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| Inter-American Development Bank  1300 New York Ave, NW Washington, DC 20577 | Improvement of Transport Logistics - Dr. Jules Sedney Port Expansion Project  Draft Environmental, Social, and Health & Safety Review of Existing Port Operations  21 December 2018  Project No.: 0482769 |

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| Document details | . |
| Document title | Improvement of Transport Logistics - Dr. Jules Sedney Port Expansion Project |
| Document subtitle | Draft Environmental, Social, and Health & Safety Review of Existing Port Operations |
| Project No. | 0482769 |
| Date | 21 December 2018 |
| Version | 1.0 |
| Author | Kim McGrath, Herbert Pirela, Susana Arispe, Ricardo Calvo |
| Client Name | Inter-American Development Bank |

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| --- | --- | --- | --- | --- | --- | --- |
| Document history | | | | | | |
|  |  |  |  | ERM approval to issue | |  |
| Version | Revision | Author | Reviewed by | Name | Date | Comments |
| Draft | 00 | Name | Name | Name | 00.00.0000 | Text |
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Signature Page

**Improvement of Transport Logistics - Dr. Jules Sedney Port Expansion Project**

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

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CONTENTS

[1. INTRODUCTION 1](#_Toc533172911)

[1.1 Background 1](#_Toc533172912)

[1.1.1 NV Havenbeheer Suriname 1](#_Toc533172913)

[1.1.2 VSH Transport 1](#_Toc533172914)

[1.1.3 Integra Port Services/DP World Paramaribo 3](#_Toc533172915)

[1.2 Environmental, Social, and Health & Safety Review Objectives 3](#_Toc533172916)

[2. LEGAL FRAMEWORK 5](#_Toc533172917)

[2.1 National Legislation 5](#_Toc533172918)

[2.2 International Treaties and Conventions 6](#_Toc533172919)

[2.3 Other Applicable Good International Industry Practice/Guidance 9](#_Toc533172920)

[3. ENVIRONMENTAL, SOCIAL, AND HEALTH & SAFETY review MEthodology 13](#_Toc533172921)

[3.1 Environmental, Social, and Health & Safety Review Steps 13](#_Toc533172922)

[4. ENVIRONMENTAL, SOCIAL, AND HEALTH & SAFETY review FINDINGS and recommendations 15](#_Toc533172923)

[4.1 Environmental and Social Management Review 15](#_Toc533172924)

[4.2 Health and Safety Management Review 22](#_Toc533172925)

[4.3 Compliance with Applicable Regulations 26](#_Toc533172926)

[5. Conclusions and Recommendations 34](#_Toc533172927)

[6. References Cited and Consulted 38](#_Toc533172928)

List of Tables

[Table 2‑1: Overview of the National Legal Framework for Environmental, Social, and Health & Safety Management in Suriname 5](#_Toc533172929)

[Table 2‑2: Applicable International Environmental, Social, and Health & Safety issues Treaties and Conventions Ratified by Suriname 6](#_Toc533172930)

[Table 2‑3: General and Port, Harbor, and Terminal Specific IFC EHS Guidelines 9](#_Toc533172931)

[Table 4‑1: Summary of the Results of the ESMS Compliance Review 15](#_Toc533172932)

[Table 4‑2: Summary of the Results of the HSMS Compliance Review 22](#_Toc533172933)

[Table 4‑3 Findings Based on Ratified Surinamese International Treaties and Conventions and General and Port Specific IFC EHS Guidelines 26](#_Toc533172934)

List of Figures

[Figure 1‑1: Layout of the Existing Port Facilities 2](#_Toc533172935)

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 |

# INTRODUCTION

## 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.

### 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.

### 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 (m2) terminal area, with 1,600 m2 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.

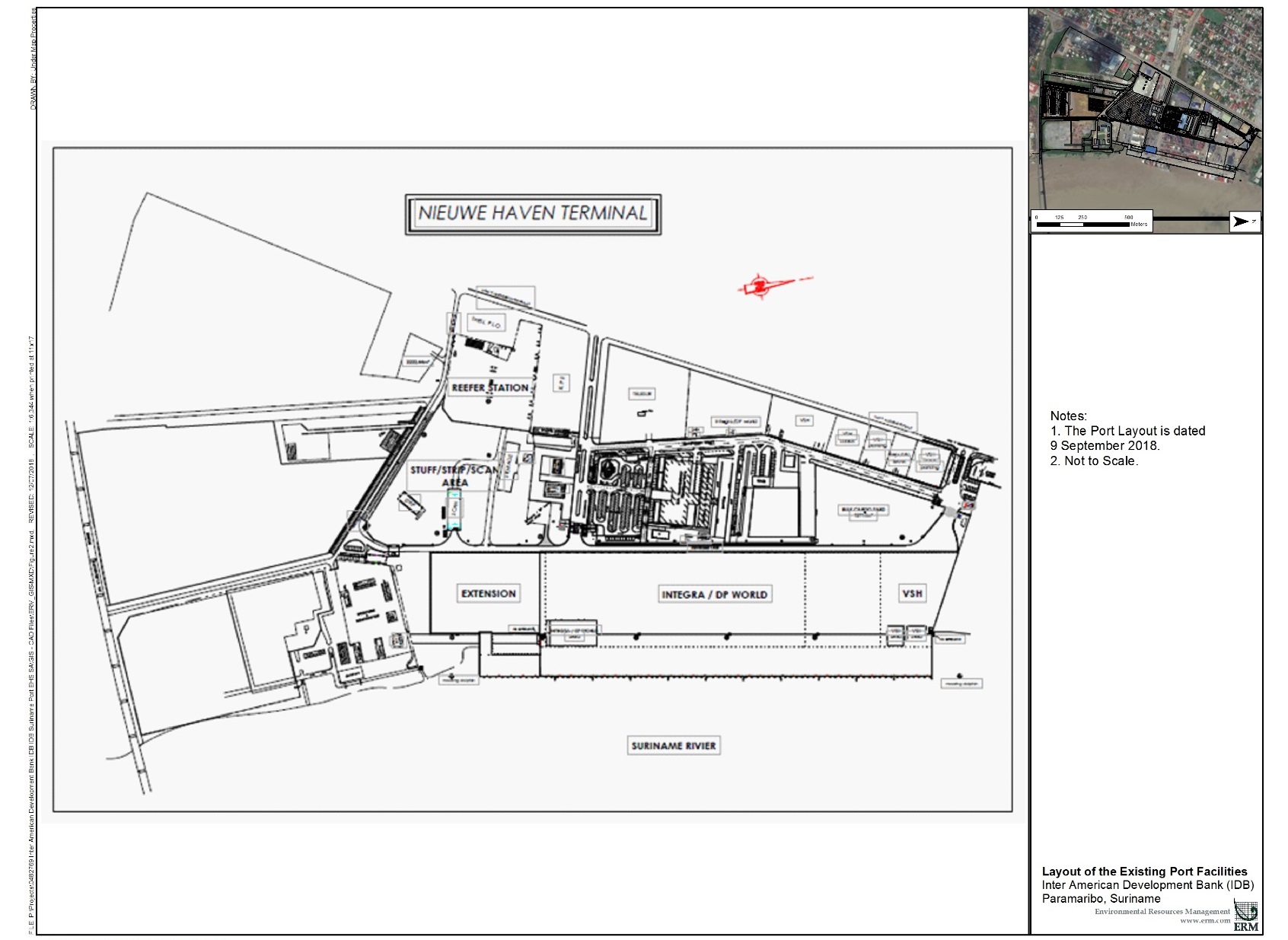


Figure 1‑1: Layout of the Existing Port Facilities

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

* ISO 9001:2008
* ISO 14001:2004

### 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)[[3]](#footnote-4):

* ISO 9001:2008
* ISO 14001:2004
* ISO 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.

## 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. 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:

* 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.

# 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.

## 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. |
| **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).

## 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. |
| **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.[[4]](#footnote-5) | Ratified by Suriname in 2011. |
| **Water/Maritime**[[5]](#footnote-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.[[6]](#footnote-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).[[7]](#footnote-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.[[8]](#footnote-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.[[9]](#footnote-10) | Suriname member since 1975. |
| 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.[[10]](#footnote-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.[[11]](#footnote-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.

## 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:

* 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, 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. |
| 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 |
| 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[[12]](#footnote-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 |
| **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. |

# ENVIRONMENTAL, SOCIAL, AND HEALTH & SAFETY review MEthodology

## 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.

# 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.

## 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: CO2 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.  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. | 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) |
| 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 * 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 | NV Havenbeheer Suriname Environmental Management Handbook (NV Handbook 2015)  VSH Transport email interview (ERM VSH 2018  DP World Environmental Manual (DPW Handbook 2018) |
| 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 Suriname River Dredging Project). No additional details were provided regarding an established methodology for dredging that would minimize impacts on the environment. | NV Havenbeheer Suriname email interview (ERM NV 2018)  VSH Transport email interview (ERM VSH 2018  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 * 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. | 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). |
| 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) |
| 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. * 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. | 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 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.  No other information on available grievance mechanisms were provided by either DP World, VSH Transport, or NV Havenbeheer Suriname. | DP World Environmental Manual (DPW Handbook 2018) |
| 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), Trainingsmatrix DPWP 2018\_Engineering (DPW Training2 2018) Trainingsmatrix DPWP 2018\_HSSEQ (DPW Training3 2018) , and Trainingsmatrix DPWP 2018\_Operations (DPW Training4 2018) |

## 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, respond and remediate potential project risks, accidents and emergencies. | 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.  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). | NV Havenbeheer email interview (ERM NV 2018)  VSH Transport email interview (ERM VSH 2018), Overview of Laws and Legislation (VSH Legislation 2018), and 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 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. | 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) |
| 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 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. | 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) |

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## 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. |
| 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 CO2 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). |
| 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. |
| 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. |
| 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 an 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. |
| 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. |
| 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. |
| 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 |

# 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, specially 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 implement 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 recommendations are provided:

**Environmental and Social Management System:**

* 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 robust social management system with a grievance mechanism for both internal and external grievances, and a records system for environmental incidents and public complaints.
  + 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).
  + All related procedures and controls.
* Develop a comprehensive SPCC to include standard operating procedures for fueling operations as well as oil tank filling operations on site.

**Health & Safety Management System**

* Develop a comprehensive HSMS for the Port and align all HSMS in coordination with the Port management and port operators.
* Develop missing health and safety procedures including (if necessary) a confined space entry procedure, noise exposure, and a Port Security Plan.

**Other Recommendations**

Additional best management practices which could be implemented include:

* 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.
* Monitor the use of oils on site and promote the use of biodegradable oil where possible.
* 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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1. Has completed a comprehensive due diligence process administered by TRACE International, Inc., the world's leading anti-bribery standard setting organization. [↑](#footnote-ref-2)
2. DNV-GL is an international accredited registrar and classification society headquartered in Høvik, Norway [↑](#footnote-ref-3)
3. United Registrar of Systems Limited (URS Certification) is an independent certification body operating in more than 30 countries within the multinational URS Holdings. [↑](#footnote-ref-4)
4. <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx> [↑](#footnote-ref-5)
5. <http://www.imo.org/en/About/Conventions/StatusOfConventions/Documents/status-x.xlsx> [↑](#footnote-ref-6)
6. <http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx> [↑](#footnote-ref-7)
7. <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Safety-of-Life-at-Sea-(SOLAS),-1974.aspx> [↑](#footnote-ref-8)
8. <http://www.imo.org/en/about/conventions/listofconventions/pages/international-convention-on-load-lines.aspx> [↑](#footnote-ref-9)
9. <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-Facilitation-of-International-Maritime-Traffic-(FAL).aspx> [↑](#footnote-ref-10)
10. <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx> [↑](#footnote-ref-11)
11. <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> [↑](#footnote-ref-12)
12. Examples of national and internationally recognized requirements and standards: International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS). [↑](#footnote-ref-13)