewerker	KKF (CSBIC)	Prof. w.J.A Kernkampweg no 37	info@SBIC.sr	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
HAUHES. J	COO	HAUHESNV	DIETENSTR 54	JHAUHES @ HAUHES NV .COM.	X Krant X Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
LAU S	Branch Manager	Hakrinbank NV.	Marienburg	sieman.lau@hakrinbank.com	___ Krant X Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Christopher Rosaud.	Transport Specialist	IDB		chrisr@iadb.org	____ Krant ___ Email ____ Uitnodigingsbrief ____Flyer ____Ander: _____
Cesar Falcom.	Regional	IDB			____ Krant ___ Email ____ Uitnodigingsbrief ____Flyer ____Ander: _____
					____ Krant ___ Email ____ Uitnodigingsbrief ____Flyer ____Ander: _____
					____ Krant ___ Email ____ Uitnodigingsbrief ____Flyer ____Ander: _____

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Persaud	adm.	NSI Shipping	Molenpad 2/9	NSI Shipping and trade@gmail.com	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
Marcel Katzbue	G. Manager	IPS / DP World Paribo	Van 't Hogerhuijstr 13-15	marcel_katzbue@dpworld.com	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: _____
Joyi dos Santos-Themen	Consultant (TDS Consulting) Facilitating	Subconsultant to ERM@project		joythemen@gmail.com	___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____
					___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: _____

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Woodly B	Sales Rep.	Surmac N.V	Slangenhoutst 57-065	ben.woodly@ surmaccat.sr	___ Krant ___ Email X Uitnodigingsbrief ___ Flyer ___ Ander: ___
Khudabaks	sales Rep	Surmac	Slangenhoutst	sahik.khudabaks @surmaccat.sr	___ Krant ___ Email X Uitnodigingsbrief ___ Flyer ___ Ander: ___
Ramsukul R	Env. Officer	NIMOS	Mr. J. Lachmonstr. 100.	RRamsukul@ nimos.org	___ Krant ___ Email X Uitnodigingsbrief ___ Flyer ___ Ander: ___
					___ Krant ___ Email ___ Uitnodigingsbrief ___ Flyer ___ Ander: ___

REPUBLIEK SURINAME

Port Improvement Project - Publieke Consultatie

Naam	Functietitel	Bedrijf/ Agentschap	Adres	E-mail	Hoe heeft u van de vergadering gehoord?
Yspol M	Hfd sial onderzoek	LVV advis	Cornelis Jongbow str 50	mario yspola @gmail	___ Krant ___ Email X Uitnodigingsbrief ___Flyer ___Ander: ___
					___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___
					___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___
					___ Krant ___ Email ___ Uitnodigingsbrief ___Flyer ___Ander: ___

Attachment 4 – Invitation Letters

Welzijn

Wel bleken er grote verschillen te zijn tussen het welzijn van mensen die een basisinkomen ontvingen en de mensen die dat niet kregen. "Het welzijn van de ontvangers van het basisinkomen was duidelijk beter dan dat van de controlegroep", aldus de onderzoekers. Zo bleken de ontvangers van het ...

De onderzoekers benadrukken dat het om voorlopige resultaten gaat. Pas als ook de in 2018 verzamelde data verwerkt is, kunnen stevigere conclusies worden getrokken. Echter, het lijkt er op dat het basisinkomen nauwelijks effect heeft op de arbeidspositie, maar wel een groot (positief) effect heeft op het welzijn.-

Scientias.nl

BEKENDMAKING

Publieke consultatie voor het project "Improving Transport Logistics and Competitiveness in Suriname" (Verbetering van de Transport Logistiek en Concurrentiepositie van Suriname)

Binnen het streven van de Regering van de Republiek Suriname ter verhoging van haar concurrentiepositie en productie dient o.a. tot upgrading van de infrastructuur te worden overgegaan. Binnen dit kader dienen er verbeteringen aangebracht te worden aan de infrastructuur en de faciliteiten op het emplacement van **de Dr. Jules Sedney Haven en aan de aangrenzende openbare wegen**. Met de deze verbeteringen wordt beoogd om de logistieke kosten en transporttijd te verlagen, hiermede zorgdragende voor optimalisatie van de faciliteiten voor de handel alsook een verhoogde concurrentiepositie, met name bij de export van landbouwproducten.

De verbeteringen zullen worden geïmplementeerd middels een investeringsproject van het Ministerie van Openbare Werken, Transport en Communicatie (MOWT&C). De Regering van Suriname is voornemens om voor dit project financiering aan te vragen bij de Inter-Amerikaanse Bank voor Ontwikkeling (Inter-American Development Bank – IDB).

Het Ministerie wil bij deze alle actoren uitnodigen, om deel te nemen aan de **Publieke Consultatie Meeting** voor het project.

Middels een korte presentatie, zal het project aan u worden gepresenteerd, vervolgens zal er een discussieronde volgen over de mogelijke milieu- sociale effecten en mitigatie maatregelen. Daarnaast zal informatie over het klachtenregelingsmechanisme dat vastgesteld is voor het project worden verstrekt.

- Datum : **20 Februari 2019**
- Tijd : 18:30 pm tot 21:00 pm (Registratie begint om 18:00 pm)
- Plaats : Courtyard Marriot Hotel
- Adres : Anton Dragtenweg 52-54, Paramaribo.
- Contact: [illegible] of [illegible] en Tel.no.: 464088/465333

Wij moedigen de gemeenschap aan om deze gelegenheid te baat te nemen om geïnformeerd te worden over het project en met de experts van gedachten te wisselen.
Uw aanwezigheid wordt ten zeerste op prijs gesteld.

Beschikbare documenten:

- Milieubeoordeling: IDB webpage: [illegible]
- Gezondheids- en veiligheidsrapport: [illegible]
- MOWTC Facebook: [illegible]
- Samenvatting: [illegible]

...aramaribo, 14 – 2 – 2019

...Directeur van het
...rectoraat Civieltechnische Werken,

S. Soman BSc.

...ISTERIE VAN OPENBARE WERKEN, TRANSPORT EN COMMUNICATIE

BEKENDMAKING

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- Gezondheids- en veiligheidsrapport: https://goo.gl/F8QanL
- MOWTC Facebook: https://goo.gl/3jAE6r
- Samenvatting: https://goo.gl/yrZ7Wv

Paramaribo, 14 - 2 - 2019

De Directeur van het
Directoraat Civieltechnische Weken,

Dhr. S. Soman BSc.

MINISTERIE VAN OPENBARE WERKEN, TRANSPORT EN COMMUNICATIE

MINISTERIE VAN OPENBARE WERKEN, TRANSPORT & COMMUNICATIE
(DIRECTORAAT CIVIELTECHNISCHE WERKEN)
Mr. Jagernath Lachmonstraat no. 167
Paramaribo-Suriname
Tel.464088

Uitnodiging

Publieke consultatie voor het project "Improving Transport Logistics and Competitiveness in Suriname" (Verbetering van de Transport Logistiek en Concurrentiepositie van Suriname)

Binnen het streven van de Regering van de Republiek Suriname ter verhoging van haar concurrentiepositie en productie dient o.a. tot upgrading van de infrastructuur te worden overgegaan. Binnen dit kader dienen er verbeteringen aangebracht te worden aan de infrastructuur en de faciliteiten op het emplacement van de Dr. Jules Sedney Haven en aan de aangrenzende openbare wegen. Met de deze verbeteringen wordt beoogd om de logistieke kosten en transporttijd te verlagen, hiermede zorgdragende voor optimalisatie van de faciliteiten voor de handel alsook een verhoogde concurrentiepositie, met name bij de export van landbouwproducten.

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- Samenvatting: https://goo.gl/yrZ7Wv

Paramaribo, 2019

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Directoraat Civieltechnische Weken,

Dhr S. Soman BSc.

Ministerie van Openbare Werken,Transport en Communicatie.

Inicio

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Publicaciones

Eventos

Te gusta ▾ | Siguiendo ▾ | Compartir | ···

MINISTERIE VAN OPENBARE WERKEN, TRANSPORT & COMMUNICATIE
(DIRECTORAAT CIVIELTECHNISCHE WERKEN)
Mr. Jagernath Lachmonstraat no. 167
Paramaribo-Suriname
Tel.464088

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- Tijd : 18:30 pm tot 21:00 pm (Registratie begint om 18:00 pm)

Attachment 5 – Stakeholder List

Stakeholder	Rationale for Inclusion
DC Paramaribo Nort-East (Incl. resorts of Centrum and Beekhuizen)	The DC is an important stakeholder in and of itself, but is also important to assist in making contact with households/neighborhoods in the vicinity, as well as religious organizations and schools.
DC Paramaribo South-West (Incl. resort Livorno)	The DC is an important stakeholder in and of itself, but is also important to assist in making contact with households/neighborhoods in the vicinity, as well as religious organizations and schools.
VSB (Vereniging Surinaams Bedrijfsleven)	To assist in making contact with small businesses located along the road.
KKF (Chamber of Commerce)	To assist in making contact with small businesses located along the road.
ASFA (Suriname Association of Manufacturers)	To assist in making contact with small businesses located along the road.
Surinaamsche Waterleiding Maatschappij (SWM - Public water company)	Ensure proper coordination to ensure excavation work does not disturb water infrastructure
Energiebedrijven Suriname (EBS - Public electricty company)	Proper coordination to ensure excavation work does not disturb electricity infrastructure Substation located at Van 't Hogerhuysstraat and Industrieweg Zuid
TeleSur	Proper coordination to ensure excavation work does not disturb telecoms infrastructure Also have an office building on Van 't Hogerhuysstraat
VMS - Association of Health Professionals Suriname	To assist in making contact with laboratory, pharmacy services located along road.
Police Station	There is a station inside the port property. Ensure emergency response is not affected during construction activities.
N.V. Havenbeer	Self-explanatory
NIMOS	Regulatory authority for environmental
Ministry of Education	May be able to assist in making contact with schools in affected neighborhoods
Ministry of Natural Resources	Ensure proper coordination with respect to water and utilities
Ministry of Regional Development	Ensure proper coordination with respect to land use planning and development
Ministry of Trade and Industry	Ensure alignment with Ministry priorities
Other Ministries	Consider informing as a courtesy/to identify other potential areas of overlapping interest and priority
Large companies at/adjacent to port complex: IAMGOLD, Kosmos Energy, VSH United, Integra Marine, TeleSur	Inform and coordinate to minimize disturbance to their operations during construction

Surmac	Large facility on Van 't Hogerhuysstraat. Inform and coordinate to minimize disturbance to their operations during construction
IBM	Office along Van 't Hogerhuysstraat, across street from port facility
Haukes Construction	Currently building a bridge over the Saramacca canal; liaise to ensure that Project traffic will not unduly impact their project deliveries.
Grassalco	Operations near a segment of Industrieweg Zuid that will be improved. Inform and ensure coordination to avoid traffic disturbance that could affect operations.
DC Sipaliwini	Office is located on Zwartehovenbrugstraat before it becomes Van 't Hogerhuysstraat (a few blocks north of where the improvements start). Consider informing as a courtesy if major traffic disruptions are expected.
Khazana Restaurant/Nightclub	Restaurant with upstairs nightclub adjacent to port site. Especially busy on Thursday nights with parking all over streets. Coordinate to avoid undue disruption.
Religious groups -EBG, Suriname Islamic Assocation, Hindu organizations	Several churches, mosques and mandirs are present along or adjacent to affected roads - ensure coordination to minimize disturbance
Taxi companies	Operate along affected roads and there are some stands along affected roads - ensure coordination to minimize disturbance
Bus service	Operate along affected roads - ensure coordination to minimize disturbance
Gas stations	Present along affected roads - ensure coordination to minimize disturbance
Schools	Present along affected roads - ensure coordination to minimize disturbance
Lab service, pharmacies	Present along affected roads - ensure coordination to minimize disturbance
Various shipping companies and other small-medium businesses and industries on Industrieweg Zuid	A segment of Industrieweg Zuid, along with adjacent segments of Van 't Hogerhuysstraat and Kankawaweg will be improved - ensure coordination to minimize disturbance during construction
Small businesses - restaurants, supermarkets, butcher shops etc.	Present along affected roads - ensure coordination to minimize disturbance
Banks - DSB, Hakrinbank, Republic Bank	Branch or ATM present along affected roads
Gas stations - Sol, Shell, GO2	Several stations located along the segments of Van 't Hogerhuysstraat that will be improved. Coordinate to avoid disruption/maintain access during construction.
Kankantrie Market	Market along a segment of Willem Campagnestraat that will be improved as part of the Project. Coordinate to maintain access or otherwise avoid/minimize disruption during construction.

Attachment 6 – Presentation

REPUBLIEK SURINAME

Verbetering van de Transport, Logistieke en Concurrentiepositie van Suriname

Februari 2019

Inhoud

Doel van de publieke consultatie

Project introductie video

Technische analyse

Milieu en sociale aspecten van het project

Vragen en antwoorden

Doel van de Publieke Consultatie

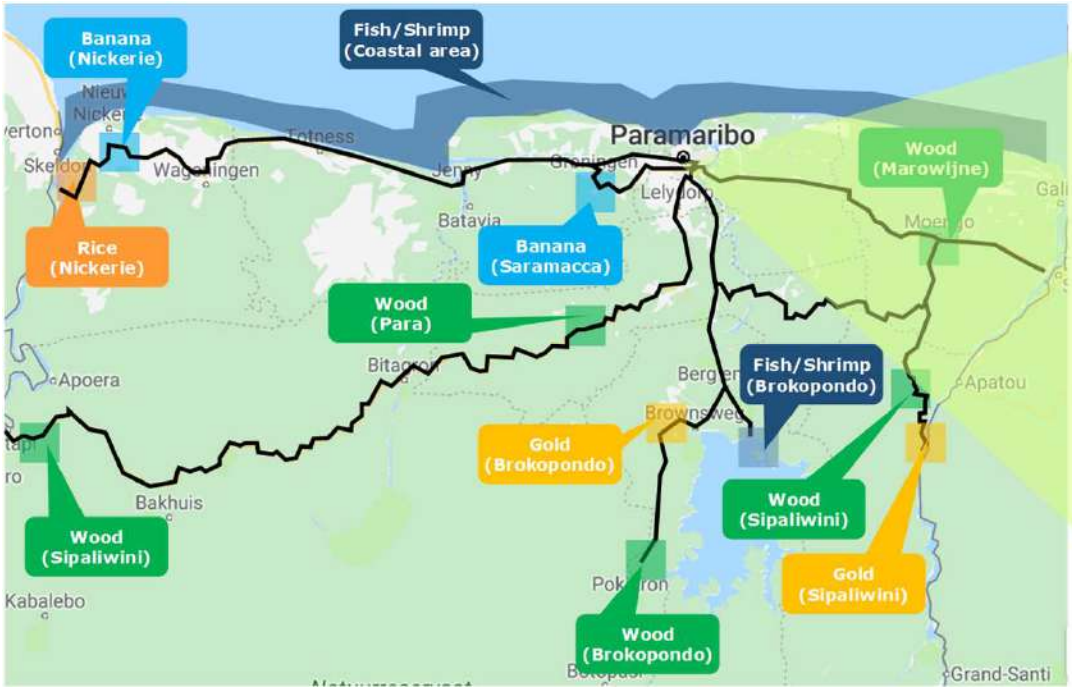
Het doel van de publieke consultatie van vandaag is om:

- De voorgestelde oplossingen voor het verminderen van verkeersopstoppingen te presenteren,
- te praten over de mogelijke impact voor alle stakeholders in de stad Paramaribo,
- methodes te ontwerpen om eventuele negatieve effecten van het project te elimineren.

Technische analyse

De focus van het project is verbetering van transport en logistiek middels het upgraden van wegen en toegang van / naar de Dr. Jules Sedney Terminal

Project begrenzing: Dr. Jules Sedney Terminal en toegangswegen



Bron: Technische analyse Transconsult, Deloitte

Het geanalyseerde netwerk omvatte de volgende wegen

Bron: Technische analyse Transconsult, Deloitte

Relevantie van het project:

- **Dr. Jules Sedney Terminal is een van Suriname's belangrijkste logistieke knooppunten voor het internationaal handelsverkeer**

  - **De haven handelt 90% (in volume) van alle overzeese handel af,** met uitzondering van aardolie.
  - **Bijna alle landbouwexporten in containers, gaan via deze haven.** Landbouw vertegenwoordigt 10% van Suriname's BNP.
  - **Suriname's toekomstige ontwikkelingen voor internationale handel zijn verbonden met de Dr. Jules Sedney Terminal,** als hoofdverbinding met de rest van de wereld.

- Om connectiviteit met de haven te verbeteren, **moeten o.a.:**

  de toegangswegen worden aangepakt aangezien er verkeersopstoppingen zijn aan de Van 't Hogerhuysstraat

  - Personen transport en vrachtransport maken tegelijkertijd gebruik van de weg. Meer dan 5.000 auto's en 13.000 gebruikers van het openbaar vervoer zijn genoteerd tijdens piekuren.
  - **Toegangswegen moeten verboden worden met alle relevante productie en consumptiegebieden in de andere districten van Suriname.**

De groei van de stad en van activiteiten bij de haven creëren oponthoud en operationele problemen in het wegennetwerk en bij de toegang tot de haven

Van ‘t Hogerhuysstraat bij piek uur

Logistieke bottlenecks van het verkeer

- **Slechte kwaliteit van de wegen infrastructuur** vanwege de **versnelde verslechtering** door zwaar verkeer (>50.000 voertuigen/dag)
- Weginrichting levert op dit moment lage “Levels of Service” (LOS), wat **volle vrachtcapaciteit beperkt**
- **Hoge transport kosten** USD $500-650 per 400 km
- **Illegaal parkeren van vrachtwagens** buiten het havengebied en in urbane gebieden
- De Haven operatie heeft tot gevolg dat trucks parkeren op sommige van de dichtbij zijnde wegen zoals Havenlaan West, wat zorgt voor **safety issues voor voetgangers, (brom)fietsers en risico’s creëert voor zowel mensen als vracht.**
- **Dagelijks maken meer dan 50.000 auto’s per dag en 5.000 auto’s** en 13.000 gebruikers van het openbaar vervoer zijn genoteerd tijdens piekuren.

Personen transport en vrachtransport maken tegelijkertijd gebruik van het kruispunt die de toegang biedt tot de haven.

Bron: Technische analyse Transconsult, Deloitte

Verkeerstellingen zijn uitgevoerd in het interventie gebied en aangevuld met drone flights over het wegennetwerk.

Geanalyseerde wegen (WADT 24-uur telling)

Bron: Technisch bezoek | Google maps

Pneumatische tellers

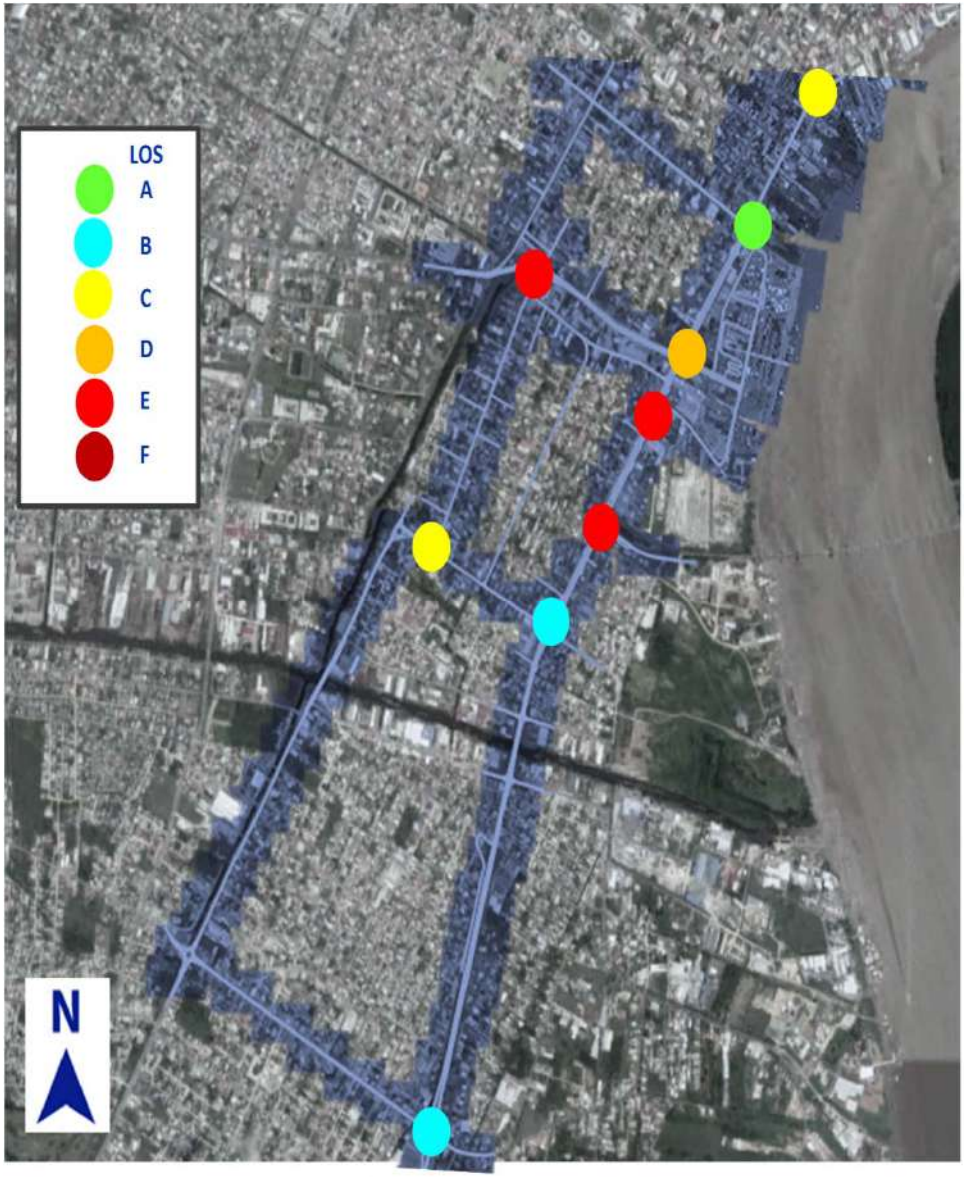
Handmatige tellingen

Andere metingen

- Rijtijden middels GPS
- Fysieke inspecties van wegen

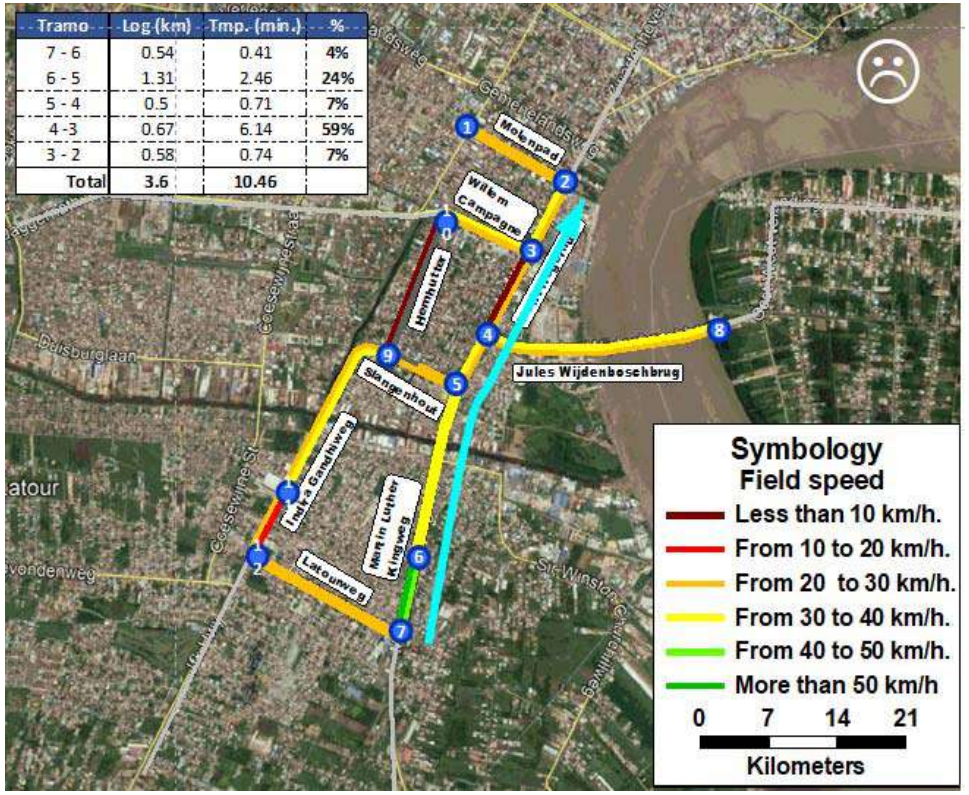
Deze informatie is gebruikt om de “level of service” van kruispunten en de feitelijke doorstroom snelheid van het netwerk, te analyseren.

Service level op kruispunten



Bron: Technisch bezoek| Google maps

Snelheid tijdens piek uren (km / uur)



Grid

- Beeldopnames voor gedetailleerde microsimulatie
- Voertuigtype en richtings beeldopname
- Gemiddelde snelheid bij intersecties

Microsimulaties zijn gemodelleerd om de huidige en de voorgestelde wegsituaties te beoordelen

TER ILLUSTRATIE

Huidige situatie

Met voorgestelde interventies

Hoofd resultaten van het model

- Snelheid per type (auto's, trucks, publiek transport, en motorfietsen)
- Vertragingen en file's op kruispunt voor ieder soort beweging (WADT)
- Gedragsanalyse van de voorgestelde interventies
- Verkeers groeieffect voor beide scenario's.

Bron: Technisch bezoek voor metingen, Transconsult, 2018

Aanbevolen interventies voor het project

Bron: Technische analyse Transconsult

Geidentificeerde interventies ter verbetering van de verkeersdoorstroming

Samenvatting van voorgestelde interventies in het weg- en haven infrastructuur

Bron: Google Earth | Transconsult

A. **Expansie van Martin Luther King en Van ‘t Hogerhuysstraat** naar drie rijstroken in elke richting

B. **Herbestrating en verbetering van meer dan 7km aan wegen**

C. **Constructie van een nieuwe brug** over het Saramacca Kanaal dat de bestaande zal vervangen. De nieuwe brug zal 3 rijbanen hebben voor elke richting en zal capaciteit hebben voor een doorstroom van zware voertuigen.

D. Implementatie van **verkeersafhankelijke verkeerslichten en een Verkeers Controle Center** dat d.m.v “groene golf” de doorstroming zal helpen bevorderen en transittijden verkorten.

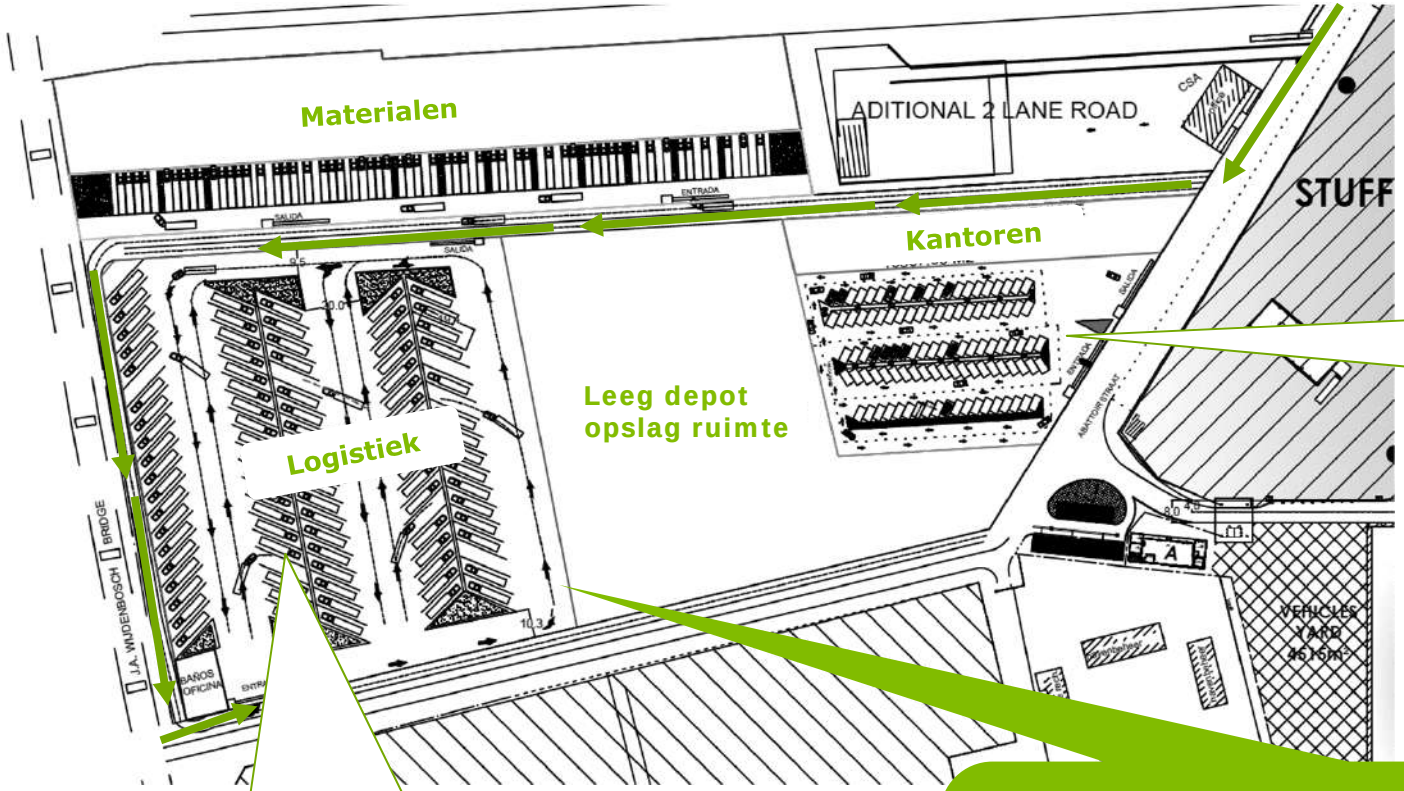
E. **Logistic Center** naast de ingang van de Haven.

Andere interventies

- **Modernisering van fiets- en voetgangerspaden** ter verbetering van de veiligheid van de gebruikers
- **Modernisering van bushaltes** voor openbaar vervoer dat gebruik maakt van de Martin Luther King weg en de Van ‘t Hogerhuysstraat.

Een logistiek centrum zal worden gecreëerd dat de efficiëntie en veiligheid van de haven operaties zal verbeteren

Layout van een logistiek Centrum en ondersteunende delen



Parkeerplaats voor personen voertuigen

- Ongeveer 40 parkeerplekken

Logistiek Centrum

- Ongeveer 60 vaste **parkeerplekken voor** 40 ft container trucks. Parkeerinrichting van onder 45°
- ***Een goede doorstroming binnen het logistiek centrum faciliteert de haven operaties***

Het project omvat het creeren van een **Logistiek centrum** voor het accomoderen van trucks en de implementatie van een **Haven Community Systeem** dat de verschillende processen op de haven integreert in een één systeem

Bron: Deloitte

De constructie van een Nieuwe Brug over het Saramacca Kanaal met capaciteit voor zwaar verkeer (HUIDIGE SITUATIE)

Bron: Transconsult

De constructie van een Nieuwe Brug over het Saramacca Kanaal met capaciteit voor zwaar verkeer (VOORGESTELDE SITUATIE)

Bron: Transconsult

Verschillende infrastructurele verbeteringen aan het wegennetwerk (HUIDIGE SITUATIE)

Bron: Transconsult

Verschillende infrastructurele verbeteringen aan het wegennetwerk (VOORGESTELDE SITUATIE)

Bron: Transconsult

Voorgestelde interventies voor het project

Bron: Transconsult

Voorgestelde interventies voor het project

Bron: Transconsult

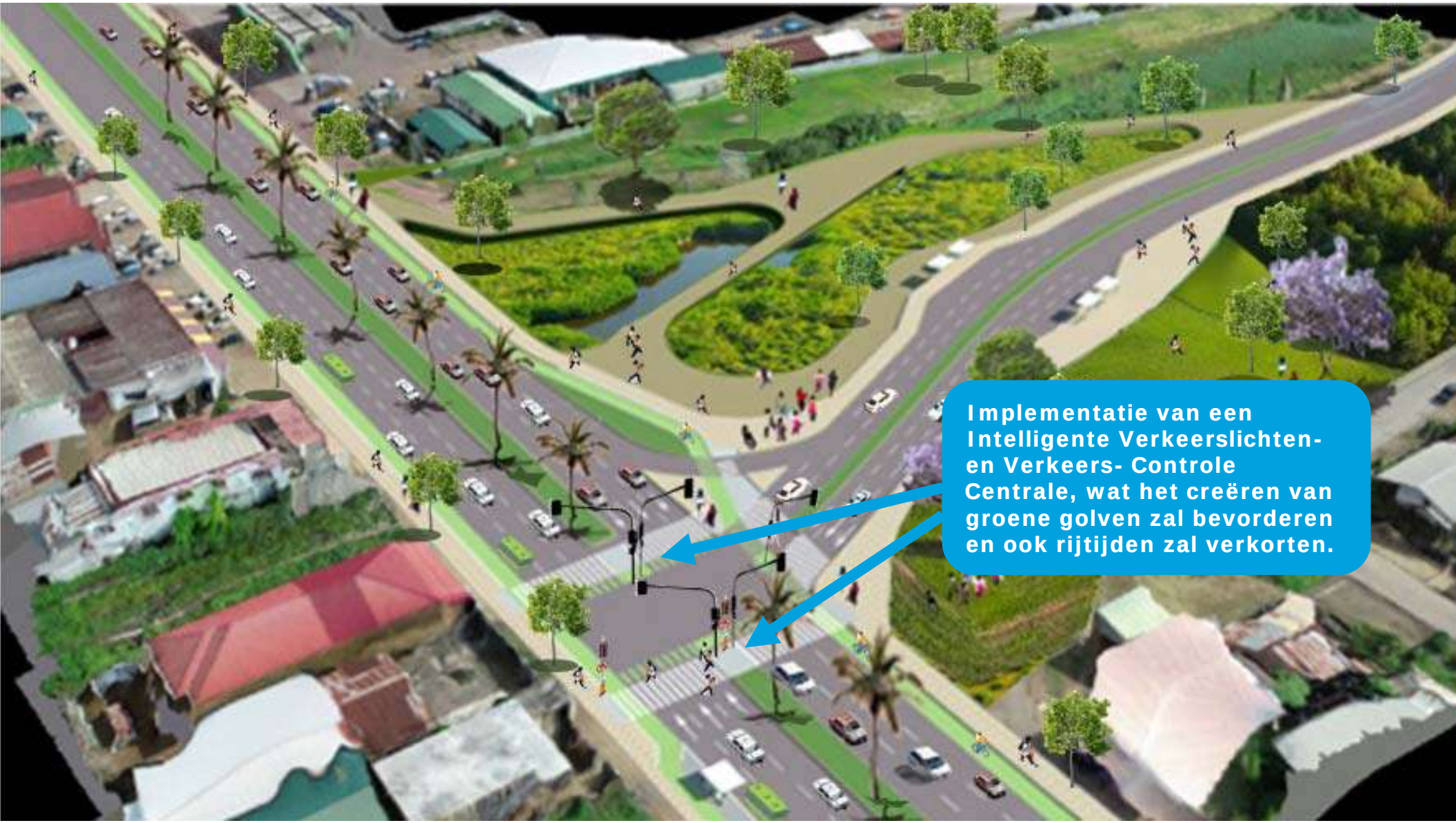
Voorgestelde interventies voor het project

Bron: Transconsult

Voorgestelde inverventies voor het project.

Bron: Transconsult

Voorgestelde interventies voor het project



Bron: Transconsult

Voorgestelde interventies voor het project

Bron: Transconsult

De interventies zullen transittijden verkorten, brandstof helpen besparen, en kosten verminderen voor de steeds duurder wordende voertuigen

Grootste voordelen van de voorgestelde interventies

Tijdsbesparing

De interventies zullen **gemiddelde snelheid verhogen en de reistijd verkorten** voor gebruikers

Brandstofbesparing

De **verhoogde gemiddelde snelheid zal brandstofconsumptie verminderen** voor alle weggebruikers.

Besparing in onderhoudskosten

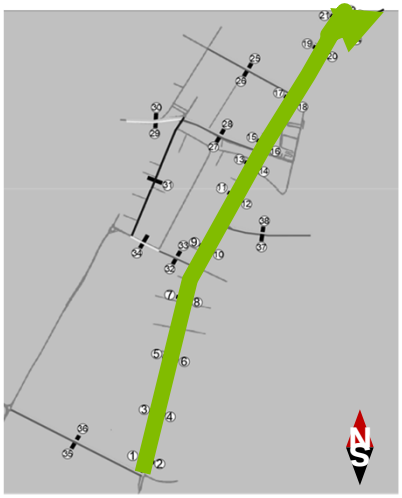
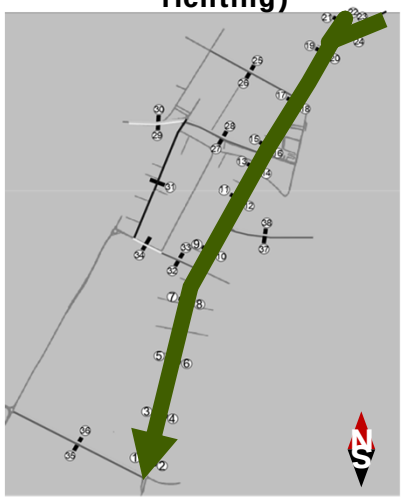
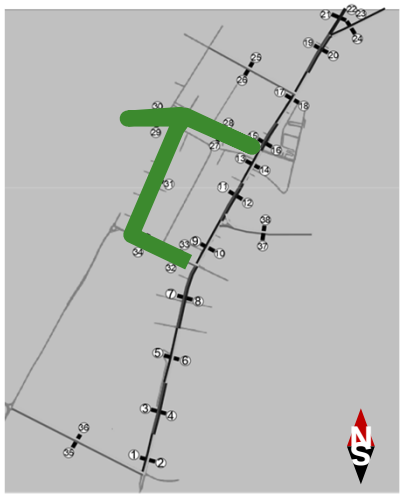
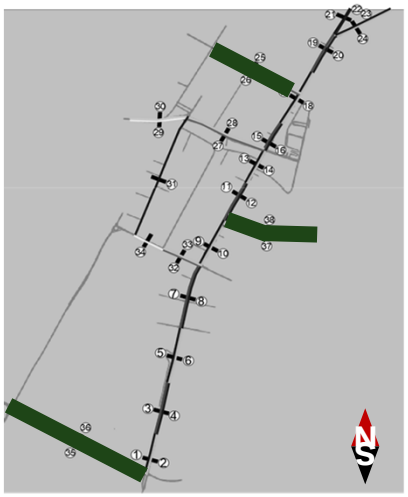
Gebruikers zullen **andere besparingen krijgen met betrekking tot voertuig onkosten** zoals:smeerolie, banden, onderhoud en reparatie, en afschrijvingskosten.

Deze voordelen zullen over tijd toenemen met de te verwachten toename van verkeer in het wegennetwerk.

Bron: Transconsult | Deloitte

Gemiddeld zullen deze interventies een besparing van 26 % in reistijd en 41 % in brandstofkosten tot gevolg hebben

Brandstof en reistijd besparingen per sectie binnen het interventie gebied

Van ‘t Hogerhuys-straat (vanuit noordelijke richting)	Van ‘t Hogerhuys-straat (vanuit zuidelijke richting)	Willem Campagne-straat Circuit	Andere toegangswegen
			
29 %	17 %	29 %	36 %
47 %	30 %	46 %	56 %

Bron: Transconsult | Deloitte

De sociaal- economische voordelen kunnen gemeten worden voor ieder type weggebruiker

Sociale voordelen per type weggebruiker

De voorgestelde interventies zullen iedere **auto gebruiker** van de route als positief effect opleveren:

- 31 uren jaarlijks → **Vier werkdagen**
- **$53 USD** jaarlijks aan brandstof

De voorgestelde interventies zullen het **publiek transport** als positief effect leveren:

- 155 uren jaarlijks → **Twintig werkdagen**
- **$102 USD** jaarlijks aan brandstof

De voorgestelde interventies zullen iedere **truck** als positief effect leveren:

- 31 uren jaarlijks → **Vier werkdagen**
- **$110 USD** jaarlijks ($48 USD aan brandstof en $62 USD vanwege afstand verkorting langs routes)
- **Dubbele inzet van de truck vloot** door 3 uren bespaard aan wachttijd op de haven per round trip

De voorgestelde interventies zullen **motorfiets gebruikers** als positief effect leveren

- 31 uren jaarlijks → **Vier werkdagen**
- **$37 USD** per jaar aan brandstof

Andere voordelen

- Groenstroken
- Verhoogde veiligheid en minder ongelukken
- Verhoogde productiviteit
- Bus halte standaardisering
- Speciale voetpaden

Bron: Transconsult | Deloitte

De voorgestelte interventies zullen de verkeerscondities helpen verbeteren en de groei van de haven operaties voor de komende jaren bevorderen

Conclusies

- Het verkeer zoals het nu is veroorzaakt meerdere vertragingen voor gebruikers in het wegennetwerk, wat een laag service level heeft. **Als hier niets aan gedaan wordt zal dit verergeren gedurende de komende 10 jaren, en wel 70% erger worden**.
- Sociale voordelen van de voorgestelde interventies:
    - **Een besparing van 1.4 miljoen uren voor bestuurders en 3 miljoen liters brandstof** in het eerste operationele jaar.
    - **Verhoogde efficientie van transport van en naar Dr. Jules Sedney terminal** en de daarmee gepaardgaande **verlaging van transport kosten** met als gevolg een **verbetering van de concurrentiepositie van Suriname**
    - **Verhoogde productiviteit in haven operaties** vanwege het opzetten van een Logistiek centrum en Haven Community systeem.
- Bovendien zullen andere voordelen behaald worden zoals **groene sectoren**, standaardisering en verbetering van de **bushaltes voor openbaar vervoer, voetgangers-en fietspaden, verbetering van de verkeersveiligheid** en **betere kwaliteit van de infrastructuu**r.

Bron: Transconsult | Deloitte

De interventies zullen transittijden helpen verkorten, brandstof bezuinigen, en voertuigkosten verminderen

Voornaamste voordelen van de voorgestelde interventies

Tijdsbesparing

De interventies zullen transittijd verkorten voor gebruikers langs de “corridor” / route.

- De max besparingen zullen gehaald worden tijdens piek uur

Brandstofbesparing

De verhoging van gemiddelde snelheid zal brandstof verbruik voor alle gebruikers verminderen.

Besparing Onderhoudskosten

Gebruikers zullen besparingen ervaren in onderhoudskosten zoals: smeerolie, banden, onderhoud en reparatie, en afschrijvingskosten

Uitgaande van een te verwachten groei in het verkeer, zullen voordelen groter worden in tijd

Bron: Deloitte analysis.

De uitgevoerde analyse en voorgestelde interventies stellen ons in staat om de volgende conclusies te trekken:

Conclusies

- **De huidige situatie in het voorgestelde interventie gebied is erg kritiek**
  - Momenteel vertonen de geanalyseerde wegen verkeerspstopping met **reistijden van gemiddeld meer dan 11 minuten in het interventie gebied**
  - **Als het project niet wordt geïmplementeerd,** dan **kunnen reistijden 19 minuten langer worden**
  - Sociale voordelen van de voorgestelde interventies zullen **1.4 miljoen uren besparen** voor bestuurders en **3 miljoen liter brandstof** in het eerste operationele jaar
  - **Verhoogde concurrentiepositie van de logistieke keten**, met verlaagde kosten en verhoogd gebruik van het logistiek centrum op de haven.
  - **Verhoogde productiviteit in havenoperaties** vanwege de Port Community System en geautomatiseerde toegang
- Bovendien zullen andere voordelen worden behaald zoals **groene gebieden**, **standaardisering en verbetering** van bushaltes voor **openbaar vervoer,** speciale **voetganger-en fietspaden,** verbeterde **verkeersveiligheid,** en betere **kwaliteit van de infrastructuur** van de corridor**.**

Milieu en sociale aspecten van het project

Milieu en sociale aspecten van het project

1. Milieu Effecten Analyse (MEA) Proces
2. Impacts, Mitigatie en Beheersing van Milieu en Sociale impacts

1. Milieu Effecten Analyse Proces

Actoren bij de Milieu Effecten Analyse

Min OWT&C – Verantwoordelijk voor project uitvoering in samenwerking met de Haven Authoriteit (Havenbeheer)

IDB – Project financierder

ERM – Onafhankelijk extern bedrijf belast met de milieu effecten analyse

Het Publiek/ De samenleving – Participeert in openbare consultaties en andere gelegenheden om feedback te geven over het project

Doelen van de Milieu Effecten Analyse

- *Naleven van de IDB beleidsvereisten en in lijn met internationale standarden*
- *Vastleggen van huidige milieu en sociale omstandigheden*
- *Voorspellen van toekomstige omstandigheden door het voorgestelde project*
- *Aanbevelen van maatregelen voor het maximaliseren van positieve en het minimaliseren van negatieve effecten*

Proces Milieu Effecten Analyse (MEA)

Betrokkenheid van Belanghebbenden

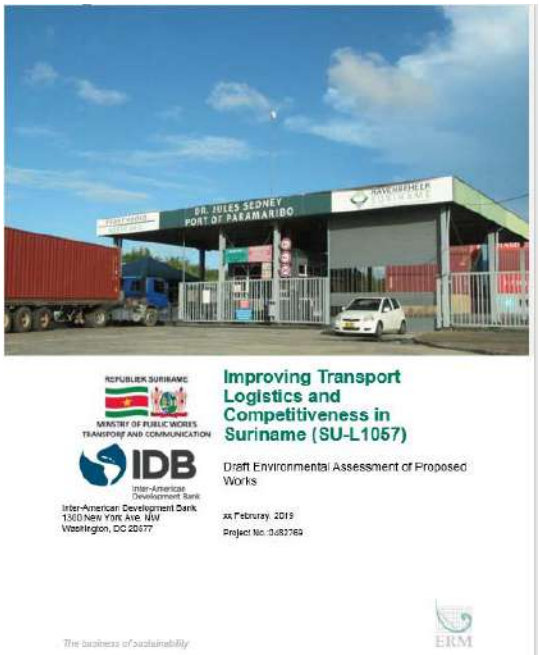
- Vragen om feedback van belanghebbenden over het project en het proces van de MEA op kern momenten
- Verzamelen van locale kennis ter overweging om te incorporeren in het project

- Vergaderingen met belanghebbenden om feedback te vragen

- Uitvoeren van milieu , biologische en social-economische studies
- Indetificeren en analyseren van potentiële impacts
- Concipieren en indienen van concept Milieu effecten analyse en milieu- en sociaalbeheersplan ESMP bij de IDB

- Beleggen van openbare vergaderingen om de resultaten van de Milieu Effecten Analyse uit te leggen en feedback te vragen aan de belanghebbenden
- Aanpassen van Milieu Effecten Analyse aan de hand van verkregen feedback

Resultaten Milieu Effecten Analyse



- Concept Milieu Effecten Analyse
  - Impacts
  - Mitigerende Maatregelen
  - Beheersplannen

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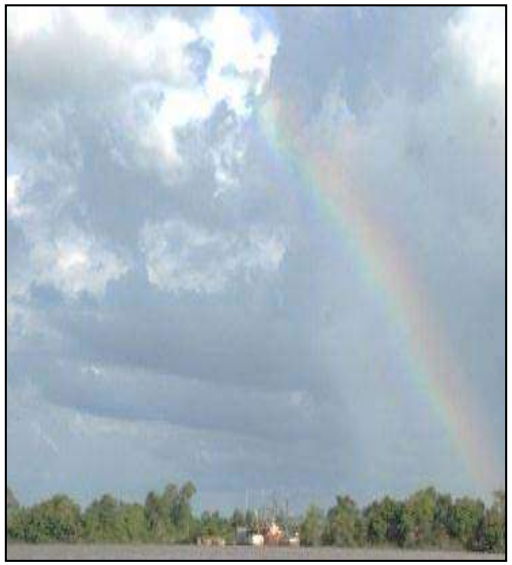
- Beoordelingsfase Milieu Effecten Analyse
  - Feedback van de voornaamste stakeholders en het publiek in het algemeen

2. Impacts, Mitigerende Mitigatie en Beheersing van Milieu en Sociale impacts

Milieu aspecten in de Milieu Effecten Analyse



Luchtkwaliteit en klimaat

Geluidsoverlast

Natuurlijke gevaren en risico's

Verkeer

Biodiversiteit

Sociale Aspecten in de Milieu Effecten Analyse

Levensonderhoud

Gemeenschaps Gezondheid en Veiligheid

Milieu effecten en Mitigatie

- Fysiek en Biologisch Milieu
  - Luchtkwaliteit en geluidsoverlast
  - Natuurrampen en risico’s
  - Verkeer
  - Biodiversiteit – flora en fauna inclusief aquatisch habitat

Luchtkwaliteit en Geluid – Impacts en Mitigate

Luchtkwaliteit

- ***Mogelijke Impact***
  - Mogelijke toename van opwaaiende stofdeeltjes
  - Verbrandingsemissies
- ***Mitigatie***
  - Onderhoud van zwaarmaterieel
  - Uitvoeren van maatregelen stof
  - Vermijden van onnodig stationnair draaien van voertuigen
  - Bedekken van de laadbak van trucks tegen stof

Geluidsoverlast

- **Mogelijke Impacts**
  - Mogelijke toename van lawaai door de dag en gedurende de nacht
- **Mitigatie**
  - Inplannen van constructie werkzaamheden gedurende de dag en op tijdstippen waarop er minder verkeer is
  - Vermijden van onnodig stationnair draaien van voertuigen
  - Implementatie van een constructie beheersplan

Natuurrampen Impacts en Mitigatie

- **Potentiële Impacts**
  - Risico voor overstromingen vanwege de locatie van het Project
- **Mitigatie**
  - Aanleggen van een goed werkend drainage systeem langs de gerehabiliteerde wegen

Verkeer -- Impacts en Mitigatie

- **Mogelijke Impact**
  - Toegenomen verkeersopstopping gedurende de bouw
  - Verminderde voetgangers - en verkeersveiligheid gedurende de bouw
  - Beperkte toegang tot woonwijken, handelszaken en instellingen
- **Mitigatie**
  - Implementatie van verkeers- en voetgangersbeheersplan met richtlijnen en procedures om overlast en risico's voor het publiek tot een minimum te beperken
  - Introductie van alternatieve routes voor openbaar vervoer

Biodiversiteit Impacts en Mitigatie

- **Mogelijke Impacts**
  - Verwijdering van vegetatie
  - Toename van afvloeiing van oppervlakte water
  - Degradatie van aquatisch habitat
- **Mitigatie**
  - Minimaliseren van tijdelijke en permanente effecten van bouwwerkzaamheden
  - Implementeren van erosie/sediment controle en oliemorspreventieplannen
  - Minimaliseren van effecten op oever gebieden

Sociale Impacts en Mitigatie

- Sociaal-Economische hulpbronnen
  - Levensonderhoud
  - Gemeenschap Gezondheid en Veiligheid

Levensonderhoud Impacts

- **Mogelijke impacts**
  - Lager inkomen bij businesses (e.g., pompstations en banken dichtbij de haven) vanwege tijdelijke sluiting of verhuizing, toegangsbeperking, (e.g., police station), of belemmering van bezoekers tijdens constructiewerkzaamheden.

Kankantri Market

Bestaansmiddelen Mitigatie

- **Mitigatie**
  - Gefaseerde constructie werkzaamheden om tijdelijke sluiting of verhuizing te minimaliseren
  - Creëren van alternatieve ingangen, looppaden en parkeer ruimtes
  - Implementeren van een Verkeers en Voetgangers beheersplan, Compensatie plan voor levensonderhoud, een Stakeholder Engagement Plan en een klachten regeling
  - Aanbieden van kansen voor locale werkgelegenheid en aanbestedingen

Gemeenschap Gezondheid en Veiligheid – Impacts en Maatregelen

- **Mogelijke Impact**
  - Effecten op de volksgezondheid door lucht- en geluidsemissies van projecten
  - Risico's voor de openbare veiligheid vanwege projectuitrusting en zwaar constructiematerieel en machines
  - Verhoogde kans op ziekteoverdracht door muskieten

- **Mitigatie**
  - Concipieren en uitvoeren van een een Constructie gezondheids en veiligheidsplan
  - Handhaven van goede zorg voor een nette omgeving in en rond het werkgebied, inclusief maatregelen om potentiële muskieten broedplaatsen te elimineren
  - Continue *outreach* naar belanghebbenden, o.a. naar kwetsbare groepen inclusief scholen, om hen te informeren over de duur en de aard van projectactiviteiten en de bijbehorende veiligheidsrisico's
  - Opzetten van een klachten regeling

Vragen of Opmerkingen?

Toegang tot het Milieu Effecten Analyse rapport

Gedrukte exemplaren van de Milieu Effecten Analyse (MEA) zijn beschikbaar voor inzage ten kantore van het Ministerie van Openbare Werken, Transport en Communicatie

Een electronische versie van de MEA kan gedownload worden via: https://goo.gl/7A5phS en https://goo.gl/F8QanL

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Vragen en Antwoorden

Additionele informatie

Ministerie van Openbare Werken

Transport en Communicatie

Voor opmerkingen over de MEA:

Telefoon: 464088 of 465333

Email:secretariaat_ctw@publicworks.gov.sr

IDB

Voor vragen en opmerkingen over het project:

Telefoon: 521220

Email: edgarz@iadb.org

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Vragen en Antwoorden